DRAFT ENVIRONMENTAL IMPACT REPORT

FOR THE

VISTA RANCH PROJECT

Volume II - Appendices

JULY 2024

Prepared for:

City of Clovis | Planning Division
1033 Fifth Street
Clovis, CA 93612
Phone: 559.324.2340

Prepared by:

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De Novo Planning Group

A Land Use Planning, Design, and Environmental Firm

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Appendix A

Notice of Preparation and Comments

NOTICE OF PREPARATION

TO:	State Clearinghouse State Responsible Agencies State Trustee Agencies Other Public Agencies Interested Organizations	FROM:	McKencie Perez, MPA | Senior Planner City of Clovis | Planning Division 1033 Fifth Street Clovis, CA 93612 (559) 324-2310 mckenciep@cityofclovis.com

SUBJECT: Notice of Preparation – Vista Ranch Project

Notice is hereby given that the City of Clovis is the lead agency for the preparation of an Environmental Impact Report (EIR) for the proposed Vista Ranch Project (proposed Project), in accordance with the California Environmental Quality Act (CEQA), Section 15050. The EIR will consider potential environmental effects of the proposed project to determine the level of significance of the environmental effect and will analyze these potential effects to the detail necessary to make a determination on the level of significance. The EIR will consider those environmental issues which are raised by responsible agencies, trustee agencies, and members of the public or related agencies during the Notice of Preparation (NOP) process.

We need to know the views of your agency or organization as to the scope and content of the environmental information germane to your agency's statutory responsibilities or of interest to your organization in connection with the proposed project. Specifically, we are requesting the following:

1. If you are a public agency, state whether your agency will be a responsible or trustee agency for the proposed project and list the permits or approvals from your agency that will be required for the project and its future actions;
2. Identify potentially significant environmental effects and mitigation measures that you believe need to be explored in the EIR with supporting discussion of why you believe these effects may be potentially significant;
3. Describe special studies and other information that you believe are necessary for the City to analyze the potentially significant environmental effects, alternatives, and mitigation measures you have identified;
4. For public agencies that provide infrastructure and public services, identify any facilities that must be provided (both on- and off-site) to provide services to the proposed project;
5. Indicate whether a member(s) from your agency would like to attend a scoping workshop/meeting for public agencies to discuss the scope and content of the EIR's environmental information; and

6. Provide the name, title, and telephone number of the contact person from your agency or organization that we can contact regarding your comments.

Due to the time limits mandated by State law, your response must be sent and received by the City of Clovis by the following deadlines:

- For responsible agencies, not later than 30 days after you receive this notice.
- For all other agencies and organizations, not later than 30 days following the publication of this Notice of Preparation. The 30-day review period begins October 18, 2023 and ends on November 17, 2023.

If we do not receive a response from your agency or organization, we will presume that your agency or organization has no response to make. A responsible agency, trustee agency, or other public agency may request a meeting with the City or its representatives in accordance with Section 15082(c) of the CEQA Guidelines. Please send your response to McKencie Perez, MPA, Senior Planner at the City of Clovis | Planning Division, 1033 Fifth Street, Clovis, CA 93612. If you have any questions, please contact McKencie Perez, MPA, Senior Planner at (559) 324-2310 or via email at: mckenciep@cityofclovis.com.

SCOPING MEETING: A scoping meeting will be held at the City of Clovis Council Chambers, located at 1033 Fifth Street, Clovis, CA 93612 on Wednesday, November 8, 2023 from 4:00 p.m. to 5:00 p.m. If you have any questions, please contact McKencie Perez, MPA, Senior Planner, at mckenciep@cityofclovis.com.

PROJECT DESCRIPTION: The Vista Ranch Project is located directly northeast of the City of Clovis limit line. The Project site is bounded on the north by East Behymer Avenue, on the east by Big Dry Creek Reservoir, on the south by East Shepherd and East Perrin Avenues, and on the west by North Fowler and North Sunnyside Avenues. The Project site is approximately 952 acres and includes a City of Clovis Sphere of Influence (SOI) expansion for the entire 952-acre area. Within the Project site there is the Vista Ranch Master Plan area that is approximately 507 acres that would be annexed into the City of Clovis. The Vista Ranch Master Plan is divided into two areas (MPArea 1 and MPArea 2) based on entitlement requests and the level of design available. MPArea 1 is 368 acres proposed for full entitlements to develop immediately. Entitlements within MPArea 1 include an annexation, general plan amendments, pre-zoning, master plan community overlay district and vesting tentative map. The remaining 139 acres in the Vista Ranch Master Plan (MPArea 2) does not include full entitlements and would require further environmental review to enable future development once more detailed design work is performed. There are also 445 acres of land outside of the Vista Ranch Master Plan, but within the Project site. This area is referred to as Non-Development Area and is part of the SOI expansion but does not propose any other entitlements that would enable

development. A detailed Project Description is attached and can be reviewed at the City or by accessing the City's website at https://cityofclovis.com/planning-and-development/planning/ceqa/.

PROBABLE ENVIRONMENTAL EFFECTS AND SCOPE OF THE EIR: The City has reviewed the proposed Project application and has determined that an EIR should be prepared for the proposed Project because it may have a significant effect on the environment. All environmental topics identified in Appendix G of the State CEQA Guidelines will be analyzed within the EIR, including: Aesthetics, Agricultural and Forestry Resources, Air Quality, Biological Resources, Cultural Resources, Energy, Geology/Soils, Greenhouse Gases/Climate Change, Hazards and Hazardous Materials, Hydrology/Water Quality, Land Use/Planning, Mineral Resources, Noise, Population/Housing, Public Services, Recreation, Transportation/Circulation, Tribal Resources, Utilities and Service Systems, Wildfire, Cumulative Impacts, and Growth Inducing Impacts. An Initial Study has not been prepared for the proposed Project.

PROJECT LOCATION

The Vista Ranch Project (Project) is located directly north of the City of Clovis (City) limit line. The Project site includes approximately 952 acres located within the City's Planning Area, and is bounded on the north by East Behymer Avenue, on the east by the Big Dry Creek Reservoir, on the south by East Shepherd and East Perrin Avenues, and on the west by North Fowler and North Sunnyside Avenues. Figures 1 and 2 show the proposed Project's regional location and vicinity. The Project site is located within portions of Sections 21, 22, and 23 of Township 12 South, Range 21 East, Mount Diablo Base and Meridian (MDBM).

PROJECT SITE DEFINED

The Project site includes several distinct planning boundaries as defined below. The following terms are used throughout this document to describe planning area boundaries within the Project site:

- **Project Area** – Includes the whole of the Project site (approximately 952 acres), all of which is currently located in the City's Planning Area and which would be incorporated into the City's sphere of influence (SOI). The Project area includes (1) the approximately 507-acre Vista Ranch Master Plan, and (2) the approximately 445-acre Non-Development Area, both of which are described below.
    - **Vista Ranch Master Plan (Master Plan)** – Includes approximately 507 acres located entirely within the Project Area. The Master Plan contemplates the construction of up to 3,286 residential units, approximately 48 acres of commercial/mixed uses, approximately 19 acres for an elementary school site, and approximately 57 acres of parks, trails and open space. The Master Plan is divided into two distinct planning areas: (1) MPArea1: an approximately 368-acre area proposed for immediate development, and (2) MPArea2: the remaining approximately 139-acres that is anticipated for future development.
        - **MPArea 1 (Development Area)** – Includes approximately 368 acres proposed to be developed by Wilson Premier Homes, Inc. A majority of the Development Area has been planned for urban uses and is included in the area designated as the Northeast Urban Center by the City's 1993 General Plan and subsequent General Plan updates. Consistent with that vision, the Development Area contemplates a mix of urban uses, including between 2,500 and 2,718 residential units, non-residential uses for future gateway neighborhood commercial and community recreational facilities up to 133,000 square feet, and approximately 43 acres of parks, trails and open space located within the 368 acres. The Development Area will have a full project-level analysis in the environmental impact report (EIR) of all entitlements necessary to develop the property in the near term.
        - **MPArea 2** – Includes approximately 139 acres controlled by several property owners within the Master Plan. This area has also been planned for a mix of urban uses as part of the Northeast Urban Center under the City's 1993 General Plan and subsequent General Plan updates. This area will continue to include a mix of

urban uses. This area is anticipated to have a programmatic-level analysis in the EIR. Future development of this area is at the discretion of the property owners and subject to project level analysis.

- **Non-Development Area** – Includes approximately 445 acres that have not requested nor will receive any entitlements other than to be included in the SOI expansion. The Non-Development Area is anticipated to have a programmatic-level analysis in the EIR.

PROJECT SETTING

EXISTING SITE CONDITIONS

The Project site is approximately 952 acres and includes 139 Assessor parcels. Figure 3 depicts the parcels within the Project site and the proposed new SOI boundary, with specific APNs identified for the Master Plan area. In addition, APNs 557-031-30, 32S, 34, 36, 38, 40, 43S, & 45 are located along the north side of Shepherd Avenue and are owned by the City of Clovis for future roadway rights-of-way.

SITE TOPOGRAPHY

Topographically, the site is characterized as flat to gently sloping southerly and westerly with elevations varying from approximately 385 to 400 feet above mean sea level. There is a knoll at the northeast corner of the Project Area that varies in elevation from 395 to 440 feet above mean sea level.

EXISTING SITE USES

Presently, the Project site consists of a combination of fallow and grazing land, several rural residences, offices and yard for Landscape Contractors and small tree nursery.

The proposed Master Plan portion of the Project site is bifurcated by the Big Dry Creek Spillway.

East Shepherd Avenue, along the southern boundary, is identified as an Expressway in the Clovis General Plan Circulation Plan and is partially improved to an urban level adjacent to the Project site. East Perrin Avenue and East Behymer Avenue are County roads and located adjacent to several of the parcels within the Project area, both streets provide access to North Fowler Avenue which is also a County Road. East Behymer Avenue also extends to North Sunnyside Avenue.

The Non-Development Area contains existing rural residential residences and agricultural fields. The Non-Development Area is located within the City of Clovis' Planning Area but is outside of the City's existing Sphere of Influence. Figure 4 shows aerial imagery of the existing site uses within the Project site.

EXISTING SURROUNDING USES

The Project site is surrounded by single-family residential, rural residential, a few agricultural orchards, grazing land and open space land uses. Uses immediately east of the Project site consist of the Big Dry Creek Reservoir, an existing earthen Dam owned and operated by the Fresno Metropolitan Flood Control District. Uses immediately south of the Project site are primarily single family residential. Uses

immediately west and north of the Project site are primarily rural residential on larger lots and fallow or grazing properties.

EXISTING GENERAL PLAN LAND USE DESIGNATIONS AND ZONING

The following section outlines the existing City and County General Plan land use designations and zoning for the Project site. It should be noted that the Project site is currently outside of the jurisdiction of the City of Clovis, and therefore does not have City of Clovis Zoning designations.

City of Clovis

The City of Clovis General Plan was adopted on August 25, 2014. Figure 5 depicts the existing land use designations for the Project site and the surrounding areas under the adopted City of Clovis General Plan. Figure 6 depicts the existing City of Clovis and Fresno County zoning designations. All parcels within the Project site currently have Fresno County zoning designations.

Most of the Project site is located within the Clovis General Plan Focus Area 13. The proposed Urban Center requires a master plan community overlay district or specific plan to implement development in this focus area. The proposed project includes a general plan amendment to establish Focus Area 13a for the Master Plan.

The City of Clovis General Plan includes a conceptual land use plan for this area illustrating the City of Clovis' desire for a master planned mixed use community. Figure 7 depicts the land use plan and Figure 9 depicts the proposed zone district designations. The land use designation for the entire Master Plan will be Mixed Use Village and multiple zone districts will be applied to define specific uses within Focus Area 13a.

A focus area complements a property's General Plan land use designation and may expand permissible uses, introduce new policy requirements, augment development standards, or simply call attention to a complex property. The proposed project will establish specific requirements and additional uses that would be permitted within Focus Area 13a. Refer to the Entitlement section for further details on Focus Area 13a.

Fresno County

The Project site is currently located in the County of Fresno. Figure 6 identifies the Fresno County land use designations and zoning for the Project site and the surrounding area. The Project site area includes AE-20 (Exclusive Agriculture), AL-20 (Limited Agriculture) and R-R (Rural Residential) Zone Districts. The proposed Master Plan area is designated as AE-20 (Exclusive Agriculture) and AL-20 (Limited Agriculture) Zone Districts in the County General Plan. The proposed Master Plan includes an area previously approved by the County of Fresno for mini storage land use and memorialized under Fresno County Conditional Use Permit 3526 in the AL-20 Zone District.

PROJECT OBJECTIVES

A clear statement of objectives and the underlying purpose of the proposed Project are discussed per CEQA Guidelines Section 15124(b).

PROJECT OBJECTIVES

The principal objective of the proposed Project is the expansion of the City's SOI to include the Project site, annexation, master planning, and subsequent development of land to accommodate growth.

The quantifiable objectives of the Proposed Project include the construction of up to 3,286 residential units within the Master Plan Area, approximately 48 acres of commercial/mixed-uses, approximately 19 acres for an elementary school site, and approximately 57 acres of parks, trails and open space use. Reference is made to Figure 8, Focus Area 13a.

Within MPArea 1 of the Master Plan (an approximately 368-acre portion of Focus Area 13a), the quantifiable objectives include the near-term development of the MPArea 1 (Development Area), which consists of developing approximately 368 acres to accommodate no less than 2,500 residential units and up to 2,718 residential units. Development in MPArea1 also includes non-residential uses for future gateway neighborhood commercial and community recreational facilities up to 133,000 square feet, and approximately 43 acres of parks, trails and open space located within the 368 acres. The remainder of the development within the Master Plan area would occur within MPArea 2.

The Project objectives also include the installation of new public and private roadways that will provide pedestrian and vehicular access to the Project site and surrounding community areas, and other improvements, including water supply, storm drainage, sewer facilities and landing to serve the residential and non-residential uses.

Additional objectives of the proposed development include the following:

- Develop within an area planned for urbanization by the City of Clovis General Plan.
- Embrace the natural resources and views of the Sierra.
- Provide residential housing opportunities that are visually attractive and accommodate the future housing demand in Clovis.
- Refine the mixture of housing types, sizes and densities that collectively provide for local and regional housing demand.
- Provide infrastructure that meets City standards and is integrated with existing and planned facilities and connections.
- Develop a strong pedestrian network that links activities, recreational amenities, local commercial and neighborhoods together.
- Establish a logical phasing plan designed to ensure that each phase of development would include necessary public improvements required to meet City standards.
- Expand the City's SOI in an area contemplated by the City General Plan to establish a logical and orderly boundary that promotes the efficient extension of municipal services to areas planned for growth.
- Create an environment that is safe and secure.
- Increase affordability and housing diversity, develop urban uses in an area planned for such uses in the City of Clovis General Plan, that is proximate to urban services and roadways.

PROJECT ENTITLEMENTS

GENERAL PLAN AMENDMENT

The proposed Project would require general plan amendments that cover City of Clovis General Plan Focus Area 13. This would include land use modifications, focus area modification, Shepherd Avenue access modification, circulation element modifications, and parks and open space element modification to accommodate the proposed Master Plan. Each are discussed below:

Land Use Modifications

The proposed Project requires adjustments to the land uses within the Master Plan area. The proposed General Plan land use designation for the Master Plan area is Mixed Use Village, shown in Figure 7. This land use designation will allow for the development of a master planned community through multiple zoning designations, including the Master Plan Community Overlay District.

Focus Area 13 Modification

The proposed modification to the original boundaries of the City of Clovis General Plan Focus Area 13 would memorialize the 507-acre Master Plan as a subarea of Focus Area 13. This application is not intended to eliminate the greater Focus Area 13 established under the General Plan, rather it would create a new Focus Area designation (Focus Area 13a) to establish and refine specific development goals and policies for this portion of Focus Area 13. Refer to Figure 8.

The adopted attributes of Focus Area 13a would include the following:

Primary Land Use

- Portion of an Urban Center developed as a mixed-use village

Additional Uses Allowed

- Residential between 2.1 – 43 du/acre, as indicated in the Master Plan Community Overlay Zone District and Master Plan

Design Features

- Master Plan required
- Development should give special consideration to buffering of residential uses adjacent to the focus area
- Development should integrate with and support active and public transportation
- Development should reflect, in its design, the legacy and landmarks of the local Sierra foothill area
- The Master Planned community should provide for a variety of “lifecycle” housing types
- Development should encourage “walkability” and safe pedestrian and bicycle routes to all land uses
- Trails, parks, and open spaces should logically connect with the greater Clovis area and provide additional recreational opportunities for the City of Clovis
- Development shall incorporate neighborhood serving commercial and service uses as well as educational opportunities

- The residential unit count shall be between 2,600 and 3,286 units

Shepherd Avenue Access Modification

The proposed modification includes a relocated vehicular access point along the limited access designation of Shepherd Avenue adjacent to the proposed Focus Area 13a. Current City of Clovis policy is to allow permanent street access points at the 0.5-mile points along this portion of Shepherd Avenue. While an intersection access does occur at Armstrong Avenue, the Shenandoah Farms residential development (approved in the County of Fresno) precludes any extension of Armstrong Avenue to the north**.**

The proposed modification would move what would have been an allowable access point approximately 500 feet to the east creating a non-signalized "right-in, right-out, left-in" ingress and egress on the north side of Shepherd Avenue. This configuration would interface appropriately with the currently existing Armstrong/Shepherd Avenue intersection.

Two recent and similar modifications have recently been approved along Shepherd Avenue addressing unique site and circulation needs. In this case, this access point will assist in providing the required two points of access for initial phases of development as well as accommodate "built-out" traffic circulation in a manner envisioned in the Clovis General Plan.

Circulation Element Modifications

The proposed modifications include an amendment to the City of Clovis General Plan Figure C-1 Circulation Diagram by proposing to add major street route designations within Focus Area 13a. These designations will be discussed with City of Clovis staff. Focus Area 13a, as requested to be modified, abuts Shepherd Avenue, a designated Expressway, along its southern boundary which includes three significant intersections; Armstrong Avenue designated as a local street, Temperance Avenue designated as an Arterial and Locan Avenue designated as a Collector. While Armstrong Avenue's extension to the north is impeded by the Shenandoah Farms residential development (approved in the County of Fresno), the Temperance and Locan Avenue intersections provide access points to the proposed Master Plan.

Given the traffic lane geometrics of these pre-existing intersections as well as the traffic load generated by the Master Plan, major street designations are being proposed and are requested to be added to the Circulation Element of Clovis' General Plan.

In addition, modifications will be made to the City of Clovis General Plan Figure C-2 Bicycle and Trails System, adding and connecting multipurpose trails and bike lanes within the Development Area that will integrate with the current Clovis trail and bike system.

Parks and Open Space Element Modification

The proposed modification includes the General Plan's Figure OS-1 Parks and Open Space diagram by adding Class I trail routes, open spaces, and parks within modified Focus Area 13a. Over four miles of Class I trail as well as pedestrian enhanced street sections are being proposed with the general plan amendment application that will integrate with the current Clovis Trail system. Neighborhood Park areas assigned under the 2014 General Plan Update are being redistributed to integrate with the design of this proposed

Master Plan. This modification request is further refined within the proposed Master Plan document being considered under the concurrent Master Plan Community (M-P-C) Zone District application described below.

MASTER PLAN COMMUNITY OVERLAY DISTRICT

The M-P-C Overlay District implements Focus Area 13a by addressing larger scale mixed use development through a variety of flexible development standards to achieve a higher degree of community design. The M-P-C Overlay District is implemented through a Master Development Plan (the Vista Ranch Master Development Plan), which is a written and illustrative plan that serves as a guideline for the long-term physical development of the area. The Vista Ranch Master Development Plan guides land use, circulation, infrastructure, and buildings to connect social, economic, and environmental goals of the community. The Vista Ranch Master Development Plan identifies the location and size of development parcels, establishes desired zoning designations, establishes development standards, illustrates transportation/circulation patterns (including alternative modes of transportation such as transit, bicycle, and pedestrian), and establishes areas for open space and community facilities. Figure 9 illustrates the zoning designations proposed within the Vista Ranch Master Development Plan.

PRE-ZONING

The Project site is currently located outside of the Clovis city limits, and therefore does not have City-designated zoning. The proposed Project includes a request for pre-zoning within the Master Plan to appropriate City of Clovis zone districts (Figure 9). The portion of the Project site that is outside the Master Plan would not receive pre-zoning designations:

Master Plan: The Project contemplates a pre-zoning request for the Master Plan area to the following City of Clovis zoning districts: R-1, R-1-MD, R-2, R-4, C-P, C-1, C-R, and O. Since all of these zone Districts are within the M-P-C district, they will include the M-P-C suffix and be subject to the development standards as modified and adopted in the Master Plan.

- **Single Family Residential Low-Density Zoning (R-1).** This designation identifies areas appropriate for conventional single-family uses. The allowable density range is 2.1-4.0 units per acre. The R-1 district is consistent with the Low and Medium Density Residential land use designations of the General Plan.

- **Single Family Residential Medium-Density Zoning (R-1-MD).** This designation identifies areas appropriate for single-family uses, including attached and detached single-family structures. The allowable density range is 4.1-7.0 units per acre. The R-1-MD district is consistent with the Medium Density Residential land use designation of the General Plan

- **Single Family Residential Medium High-Density Zoning (R-2).** This designation identifies areas appropriate for moderately dense residential uses, including multifamily apartments, duplexes, townhouses, and small parcel, attached and detached single-family uses. The allowable density range is 7.1-15.0 units per acre. The R-2 district is consistent with the Medium High Density Residential land use designation of the General Plan.

- **Multi-Family Residential Very High-Density Zoning (R-4).** This designation identifies areas appropriate for high and very high density residential uses, particularly in association with mixed use development. The allowable density range is 25.1-43.0 units per acre. The R-4 district is consistent with the High and Very High Density Residential land use designations of the General Plan.

- **Administrative and Professional Office Zoning (C-P).** This designation allows for the development of a Mini Storage with a conditional use permit. The site is currently approved for development of a mini storage in the County of Fresno. Should this site not develop as a mini-storage, this designation identifies areas appropriate for integrated, professional office uses including administrative, corporate, financial, government, institutional, legal, and medical.

- **Neighborhood Commercial Zoning (C-1).** This designation identifies areas appropriate for providing convenience services, compatible with adjacent neighborhood areas. The C-1 district is consistent with the Neighborhood Commercial land use designation of the General Plan.

- **Community Recreation Zoning (C-R).** This designation identifies areas appropriate for commercial recreation into a planned integrated center for the community. The C-R district is consistent with the General Commercial, Mixed Use Village and Public/Quasi-Public Facilities land use designations of the General Plan.

- **Open Space and Parks Zoning (O).** This designation identifies areas appropriate for open space, such as Parks, flood control channels, greenbelts, parkways, ponding basins, trails and wildlife preserves. The O district is consistent with the Park and Open Space land use designations of the General Plan.

VESTING TENTATIVE SUBDIVISION MAP

The proposed Project includes a vesting tentative map (VTM) for a portion of the Master Plan (MPArea 1 only). The VTM would cover approximately 368 acres within 13 assessor parcels (APN's), more specifically, APNs 557-012-02, 28, and 29, 557-022-11S, 557-031-05S, 23, 24, 25 ,27, 35, 37 and 44s and 558-010-25.

The VTM would result in the subdivision of approximately 368 acres for the development of approximately 2,718 residential units. This includes single-family lots, outlots for multi-family development (approximately 15 acres), and outlots of approximately seven acres for mixed uses (neighborhood commercial and community recreation facilities). Additional outlots will have private community recreation, parks, roads, utilities, greenspace, landscaping and pedestrian paths and trails.

The VTM proposes new public roadways with pedestrian/bicycle and vehicular access, landscaping and lighting, and other infrastructure such as water, storm drainage, wastewater facilities. All onsite infrastructure is located within the boundaries of the Project site, and offsite infrastructure may include connections and improvements to existing infrastructure in adjacent roadways including Behymer between Sunnyside and the Project, Fowler between Shepherd and Behymer, Perrin between Fowler and the Project, Shepherd between Fowler and DeWolf and Locan within the Master Plan. All infrastructure design will be confirmed through engineering studies and calculations.

DEVELOPMENT AGREEMENT

The proposed Project may also include a Development Agreement between the City and the project applicant. The agreement would specify obligations of both the city and the applicant with respect to the future development of the MPArea 1 (Development Area).

ANNEXATION

The proposed Project includes an annexation of approximately 507 acres, which covers the entire boundary of the proposed Master Plan. The annexation does not include the +/- 445-acre Non-development Area. The final annexation boundary may be refined as part of the study process, which would ultimately include a public hearing before the Fresno County Local Agency Formation Commission (LAFCO), who has the final statutory authority to set annexation boundaries.

SPHERE OF INFLUENCE EXPANSION

The proposed Project includes the amendment of the City's SOI to include the entire 952-acre Project site. The area is currently located in the City's Planning Area, but outside of the City's SOI. The amendment of the City's SOI will require an application and approval by the LAFCO.

MASTER PLAN DEVELOPMENT PROJECT CHARACTERISTICS

The proposed Project as implemented under the City of Clovis M-P-C Zone District is a mixed-use development anticipated to provide not less than 2,600 residential units and up to 3,286 residential units, including single family and multi-family units. In addition, the M-P-C Overlay District, as implemented through the Master Development Plan, will include non-residential uses including a mixed-use neighborhood commercial center designed to provide localized retail and service uses and employment to the Project and local surrounding areas, a mini storage site approved for development by the County of Fresno, an elementary school and community recreation centers serving the community. Figure 9 depicts the proposed zoning of the properties within the Master Plan area.

RESIDENTIAL DEVELOPMENT

The proposed Master Plan will provide a variety of housing types and lot sizes that will accommodate a range of housing objectives and buyer needs with a goal to ensure housing for a variety of families and lifestyles. The Master Plan will accommodate between 2,600 and 3,286 residential units with densities varying from low density to very high density residential. The Master Plan has been designed to have low and medium densities adjacent to rural residential development and higher densities, adjacent to the major circulation corridors, localized amenities and commercial centers.

GREENSPACE

The Master Plan includes an extensive trail circulation system, which is intended to provide neighborhood connectivity and convenient and safe access to the various community amenities, and commercial areas. In addition, multiple parks are dispersed throughout the Master Plan. These trail and park areas will combine or provide nearby public recreational elements (city park) and private recreational facilities for the Master Planned community. The city park space is designed to be approximately 7.8 acres. The

medium-high density gated neighborhoods will provide small parks/or small community pools to those neighborhoods.

CIRCULATION

The Master Plan proposes a hierarchy of roadways to accommodate the capacity needs of the existing street network as well as provide additional vehicular access to the Master Plan. Shepherd Avenue and Temperance Avenue are the main expressway/arterial/collector roadways providing access to the Development. The neighborhoods within the Master Plan will include a network of public and private residential streets to provide an efficient flow of traffic and pedestrian mobility through the area. Additionally, sidewalks will be included per the City of Clovis standards.

UTILITIES AND PLANNED INFRASTRUCTURE IMPROVEMENTS

The construction of on-site infrastructure improvements would be required to accommodate development within the Master Plan, as described below.

Water System

The Master Plan will be served by a new connection to the City of Clovis potable and non-potable water distribution system. The proposed water system will be located within proposed public utilities easements and will be connected to existing City main lines. All water system infrastructure will comply with City Master Plans and standards.

The City of Clovis provides water supplies to the City of Clovis. The City has three main water supply sources: groundwater, surface water, and recycled water. The City extracts groundwater from the Kings Subbasin. Surface water is delivered to the City by the Fresno Irrigation District (FID). The various surface water supplies are from the Kings River and Central Valley Project. The City's Water Reuse Facility produces tertiary treated effluent that can be used for agriculture or landscape irrigation.

Wastewater System

The Master Plan will be served by a new connection to the City of Clovis wastewater collection system installed within proposed public utilities easements. The proposed wastewater conveyance facilities will connect to the existing sewer main lines. Wastewater treatment will be provided at the existing Fresno-Clovis Regional Wastewater Treatment Plant in the City of Fresno and by the City's Water Reuse Facility. By agreement with the City of Fresno, the City of Clovis is entitled to a maximum capacity of 9.3 million gallons per day (mgd). The Fresno-Clovis Regional Wastewater Treatment Plant is owned and operated by the City of Fresno and has a maximum capacity of 80 mgd. Wastewater treatment may also be provided by the City of Clovis' Water Reuse Facility. The Clovis plant serves the new growth areas of the City in the southeast, northwest, and ultimately the northeast urban centers. The plant is designed to accommodate future expansion and will ultimately treat 8.4 mgd. The City of Clovis will manage service to the site to optimize the use of available capacity at each of the Plants to facilitate service to the project.

Storm Drainage

The Master Plan will include construction of a new storm drainage system, which will conform to applicable regulations, standards, and specifications of the State Water Resources Control Board

Requirements (SWRCB), the Fresno Metropolitan Flood Control District (FMFCD), and City of Clovis. This includes, but is not limited to the municipal National Pollutant Discharge Elimination System storm water discharge permit, as well as Best Management Practices to control the volume, rate, and potential pollutant load of storm water runoff. Stormwater throughout the City is collected in FMFCD's basins.

Regulated Public Utilities

Electrical and gas, provided by PG&E (except in MPArea 1 no gas will be provided); phone, provided by AT&T; cable, provided by Comcast; and related internet services would be extended to all portions of the Master Plan from existing facilities located along East Shepherd Avenue and from existing residential development surrounding the Master Plan. Proposed utilities would be located within public utility easements to be dedicated along street frontages. Utility improvements would be installed in conjunction with planned street improvements.

ALTERNATIVES

CONSIDERATION OF ALTERNATIVE LOCATION

It is the City's desire to develop a reasonable range of alternatives to the proposed Project. The City has considered alternative locations early in the scoping process. The City's key considerations in identifying an alternative location was as follows:

- Is there an alternative location where significant effects of the Project would be avoided or substantially lessened?
- Is there a site available within the City's Sphere of Influence with the appropriate size and characteristics such that it would meet the basic Project objectives?

The City's consideration of alternative locations for the Project included a review of previous land use planning and environmental documents in Clovis including the General Plan. The search included a review of land in Clovis that is located within the SOI, suitable for development, available for acquisition, and not already approved or pending development. It was found that there are projects that are already developed, approved but not yet developed, or currently under review in Clovis. These developed, approved, and pending projects are not available for acquisition by the Project applicant, and are not considered a feasible alternative for the Project applicant. The City has found that there are no feasible alternative locations that exist within the City's SOI with the appropriate size and characteristics that would meet the basic Project objectives and avoid or substantially lessen a significant effect. The City has determined that alternative locations that are not a General Plan Focus Area and outside the SOI would not be feasible because an expansion of the SOI into areas that are not already a Focus Area in the City of Clovis General Plan would induce unplanned growth and cause impacts greater than development on the Project site. For these reasons, the City determined that there are no feasible alternative locations.

In addition, as discussed in Citizens of Goleta Valley v. Board of Supervisors (1990) 52 Cal.3d 553 (Goleta II), where a project is consistent with an approved general plan, no off-site alternative need be analyzed in the EIR. The EIR "is not ordinarily an occasion for the reconsideration or overhaul of fundamental land-use policy." (Goleta II, supra, 52 Cal.3d at p. 573.) In approving the City of Clovis General Plan and related EIR, the city identified and analyzed suitable alternative sites for particular types of development and has

selected a feasible land use plan, such as Focus Area 13. "Informed and enlightened regional planning does not demand a project EIR dedicated to defining alternative sites without regard to feasibility. Such ad hoc reconsideration of basic planning policy is not only unnecessary, but would be in contravention of the legislative goal of long-term, comprehensive planning." (Goleta II, supra, 52 Cal.3d at pp. 572-573.) The proposed Project is generally consistent with the location anticipated for new development under the General Plan (Focus Area 13), and thus, in addition to the reasons discussed above, an off-site alternative need not be further discussed in this EIR.

ALTERNATIVES CONSIDERED

Four alternatives to the proposed Project have been developed early in the scoping process. It is noted that these alternatives may be modified based on analysis and input from agencies and the general public. Additionally, new and different alternatives may be developed through the process.

- **No Project (No Build) Alternative**
- **Reduced Density Alternative**
- **Increased Density Alternative**
- **Reduced Sphere of Influence Alternative**

NO PROJECT (NO BUILD) ALTERNATIVE

Under the No Project (No Build) Alternative expansion of the SOI and development in the Master Plan would not occur. The Project site would remain in its current existing condition. It is noted that the No Project (No Build) Alternative would fail to meet the Project objectives/goals.

REDUCED DENSITY ALTERNATIVE

Under the Reduced Density Alternative, there would be downzoning throughout the Master Plan Area (MPArea 1 and MPArea 2) to very low density residential. The developable acreage is 427 acres and density is assumed to be two units per acre. The total unit count would decrease from 3,286 under the proposed Master Plan to a total of 854 under the Reduced Density Alternative. The SOI expansion of the entire Project would still occur, but there would be no planned development of uses or infrastructure in the SOI expansion area.

INCREASED DENSITY ALTERNATIVE

Under the Increased Density Alternative, there would be upzoning throughout the Master Plan Area (MPArea 1 and MPArea 2) to higher densities to accommodate a 10% increase in units. The total unit count would increase from 3,286 under the proposed Master Plan to a total of 3,615 under the Increased Density Alternative. The SOI expansion of the entire Project would still occur, but there would be no planned development of uses or infrastructure in the SOI expansion area.

REDUCED SPHERE OF INFLUENCE ALTERNATIVE

Under this alternative, the proposed Project would only expand the Sphere of Influence and annex the proposed Master Plan, and would exclude the 445-acre SOI expansion outside of the proposed Master Plan.

USES OF THE EIR AND REQUIRED AGENCY APPROVALS

This EIR may be used for the following direct and indirect approvals and permits associated with adoption and implementation of the proposed Project entitlements.

CITY OF CLOVIS

The City of Clovis will be the Lead Agency for the proposed Project, pursuant to the State Guidelines for Implementation of CEQA, Section 15050. Actions that would be required from the City include, but are not limited to the following:

- Certification of the EIR;
- Adoption of the Mitigation Monitoring and Reporting Program;
- Approval of City of Clovis General Plan Amendments (Land Use Element, Circulation Element and Open Space and Conservation Element);
- Approval of City of Clovis Pre-zoning;
- Approval of Master Plan Community Overlay District and Master Development Plan;
- Approval of Vesting Tentative Maps;
- Possible approval of Development Agreement;
- Approval of SOI Expansion;
- Authorization to submit SOI Amendment request to Fresno LAFCo;
- Approval of Annexation of the Master Plan, including Inhabited Areas;
- Authorization to submit Annexation request for the Master Plan to Fresno LAFCo;
- Approval of future Final Maps;
- Approval of future Grading Plans;
- City review, approval, of construction and utility plans;
- Approval of future Building Permits; and
- Allocation and provision of City of Clovis Sewer and Water service.

OTHER GOVERNMENTAL AGENCY APPROVALS

The following agencies may be required to issue permits or approve certain aspects of the proposed Project. Other governmental agencies that may require approval include, but are not limited to, the following:

- Fresno Local Agency Formation Commission (LAFCo) – SOI Amendment, Annexation, and Detachment from the Fresno County Fire Protection District and the Kings River Conservation District;
- Central Valley Regional Water Quality Control Board (CVRWQCB) - Storm Water Pollution Prevention Plan (SWPPP) approval prior to construction activities pursuant to the Clean Water Act;
- San Joaquin Valley Air Pollution Control District (SJVAPCD) - Approval of construction-related air quality permits; and
- Fresno Metropolitan Flood Control District – review of stormwater facilities, grading, and street improvements.

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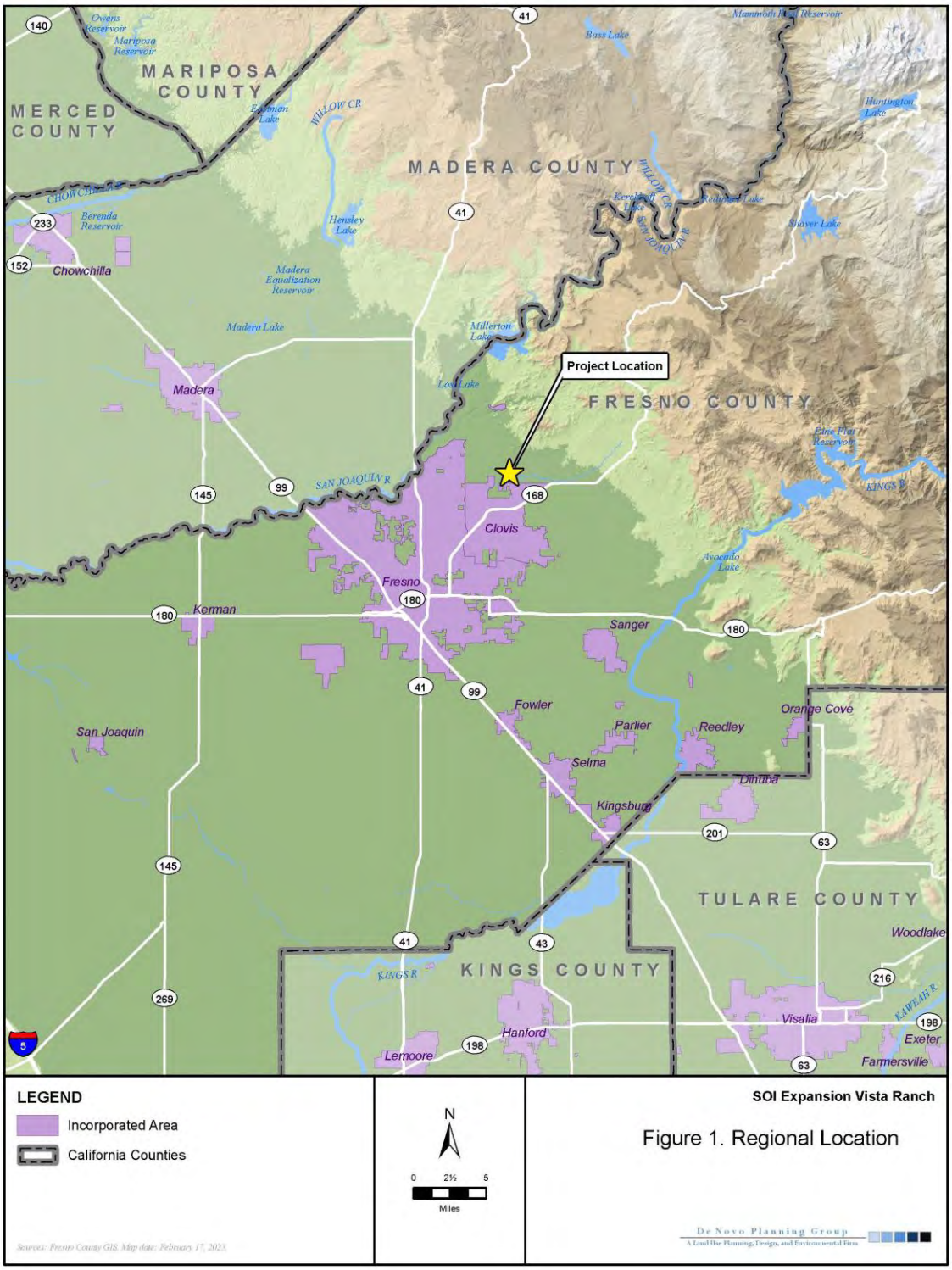
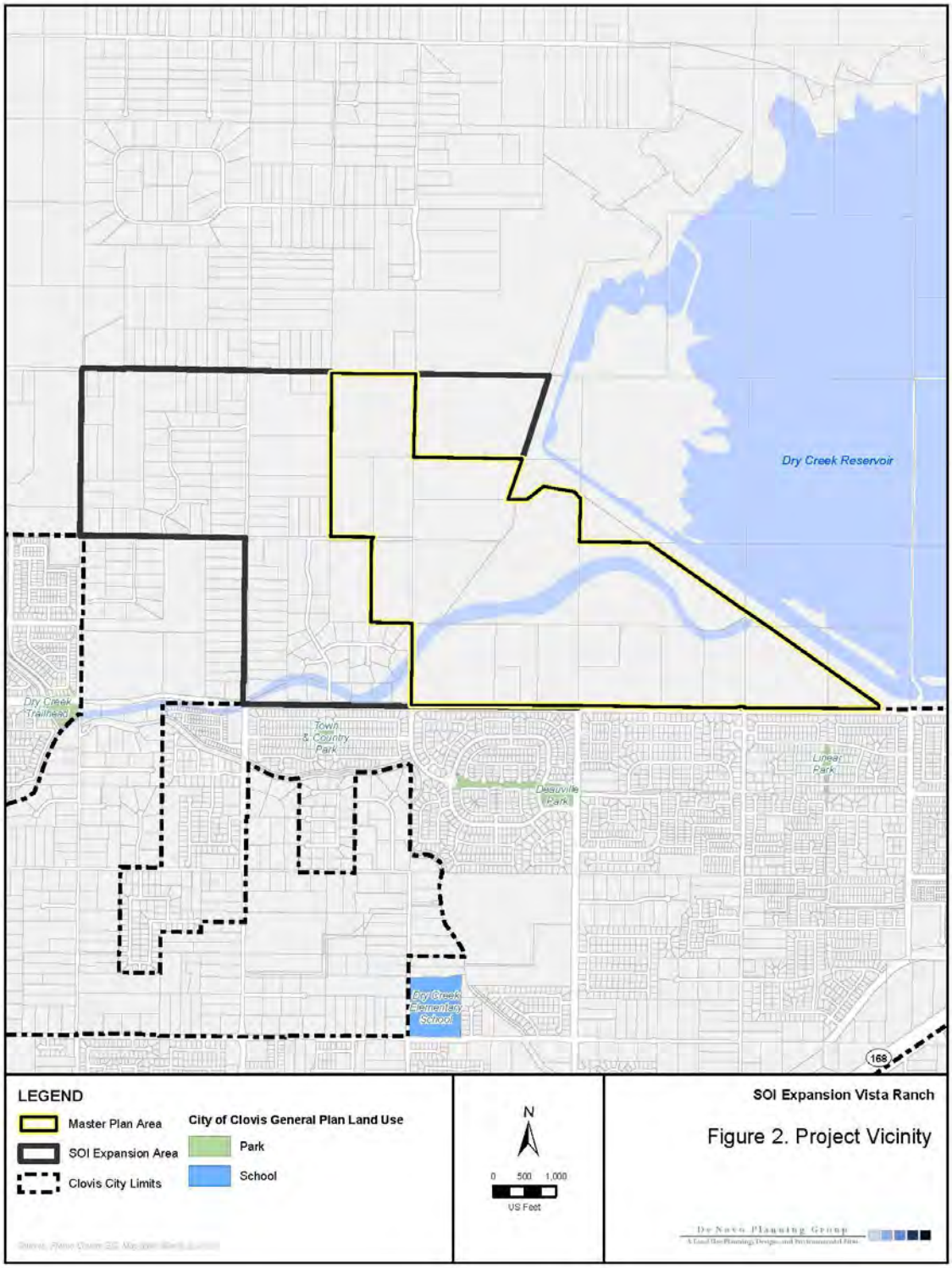
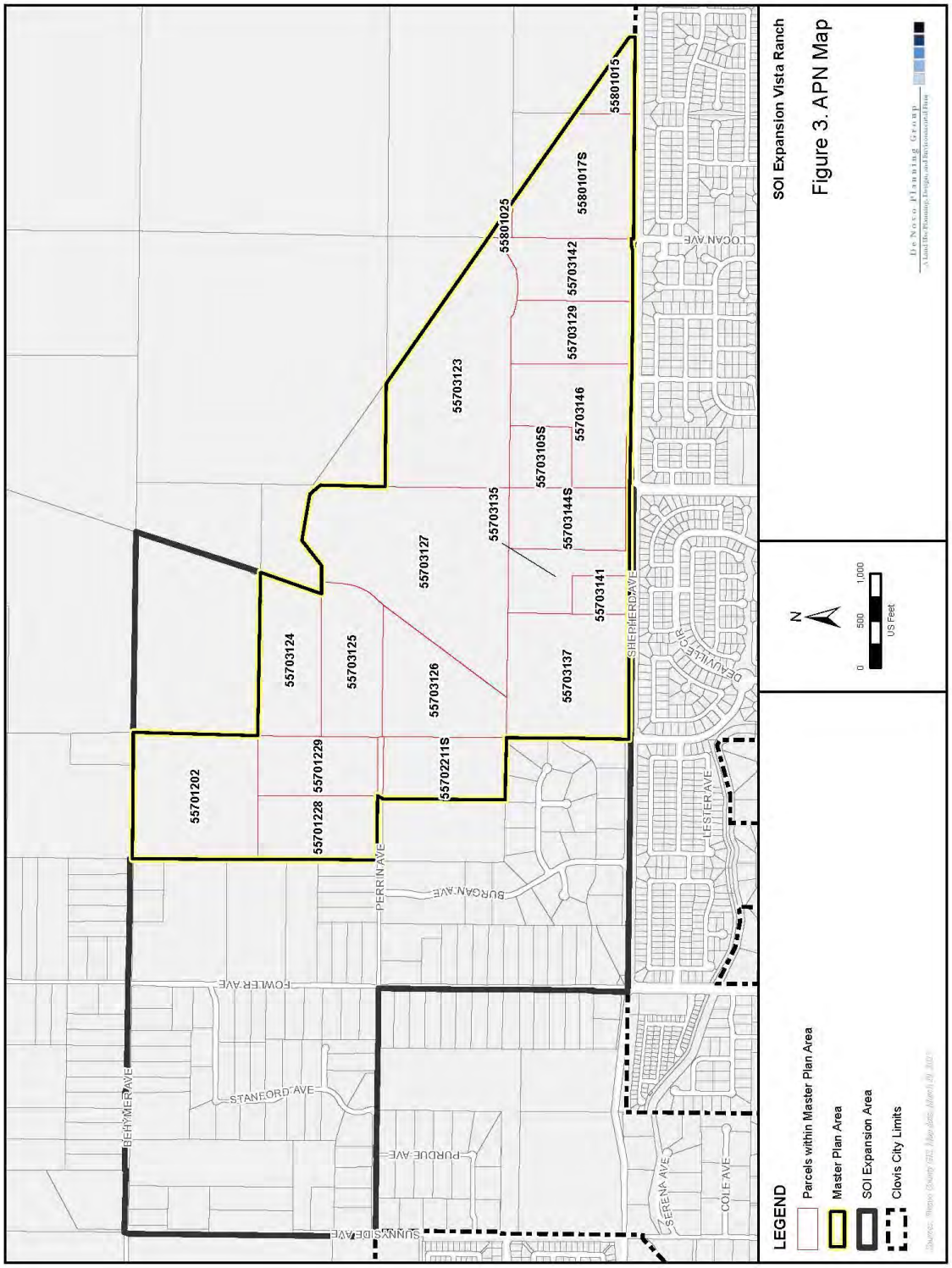
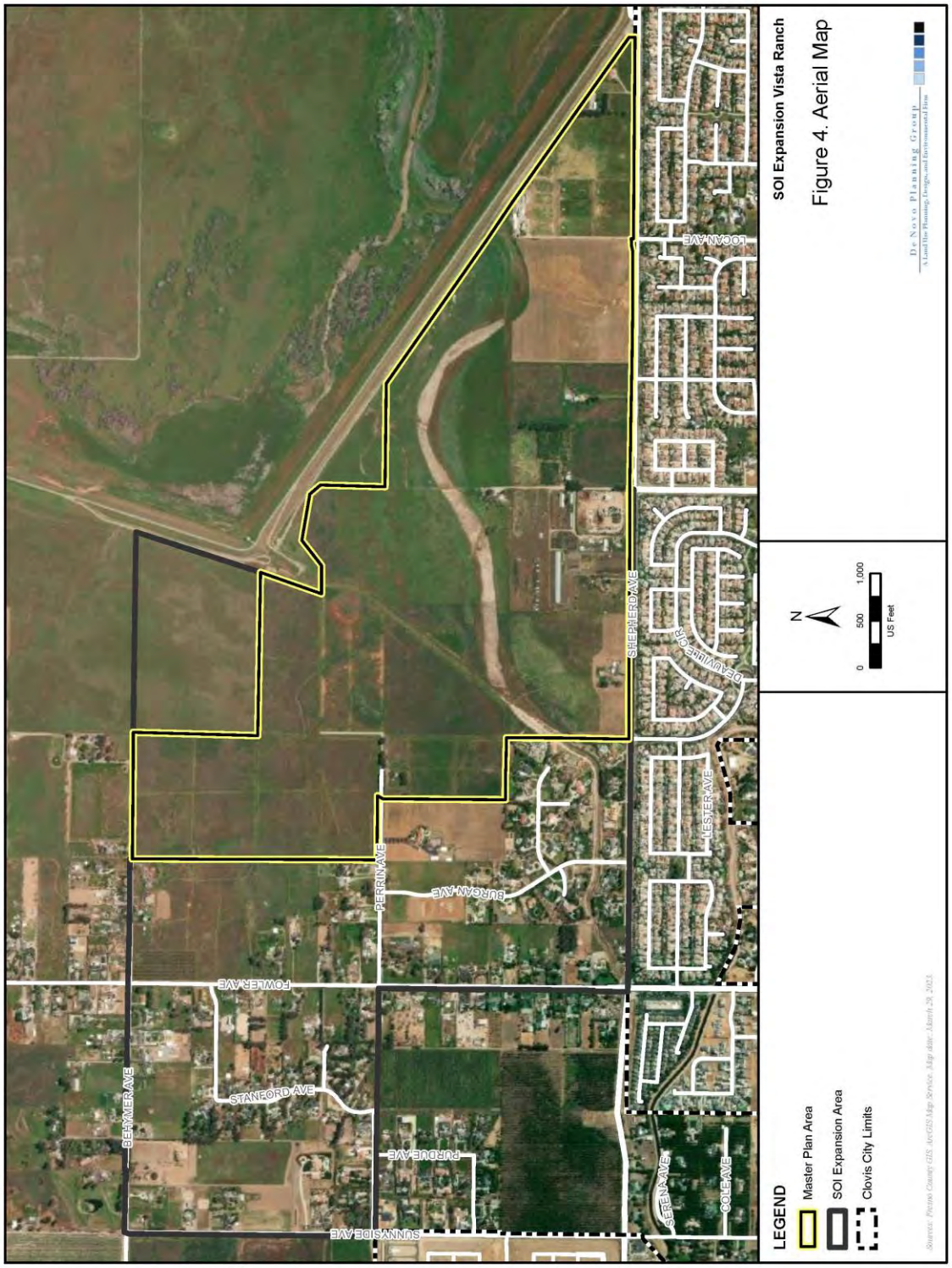
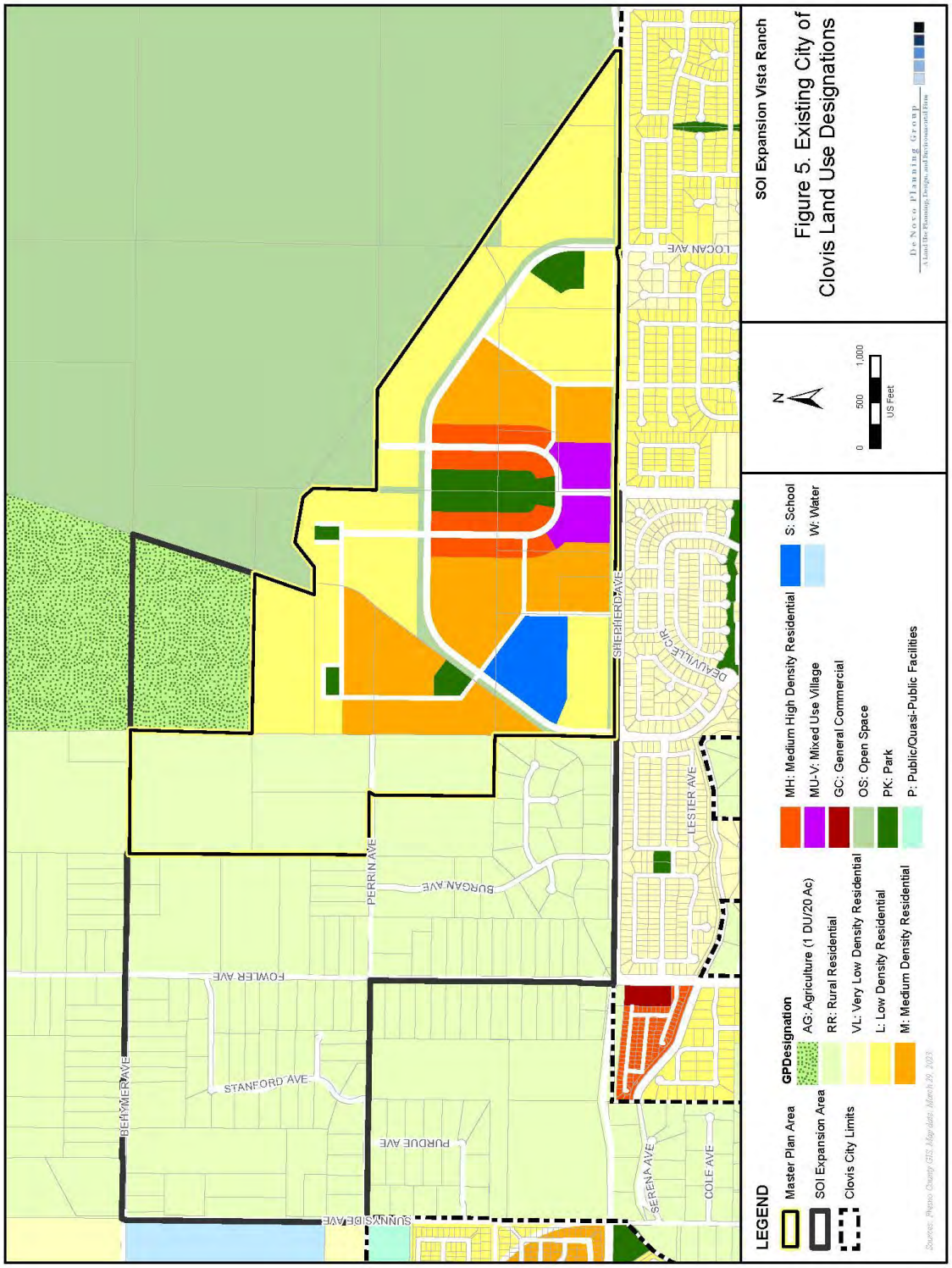
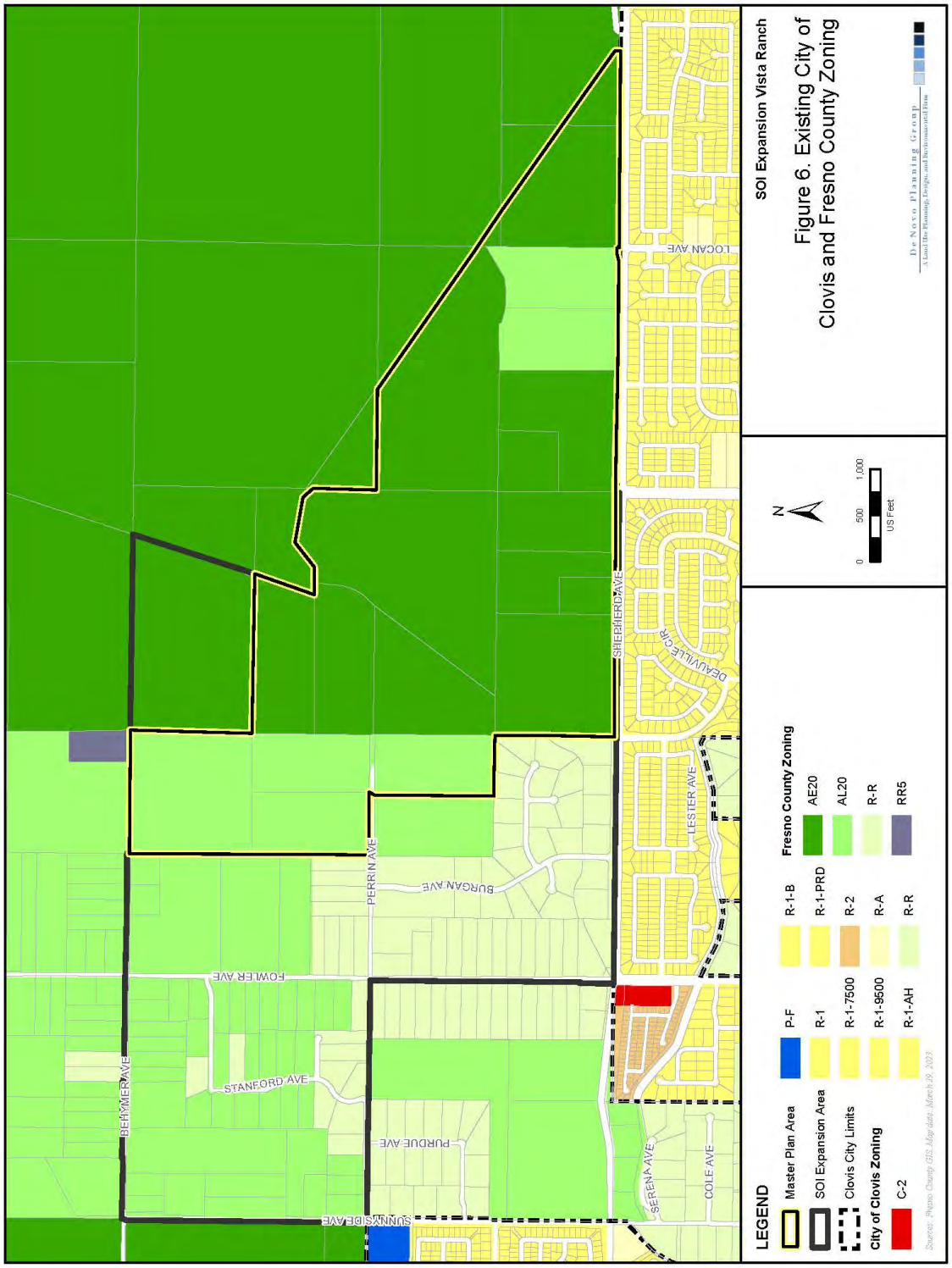

MARIPOSA COUNTY
MERCED COUNTY
MADERA COUNTY
FRESNO COUNTY
TULARE COUNTY
KINGS COUNTY
Project Location
Chowchilla
Madera
Clovis
Fresno
Kerman
Sanger
Fowler
Parlier
Reedley
Orange Cove
Selma
Dinuba
Kingsburg
San Joaquin
Woodlake
Visalia
Exeter
Farmersville
Hanford
Lemoore
Bass Lake
Huntington Lake
Shaver Lake
Pine Flat Reservoir
Avocado Lake
Millerton Lake
Madera Lake
Madera Equalization Reservoir
Hensley Lake
Berenda Reservoir
Eastman Lake
Mariposa Reservoir
Owens Reservoir
SAN JOAQUIN R
KINGS R
KAWEAH R
WILLOW CR
CHOW CHILLA R
LOST LAKE
LEGEND
Incorporated Area
California Counties
N
0 2½ 5
Miles
SOI Expansion Vista Ranch
Figure 1. Regional Location
De Novo Planning Group
A Local Hire Planning, Design, and Environmental Firm
Sources: Fresno County GIS. Map date: February 17, 2023.

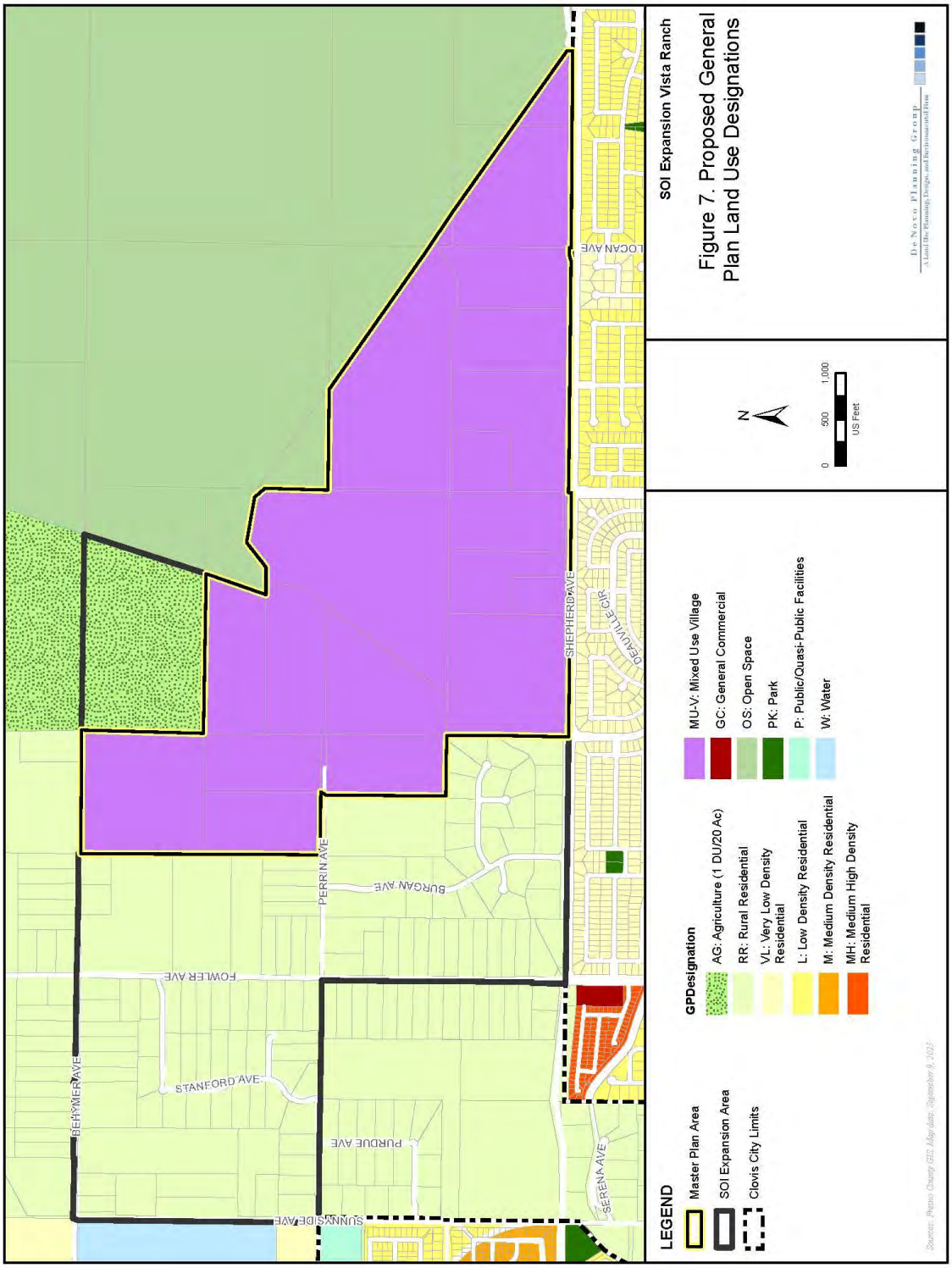

Dry Creek Reservoir
Dry Creek Trailhead
Town & Country Park
Dakuville Park
Linear Park
Dry Creek Elementary School
168
LEGEND
Master Plan Area
SOI Expansion Area
Clovis City Limits
City of Clovis General Plan Land Use
Park
School
N
0 500 1,000
US Feet
SOI Expansion Vista Ranch
Figure 2. Project Vicinity
De Novo Planning Group


SOI Expansion Vista Ranch
Figure 3. APN Map
LEGEND
Parcels within Master Plan Area
Master Plan Area
SOI Expansion Area
Clovis City Limits
0
500
1,000
US Feet
N
55801015
55801017S
55801025
55703142
55703129
55703123
55703146
55703105S
55703135
55703144S
55703127
55703141
55703124
55703125
55703126
55703137
55701202
55701229
55702211S
55701228
LOCAN AVE
SHEPHERD AVE
DEAUVILLE CIR
LESTER AVE
PERRIN AVE
BURGAN AVE
FOWLER AVE
STANFORD AVE
BEHYMER AVE
PURDUE AVE
SUNNYSIDE AVE
SERENA AVE
COLE AVE


SOI Expansion Vista Ranch
Figure 4. Aerial Map
De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm
N
0
500
1,000
US Feet
LEGEND
Master Plan Area
SOI Expansion Area
Clovis City Limits
Source: Fresno County GIS, ArcGIS Map Service. Map date: March 28, 2023.
BEHYMER AVE
STANFORD AVE
FOWLER AVE
PURDUE AVE
SUNNYSIDE AVE
PERRIN AVE
BURGAN AVE
SHEPHERD AVE
DEAUVILLE CIR
LESTER AVE
LOCAN AVE
GREEN AVE
COLE AVE


SOI Expansion Vista Ranch
Figure 5. Existing City of Clovis Land Use Designations
De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm
N
0
500
1,000
US Feet
LEGEND
Master Plan Area
SOI Expansion Area
Clovis City Limits
GPDesignation
AG: Agriculture (1 DU/20 Ac)
RR: Rural Residential
VL: Very Low Density Residential
L: Low Density Residential
M: Medium Density Residential
MH: Medium High Density Residential
MU-V: Mixed Use Village
GC: General Commercial
OS: Open Space
PK: Park
P: Public/Quasi-Public Facilities
S: School
W: Water
Sources: Fresno County GIS Map date: March 29, 2023
BETHMER AVE
STANFORD AVE
FOWLER AVE
PERRIN AVE
BURGAN AVE
PURDUE AVE
SUNNYSIDE AVE
SERENA AVE
COLE AVE
LESTER AVE
DEAUVILLE CIR
SHEPHERD AVE
LOCAN AVE


SOI Expansion Vista Ranch
Figure 6. Existing City of Clovis and Fresno County Zoning
De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm
N
0
500
1,000
US Feet
LEGEND
Master Plan Area
SOI Expansion Area
Clovis City Limits
City of Clovis Zoning
C-2
P-F
R-1
R-1-7500
R-1-8500
R-1-AH
R-1-B
R-1-PRD
R-2
R-A
R-R
Fresno County Zoning
AE20
AL20
R-R
RR5
Source: Fresno County GIS. Map date: March 29, 2023
BEHYMER AVE
STANFORD AVE
FOWLER AVE
PERRIN AVE
BURGAN AVE
PURDUE AVE
SUNNYSIDE AVE
SERENA AVE
COLE AVE
LESTER AVE
DEAUVILLE CIR
SHEPHERD AVE
LOCAN AVE


SOI Expansion Vista Ranch
Figure 7. Proposed General Plan Land Use Designations
De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm
N
0
500
1,000
US Feet
LEGEND
Master Plan Area
SOI Expansion Area
Clovis City Limits
GPDesignation
AG: Agriculture (1 DU/20 Ac)
RR: Rural Residential
VL: Very Low Density Residential
L: Low Density Residential
M: Medium Density Residential
MH: Medium High Density Residential
MU-V: Mixed Use Village
GC: General Commercial
OS: Open Space
PK: Park
P: Public/Quasi-Public Facilities
W: Water
Sources: Fresno County GIS, Map date: September 9, 2022
BEHYMER AVE
STANFORD AVE
FOWLER AVE
PERRIN AVE
SURGAN AVE
PURDUE AVE
SUNNYSIDE AVE
SERENA AVE
SHEPHERD AVE
BEAUVILLE CIR
LOCAN AVE

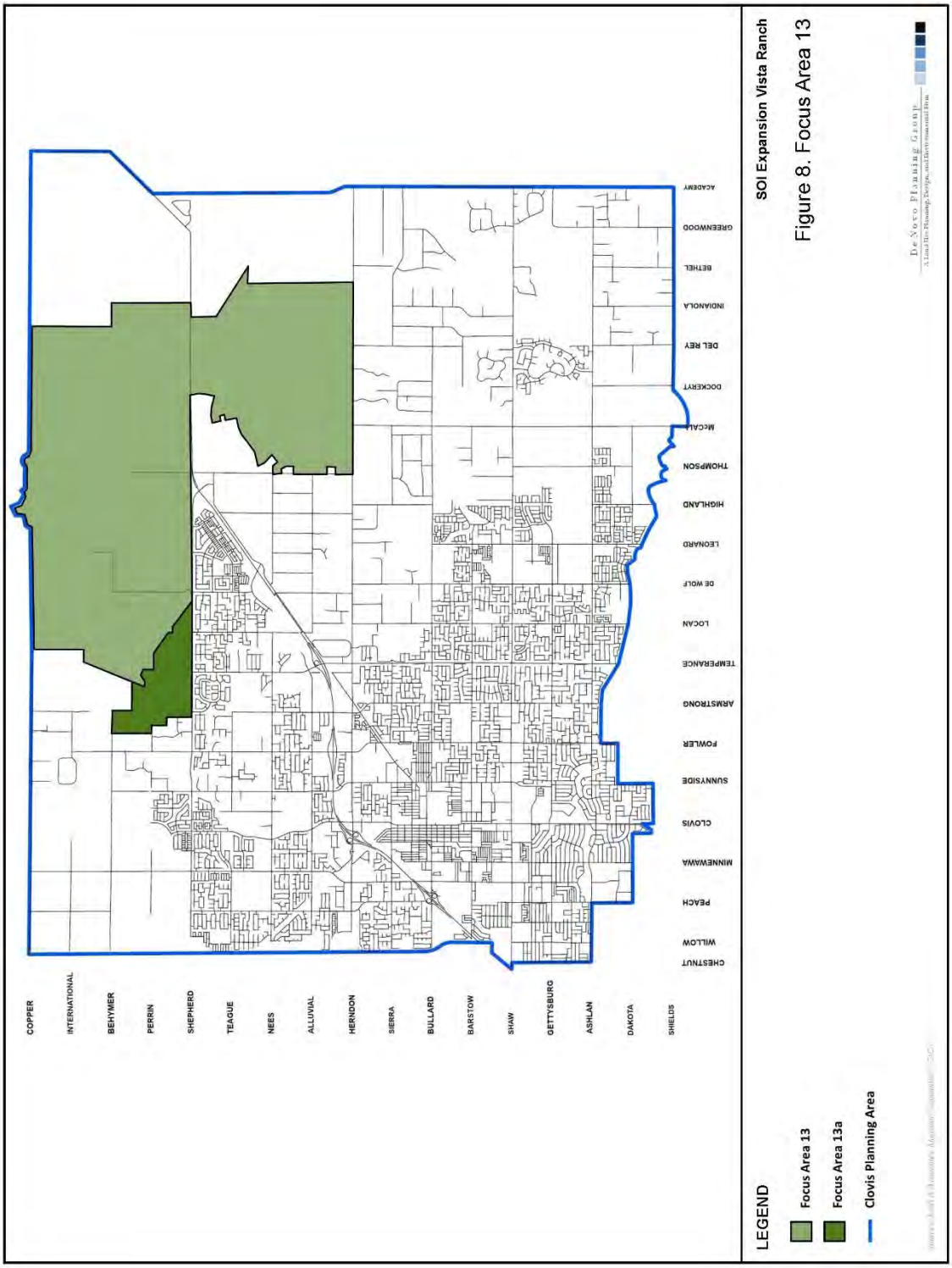
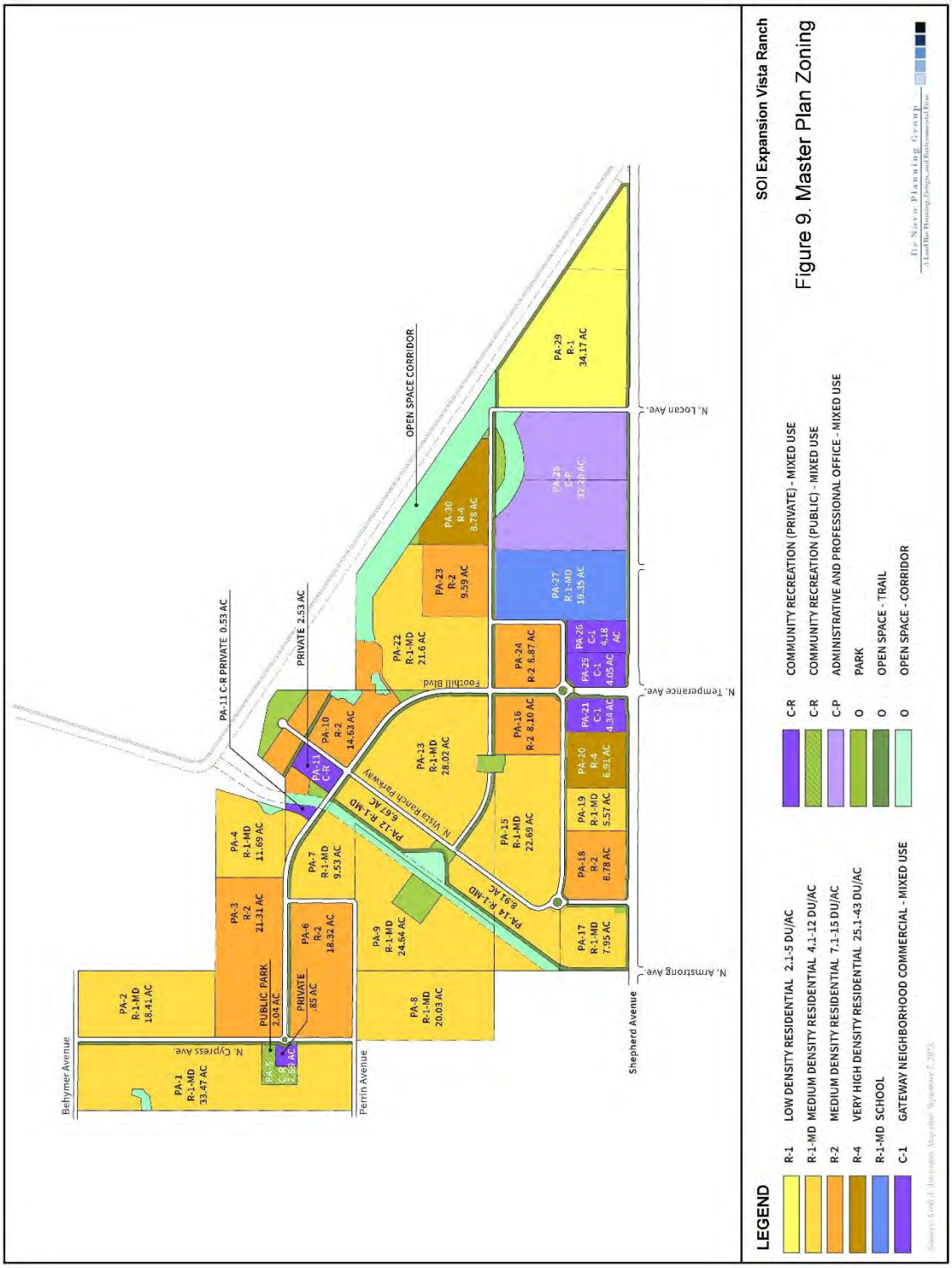


Figure 8. Focus Area 13


SOI Expansion Vista Ranch
Figure 9. Master Plan Zoning
LEGEND
R-1 LOW DENSITY RESIDENTIAL 2.1-5 DU/AC
R-1-MD MEDIUM DENSITY RESIDENTIAL 4.1-12 DU/AC
R-2 MEDIUM DENSITY RESIDENTIAL 7.1-15 DU/AC
R-4 VERY HIGH DENSITY RESIDENTIAL 25.1-43 DU/AC
R-1-MD SCHOOL
C-1 GATEWAY NEIGHBORHOOD COMMERCIAL - MIXED USE
C-R COMMUNITY RECREATION (PRIVATE) - MIXED USE
C-R COMMUNITY RECREATION (PUBLIC) - MIXED USE
C-P ADMINISTRATIVE AND PROFESSIONAL OFFICE - MIXED USE
O PARK
O OPEN SPACE - TRAIL
O OPEN SPACE - CORRIDOR
Behymer Avenue
Perrin Avenue
Shepherd Avenue
N. Cypress Ave.
N. Armstrong Ave.
N. Temperance Ave.
N. Locan Ave.
Foothill Blvd
N. Vista Ranch Parkway
OPEN SPACE CORRIDOR
PA-1 R-1-MD 33.47 AC
PA-2 R-1-MD 18.41 AC
PA-3 R-2 21.31 AC
PA-4 R-1-MD 11.69 AC
PA-5 C-R 2.89 AC
PUBLIC PARK 2.04 AC
PRIVATE .85 AC
PA-6 R-2 18.32 AC
PA-7 R-1-MD 9.53 AC
PA-8 R-1-MD 20.03 AC
PA-9 R-1-MD 24.64 AC
PA-10 R-2 14.63 AC
PA-11 C-R
PA-11 C-R PRIVATE 0.53 AC
PRIVATE 2.53 AC
PA-12 R-1-MD 5.67 AC
PA-13 R-1-MD 28.02 AC
PA-14 R-1-MD 8.91 AC
PA-15 R-1-MD 22.69 AC
PA-16 R-2 8.10 AC
PA-17 R-1-MD 7.95 AC
PA-18 R-2 8.78 AC
PA-19 R-1-MD 5.57 AC
PA-20 R-4 6.91 AC
PA-21 C-1 4.34 AC
PA-22 R-1-MD 21.6 AC
PA-23 R-2 9.59 AC
PA-24 R-2 8.87 AC
PA-25 C-1 4.05 AC
PA-26 C-1 4.18 AC
PA-27 R-1-MD 19.35 AC
PA-28 C-P 32.26 AC
PA-29 R-1 34.17 AC
PA-30 R-4 8.78 AC
De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #

Project Title: Vista Ranch Project

Lead Agency: City of Clovis
Contact Person: McKencie Perez
Mailing Address: 1033 Fifth Street
Phone: (559) 324-2310
City: Clovis
Zip: 93612
County: Fresno County

Project Location: County: Fresno County
City/Nearest Community: Clovis
Cross Streets: East Behymer Avenue, East Shepherd and East Perrin Avenues, North Fowler and North Sunnyside Avenues.
Zip Code: 93612
Longitude/Latitude (degrees, minutes and seconds): 36 ° 52 ′ 22.13 ″ N / 119 ° 40 ′ 29.44 ″ W
Total Acres: 952
Assessor's Parcel No.: 557-031-30, 32S, 34, 36, 38, 40, 43S, & 45
Section: ____ Twp.: ____ Range: ____ Base: ____
Within 2 Miles: State Hwy #: SR 168
Waterways: N/A
Airports: N/A
Railways: N/A
Schools: N/A

Document Type:

CEQA:
- [x] NOP
- [ ] Early Cons
- [ ] Neg Dec
- [ ] Mit Neg Dec
- [ ] Draft EIR
- [ ] Supplement/Subsequent EIR (Prior SCH No.) ____
- Other: ____

NEPA:
- [ ] NOI
- [ ] EA
- [ ] Draft EIS
- [ ] FONSI

Other:
- [ ] Joint Document
- [ ] Final Document
- [ ] Other: ____

Local Action Type:

- [ ] General Plan Update
- [x] General Plan Amendment
- [ ] General Plan Element
- [ ] Community Plan
- [ ] Specific Plan
- [x] Master Plan
- [ ] Planned Unit Development
- [x] Site Plan
- [ ] Rezone
- [x] Prezone
- [ ] Use Permit
- [x] Land Division (Subdivision, etc.)
- [x] Annexation
- [ ] Redevelopment
- [ ] Coastal Permit
- [ ] Other: ____

Development Type:

- [x] Residential: Units 3286 Acres 828
- [ ] Office: Sq.ft. ____ Acres ____ Employees ____
- [x] Commercial: Sq.ft. 2090881 Acres 48 Employees 2090
- [ ] Industrial: Sq.ft. ____ Acres ____ Employees ____
- [x] Educational: 19 acres for elementary school site
- [x] Recreational: ~57 acres of parks, trails, and open space
- [ ] Water Facilities: Type ____ MGD ____
- [ ] Transportation: Type ____
- [ ] Mining: Mineral ____
- [ ] Power: Type ____ MW ____
- [ ] Waste Treatment: Type ____ MGD ____
- [ ] Hazardous Waste: Type ____
- [ ] Other: ____

Project Issues Discussed in Document:

- [x] Aesthetic/Visual
- [x] Agricultural Land
- [x] Air Quality
- [x] Archeological/Historical
- [x] Biological Resources
- [ ] Coastal Zone
- [x] Drainage/Absorption
- [x] Economic/Jobs
- [ ] Fiscal
- [x] Flood Plain/Flooding
- [x] Forest Land/Fire Hazard
- [x] Geologic/Seismic
- [x] Minerals
- [x] Noise
- [x] Population/Housing Balance
- [x] Public Services/Facilities
- [x] Recreation/Parks
- [x] Schools/Universities
- [x] Septic Systems
- [x] Sewer Capacity
- [x] Soil Erosion/Compaction/Grading
- [x] Solid Waste
- [x] Toxic/Hazardous
- [x] Traffic/Circulation
- [x] Vegetation
- [x] Water Quality
- [x] Water Supply/Groundwater
- [x] Wetland/Riparian
- [x] Growth Inducement
- [x] Land Use
- [x] Cumulative Effects
- [x] Other: Energy

Present Land Use/Zoning/General Plan Designation:

Land Use: Various; Zoning: Various; General Plan Designation: Various

Project Description: *(please use a separate page if necessary)*

The Project site is approximately 952 acres and includes a City of Clovis Sphere of Influence (SOI) expansion for the entire 952-acre area. Within the Project site there is the Vista Ranch Master Plan area that is approximately 507 acres that would be annexed into the City of Clovis. The Vista Ranch Master Plan is divided into two areas (MPArea 1 and MPArea 2) based on entitlement requests and the level of design available. MPArea 1 is 368 acres proposed for full entitlements to develop immediately. Entitlements within MPArea 1 include an annexation, general plan amendments, pre-zoning, master plan community overlay district and vesting tentative map. The remaining 139 acres in the Vista Ranch Master Plan (MPArea 2) does not include full entitlements and would require further environmental review to enable future development once more detailed design work is performed. There are also 445 acres of land outside of the Vista Ranch Master Plan, but within the Project site. This area is referred to as Non-Development Area and is part of the SOI expansion but does not propose any other entitlements that would enable development.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

_____	Air Resources Board	_____	Office of Historic Preservation
_____	Boating & Waterways, Department of	_____	Office of Public School Construction
_____	California Emergency Management Agency	_____	Parks & Recreation, Department of
_____	California Highway Patrol	_____	Pesticide Regulation, Department of
X	Caltrans District # 6	_____	Public Utilities Commission
_____	Caltrans Division of Aeronautics	X	Regional WQCB # 5
_____	Caltrans Planning	_____	Resources Agency
_____	Central Valley Flood Protection Board	_____	Resources Recycling and Recovery, Department of
_____	Coachella Valley Mtns. Conservancy	_____	S.F. Bay Conservation & Development Comm.
_____	Coastal Commission	_____	San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
_____	Colorado River Board	_____	San Joaquin River Conservancy
_____	Conservation, Department of	_____	Santa Monica Mtns. Conservancy
_____	Corrections, Department of	_____	State Lands Commission
_____	Delta Protection Commission	_____	SWRCB: Clean Water Grants
_____	Education, Department of	_____	SWRCB: Water Quality
_____	Energy Commission	_____	SWRCB: Water Rights
X	Fish & Game Region # 4	_____	Tahoe Regional Planning Agency
_____	Food & Agriculture, Department of	_____	Toxic Substances Control, Department of
_____	Forestry and Fire Protection, Department of	_____	Water Resources, Department of
_____	General Services, Department of		
_____	Health Services, Department of	_____	Other: _____
_____	Housing & Community Development	_____	Other: _____
_____	Native American Heritage Commission		

Local Public Review Period (to be filled in by lead agency)

Starting Date October 18, 2023 Ending Date November 17, 2023

Lead Agency (Complete if applicable):

Consulting Firm: City of Clovis
Address: 1033 Fifth Street
City/State/Zip: Clovis, CA 93612
Contact: McKencie Perez, Senior Planner
Phone: (559) 324-2310

Applicant: City of Clovis
Address: 1033 Fifth Street
City/State/Zip: Clovis, CA 93612
Phone: (559) 324-2310

Signature of Lead Agency Representative: _____ **Date:** 10/18/2023

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

NATIVE AMERICAN HERITAGE COMMISSION

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Chumash

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nahc@nahc.ca.gov
NAHC.ca.gov

October 24, 2023

McKencie Perez
City of Clovis
1033 Fifth Street
Clovis, CA 93612

Re: 2023100508, Vista Ranch Project, Fresno County

Dear Ms. Perez:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

- **a.** A brief description of the project.
- **b.** The lead agency contact information.
- **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
- **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

- **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- **a.** Alternatives to the project.
- **b.** Recommended mitigation measures.
- **c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

- **a.** Type of environmental review necessary.
- **b.** Significance of the tribal cultural resources.
- **c.** Significance of the project's impacts on tribal cultural resources.
- **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

- **a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
- **b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).

2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.

3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).

4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:

- **a.** The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
- **b.** Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (https://ohp.parks.ca.gov/?page_id=30331) for an archaeological records search. The records search will determine:

- **a.** If part or all of the APE has been previously surveyed for cultural resources.
- **b.** If any known cultural resources have already been recorded on or adjacent to the APE.
- **c.** If the probability is low, moderate, or high that cultural resources are located in the APE.
- **d.** If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.

- **a.** The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
- **b.** The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:

a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.

b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.

b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.

c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

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

Sincerely,

Cameron Vela

Cameron Vela
Cultural Resources Analyst

cc: State Clearinghouse

County of Fresno

DEPARTMENT OF PUBLIC HEALTH
Environmental Health Division

November 2, 2023

LU0022413
2604

McKencie Perez, Senior Planner
City of Clovis
Planning and Development Services Department
1033 Fifth Street
Clovis, CA 93612

Dear Ms. Perez:

SUBJECT: Notice of Preparation of DEIR
PROJECT: Vista Ranch Project
LOCATION: NE of the City of Clovis, bounded on the north by East Behymer Avenue, on the east by Big Dry Creek Reservoir, on the south by East Shepherd and East Perrin Avenues, and on the west by North Fowler and North Sunnyside Avenues.

The Fresno County Department of Public Health, Environmental Health Division has reviewed the proposed NOP of a DEIR for the Vista Ranch Project and offers the following comments for future consideration:

Hazards and Hazardous Materials

- If future applicants propose to use and/or store hazardous materials and/or hazardous wastes, they shall meet the requirements set forth in the California Health and Safety Code (HSC), Division 20, Chapter 6.95, and the California Code of Regulations (CCR), Title 22, Division 4.5. Any business that handles a hazardous material or hazardous waste may be required to submit a Hazardous Materials Business Plan pursuant to the California Health and Safety Code (HSC), Division 20, Chapter 6.95, Section 25507 (http://cers.calepa.ca.gov/). Contact the Fresno County Hazmat Compliance Program at (559) 600-3271 for more information.

- If any underground petroleum storage tank(s) are discovered during construction activities, the applicant/property owner shall apply for and secure an Underground Storage Tank Removal Permit from the Fresno County Department of Public Health, Environmental Health Division. Contact the Fresno County Hazmat Compliance Program at (559) 600-3271 for more information.

Hydrology and Water Quality

- As a measure to protect groundwater, all water wells (not intended for use) and septic systems within the project aera shall be properly destroyed by an appropriately licensed contractor. Contact the Fresno County Department of Public Health, Water Surveillance Program at (559) 600-3357 for more information.

Noise

- Appropriate measures should be incorporated into the construction phase of future projects to minimize potentially significant short-term localized noise impacts to noise sensitive receivers caused by the operation of construction equipment. Construction specifications for projects

should require that all construction equipment is maintained according to the manufacturers' specifications, and that noise generating construction equipment is equipped with mufflers. In addition, consideration should be given to limiting noise-generating construction activities to daytime hours.

- Future projects have the potential to expose nearby residents to elevated noise levels. Consideration should be given to conformance with the applicable standards of the Noise Element of the City of Clovis General Plan/Municipal Code and the Fresno County Ordinance Code.

If I can be of further assistance, please contact me at (559) 600-3271.

COMMENTS BY:

Kevin Tsuda, R.E.H.S.
Environmental Health Specialist II (559) 600-33271

KT

cc: Deep Sidhu- Supervisor Environmental Health Division (CT. 55.25)

County of Fresno

DEPARTMENT OF PUBLIC WORKS AND PLANNING
STEVEN E. WHITE, DIRECTOR

November 3, 2023

McKencie Perez, Senior Planner
Planning Division
City of Clovis
1033 Fifth Street
Clovis, CA 93612

SUBJECT: Notice of Preparation – Vista Ranch Project

Dear Ms. Perez:

The County of Fresno appreciates the opportunity to review and comment on the subject project being reviewed by the City of Clovis. Staff's understanding is that the proposed project is proposing a development area including annexed parcels that will be entitled for subdivision and development of up to 605 residential units, parkland, and public and private infrastructure. The application includes a request for a Sphere of Influence Expansion, General Plan Amendment, Pre-zone, Annexation, Tentative Map, Planned Development Permit, and Residential Site Plan Review. The Non-Development Area includes the parcels being included in the Sphere of Influence (SOI) expansion that will not be entitled for subdivision or development.

I am providing the following excerpts of comments provided by our County of Fresno divisions, particularly as it relates to the proposed Vista Ranch Project.

Transportation Division:
The Transportation Planning Unit has the following comments:

- A Traffic Impact Study (TIS) should evaluate impacts on surrounding County facilities affected by the Vista Ranch Master Plan

- The County requests the following road segments be annexed or maintained by the City of Clovis:
    - Sunnyside Avenue: Perrin Avenue to Shepherd Avenue
    - Shepherd Avenue: Sunnyside Avenue to Armstrong Avenue
    - Fowler Avenue: Approximately 800-feet south of Teague Avenue to Nees Avenue
    - Nees Avenue: Approximately 1,325-feet west of Fowler Avenue to approximately 675-feet east of Fowler Avenue

Engineering Division:

- The said project site is approximately 952 acres and is bounded on the north by East Behymer Avenue, on the east by Big Dry Creek Reservoir, on the south by East Shepherd Avenue, and on the west by North Fowler Avenue . According to FEMA FIRM

Panel 1045H and 1585H, portions of the area of the project site are found to be under shaded Flood Zone X and Flood Zone A which is subject to flooding from the 100-year storm.

- The project site is within the Low Water Area (Water Short Area).

- The project site is within FMFCD Drainage Zone and Boundary with a rural stream and adjacent to Big Dry Creek Reservoir (BDR), all site improvements requirements including Notice of Preparation for an Environmental Impact Report (EIR) should be referred to the FMFCD.

Fresno Metropolitan Flood Control District
5469 E. Olive Avenue
Fresno, CA 93727
(559) 456-3292
developmentreview@fresnofloodcontrol.org

- Furthermore, according to the U.S.G.S. Quad Map, Dry Creek traverses the subject property. Any future work within or near a stream will require clearance from California Department of Fish and Wildlife (CDFW).

- According to the Wetlands Mapper of U.S. Fish and Wildlife Service, wetlands may be present within/nearby the subject property. For any future development on wetlands, U.S. Fish and Wildlife Service and other appropriate agencies should be consulted regarding any requirements they may have.

- Since the project site will not be developed under the jurisdiction of the County of Fresno and it is anticipated to be included as part of the annexation application, any proposed onsite improvements including the City of Clovis Vista Ranch Project Notice of Preparation for an Environmental Impact Report (EIR) should be reviewed and comply with City of Clovis for their requirements particularly the proposed development within the Low Water Area (Water Short Area) and flood zones.

If you have any questions regarding the information described in this letter, please contact me at eracusin@FresnoCountyCA.gov or (559) 600-4245.

Sincerely,

Elliot Racusin

Elliot Racusin, Planner
Development Services and Capital Projects Division

DR:er:cwm
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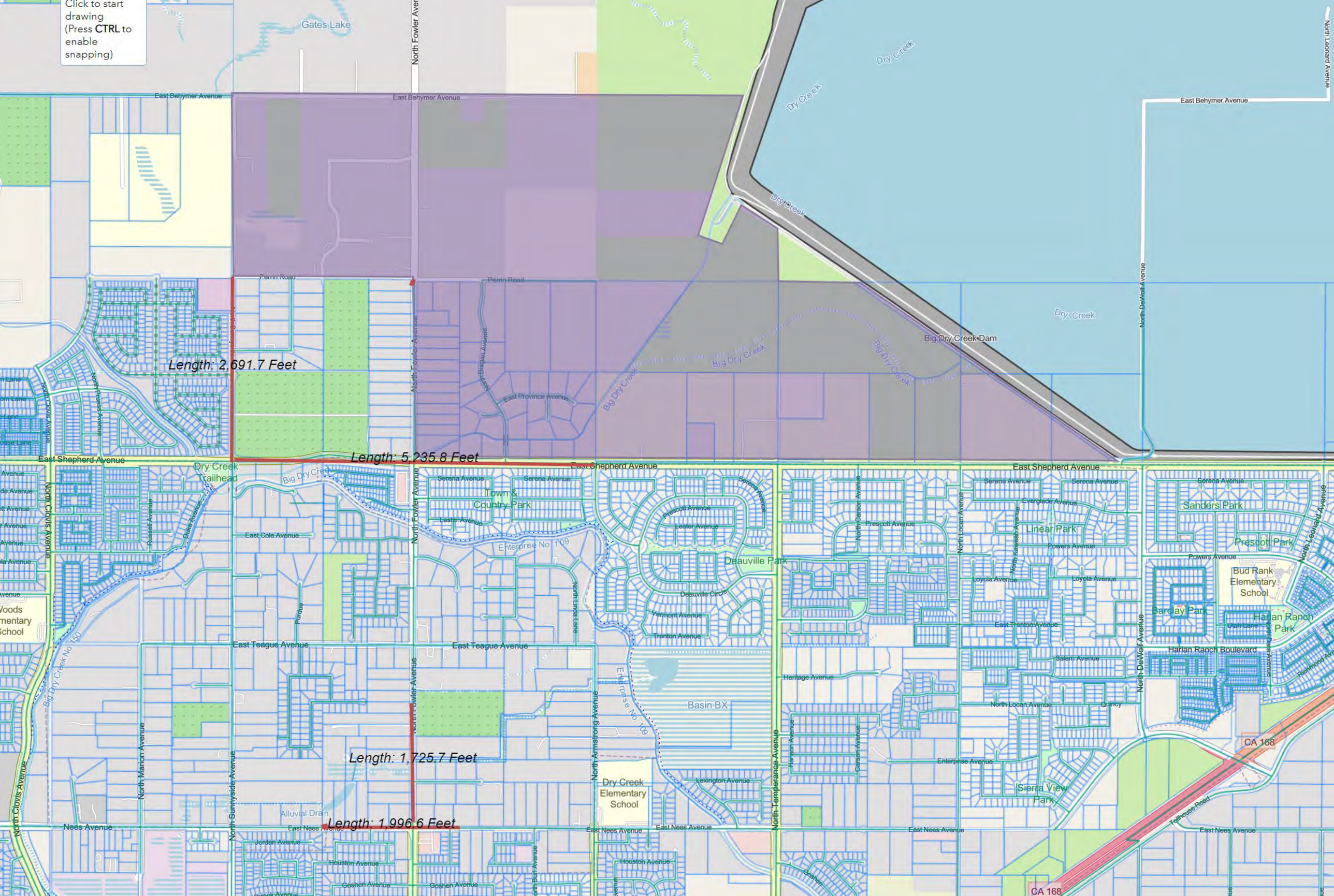


Click to start drawing (Press CTRL to enable snapping)
Gates Lake
North Fowler Avenue
East Behymer Avenue
Dry Creek
Perrin Road
Big Dry Creek Dam
Big Dry Creek
East Province Avenue
North DeWolf Avenue
North Leonard Avenue
Length: 2,691.7 Feet
Length: 5,235.8 Feet
Length: 1,725.7 Feet
Length: 1,996.6 Feet
East Shepherd Avenue
Dry Creek Trailhead
Serena Avenue
Town & Country Park
Lester Avenue
Prescott Avenue
Deauville Park
Deauville Circle
Vermont Avenue
Trenton Avenue
Enterprise No. 109
East Cole Avenue
Russell Avenue
Duke Avenue
North Clovis Avenue
North Linda Lane
North Armstrong Avenue
Basin BX
Heritage Avenue
Lexington Avenue
Dry Creek Elementary School
Alluvial Drain
East Teague Avenue
Big Dry Creek No. 150
North Marion Avenue
North Sunnyside Avenue
Nees Avenue
East Nees Avenue
Jordan Avenue
Houston Avenue
Goshen Avenue
North Temperance Avenue
Hanson Avenue
Carson Avenue
Enterprise Avenue
Sierra View Park
North Locan Avenue
Quincy
Salem Avenue
East Trenton Avenue
Loyola Avenue
Powers Avenue
Linear Park
Everglade Avenue
Sanders Park
Prescott Park
Bud Rank Elementary School
Barclay Park
Harlan Ranch Park
Harlan Ranch Boulevard
Utah Lane
Richmond Avenue
CA 168
Tollhouse Road
North Clovis Avenue
North Pressa Avenue

2907 S. Maple Avenue
Fresno, California 93725-2208
Telephone: (559) 233-7161
Fax: (559) 233-8227

CONVEYANCE. COMMITMENT. CUSTOMER SERVICE.

November 7, 2023

McKencie Perez
City of Clovis
Department of Planning and Development Services
1033 Fifth Street
Clovis, CA 93612

RE: Notice of Preparation of a Draft EIR for the Vista Ranch Project, Clovis, CA
N/E Shepherd and Sunnyside avenues

Dear Ms. Perez:

The Fresno Irrigation District (FID) has reviewed the Notice of Preparation of a Draft EIR for the proposed Vista Ranch Project led by the City of Clovis, APNs: 557-012-02, 28 and 29, 557-022-11S, 557-031-05S, 23, 24, 25, 27, 35, 37, 44S and 558-010-25. The project site is approximately 507 acres to be annexed into the City of Clovis and includes 368 acres proposed for full entitlements to develop immediately and 139 acres that does not include full entitlements and requires further review for future development. There are an additional 445 acres outside of the Vista Ranch Master Plan that involves a City of Clovis Sphere of Influence (SOI) expansion area of 952 acres in total. The development area includes parcels that will be annexed and will be entitled for subdivision and development of up to 2,718 residential units, parkland, and private infrastructure. If the 139 acres is granted future development, it would increase the development area to 3,286 residential units and include community recreation centers and an elementary school site. FID has the following comments:

1. FID does not own, operate, or maintain any facilities located on the subject properties, as shown on the attached FID exhibit map.

2. The proposed development is to be annexed into the City of Clovis but lies outside FID's boundary line. The parcels are not entitled to water from the Kings River.

3. FID is concerned that the proposed development may negatively impact local groundwater supplies including those areas adjacent to or neighboring the proposed development area. The area has historically been fallowed with some rural residential and has historically had little to no water usage. Under current circumstances the project area is experiencing a modest but continuing groundwater

BOARD OF DIRECTORS President RYAN JACOBSEN Vice-President JERRY PRIETO, JR. CHRISTOPHER WOOLF
GEORGE PORTER GREGORY BEBERIAN General Manager BILL STRETCH

overdraft. Should the proposed development result in a significant increase in dependence on groundwater, this deficit will increase. FID recommends the City of Clovis require the proposed development balance anticipated groundwater use with sufficient recharge of imported surface water in order to preclude increasing the area's existing groundwater overdraft problem. The EIR must fully analyze the potential water demands of the development, the available water supplies, and the potential adverse impact of the increased water demands.

4. California enacted landmark legislation in 2014 known as the Sustainable Groundwater Management Act (SGMA). The act requires the formation of local groundwater sustainability agencies (GSAs) that must assess conditions in their local water basins and adopt locally-based management plans. FID and the City of Clovis are members of the North Kings Groundwater Sustainability Agency which will manage the groundwater basin within the FID service area. This area is completely reliant on groundwater pumping and SGMA will impact all users of groundwater and those who rely on it. The City of Clovis must consider the potential impacts of the development on the City's ability to comply with requirements of SGMA as well as impacts to the neighboring areas.

5. It is unclear if the source of water for this development is solely groundwater or a mixture of treated surface water. If treated surface water will be used, the City must acquire surface water from a water purveyor, such as FID for that purpose, so as to not adversely impact the groundwater levels in the area. Additionally, the City must not reduce water supplies available to or create water supply deficits in and around other areas of the City. The water supply proposed to be used by the development must be clearly identified and all potential issues must be fully evaluated and addressed as part of the environmental impact analyses before any further "hardening" of the water supply demand is allowed to take place.

6. The City of Clovis and FID have been working to address water supplies issues for development outside of the FID service area. We encourage the City to continue towards finding solutions to minimize the impacts of land use changes and to mitigate any existing and anticipated adverse water supply impacts within the development areas.

7. For informational purpose, FID's Enterprise No. 109 runs northwesterly and crosses Fowler Avenue approximately 900 feet south of the subject property, Sunnyside Avenue approximately 2700 feet southwest of the subject property, and Shepherd Avenue approximately 3,200 feet west of the subject property, as shown on the attached FID exhibit map. Should this project include any street and/or utility improvements along Fowler Avenue, Sunnyside Avenue, Shepherd Avenue, or in the vicinity of this facility, FID requires it review and approve all plans.

8. For informational purposes, Fresno Metropolitan Flood Control District's Big Dry Creek No. 150 runs southwesterly and traverses through the proposed development. FID recommends the City contact FMFCD for further comments. Additionally, water

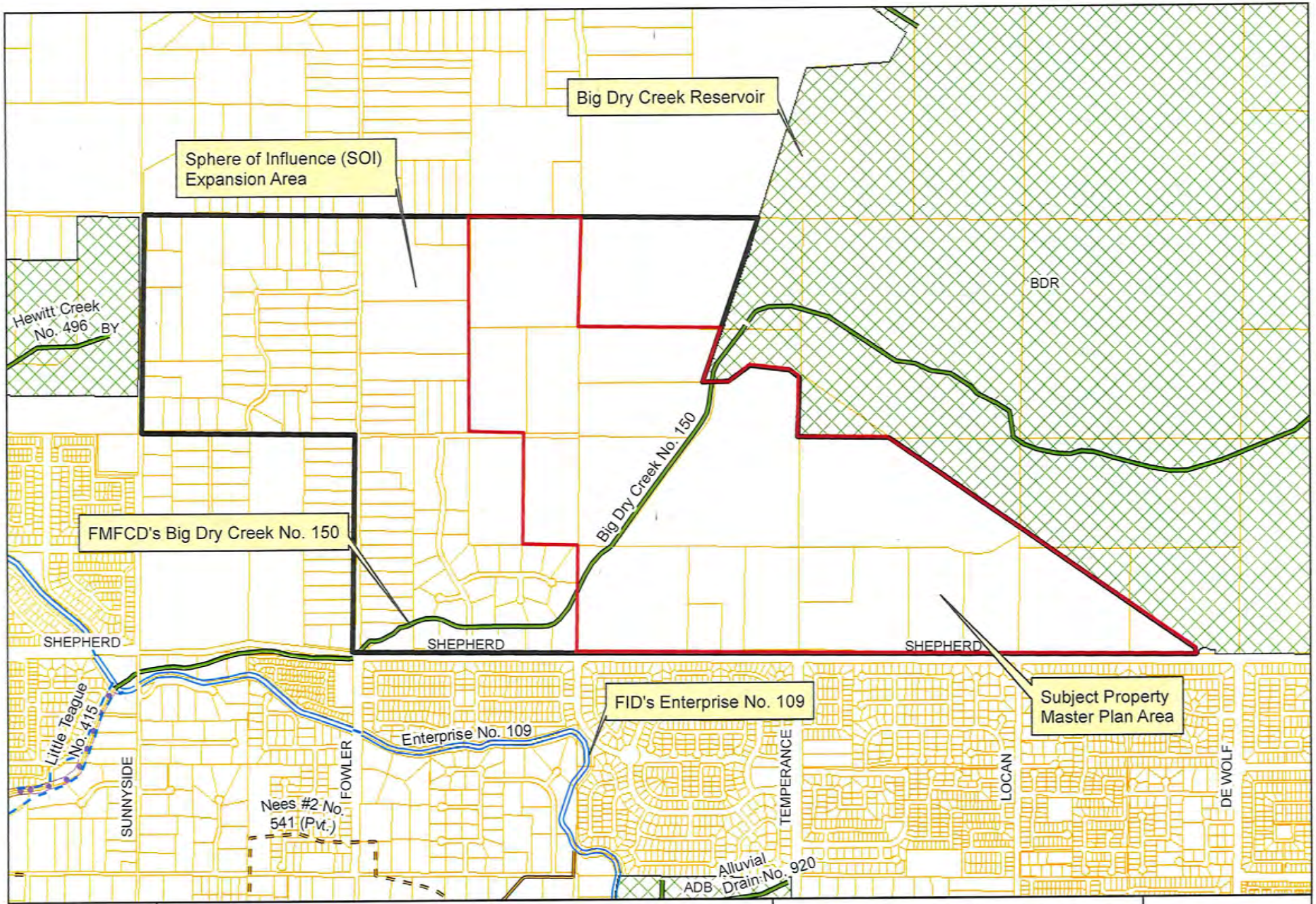
from Big Dry Creek is currently used within the City of Clovis and FID to help balance the groundwater deficit. Any potential adverse impacts of the Project to FID being able to utilize water from Big Dry Creek must be fully identified and analyzed as part of the proposed evaluation.

Thank you for submitting the proposed project for our review. We appreciate the opportunity to review and comment on the subject documents for this project. If you have any questions, please feel free to contact Ben Negley at (559) 233-7161 extension 7413 or bnegley@fresnoirrigation.com.

Sincerely,

Laurence Kimura, P.E.
Chief Engineer

Attachment


Big Dry Creek Reservoir
Sphere of Influence (SOI) Expansion Area
Hewitt Creek No. 496
BY
BDR
Big Dry Creek No. 150
FMFCD's Big Dry Creek No. 150
SHEPHERD
SHEPHERD
SHEPHERD
Little Teague No. 415
SUNNYSIDE
FOWLER
Enterprise No. 109
FID's Enterprise No. 109
Nees #2 No. 541 (Pvt.)
TEMPERANCE
LOCAN
DE WOLF
Subject Property Master Plan Area
ADB
Alluvial Drain No. 920
Legend
FID Canal
Private Canal
Abandoned Canal
FID Pipeline
Private Pipeline
Abandoned Pipeline
Stream Group
Other-Creek\River
Other-Pipeline
FID Boundary
Railroad
Streets & Hwys
Parcel
FMFCD Acquired Basins
FMFCD Proposed Basins
FRESNO IRRIGATION DISTRICT
This map was produced by the Fresno Irrigation District and is provided for reference and informational purposes only and is not intended to show map scale accuracy or all inclusive map features, nor for legal purposes. FID makes no statements regarding the accuracy of this map as the features shown are in their approximate location. Please contact the FID Engineering Dept. at (559) 233-7161 for further information on FID facilities.
Path: G:\Fidgis\20230727 FID Compact.mxd
Spatial Reference
Name: NAD 1983 StatePlane California IV FIPS 0404
0
730
1,460
Feet
1 inch = 1,506.37 feet

November 13, 2023

McKencie Perez
City of Clovis
Planning Division
1033 Fifth Street
Clovis, CA 93612

Project: Notice of Preparation – Vista Ranch Project

District CEQA Reference No: 20230984

Dear Ms. Perez,

The San Joaquin Valley Air Pollution Control District (District) has reviewed the Notice of Preparation (NOP) from the City of Clovis (City). Per the NOP, the Vista Ranch Project (Project) consists of 952 acres, set to be incorporated into the City of Clovis' Sphere of Influence, as two master plans. The two master plans consist of a Master Plan (MP) and Non-Development Plan Area (NDP). The MP is divided into, MPArea1 and MPArea2. MPArea1 includes 368 acres to be developed by Wilson Premier Homes, proposing up to 2,718 residential units, commercial and community recreational facilities up to 133,000 square feet, and including 43 acres of parks, trails, and open space. MPArea2 includes 139 acres for future development unknown at this time. The NDP will include 445 acres of a non-development area. The Project is located north of E. Shepherd, west of N. Carson, and East of N. Fowler, Clovis.

The District offers the following comments at this time regarding the Project:

1) <u>Project Related Emissions</u>

At the federal level under the National Ambient Air Quality Standards (NAAQS), the District is designated as extreme nonattainment for the 8-hour ozone standards and serious nonattainment for the particulate matter less than 2.5 microns in size (PM2.5) standards. At the state level under California Ambient Air Quality Standards (CAAQS), the District is designated as nonattainment for the 8-hour ozone, PM10, and PM2.5 standards.

The District's initial review of the Project concludes that emissions resulting from construction and operation of the Project may exceed any of the following significance thresholds as identified in the District's Guidance for Assessing and Mitigating Air Quality Impacts: https://www.valleyair.org/transportation/GAMAQI.pdf. The District recommends that a more detailed preliminary review of the Project be conducted for the Project's construction and operational emissions.

1a) Construction Emissions

The District recommends, to reduce impacts from construction-related diesel exhaust emissions, the Project should utilize the cleanest available off-road construction equipment.

1b) Operational Emissions

Operational (ongoing) air emissions from mobile sources and stationary sources should be analyzed separately. For reference, the District's significance thresholds are identified in the District's Guidance for Assessing and Mitigating Air Quality Impacts: https://www.valleyair.org/transportation/GAMAQI.pdf.

Recommended Mitigation Measure: At a minimum, project related impacts on air quality should be reduced to levels below the District's significance thresholds through incorporation of design elements such as the use of cleaner Heavy Heavy-Duty (HHD) trucks and vehicles, measures that reduce Vehicle Miles Traveled (VMTs), and measures that increase energy efficiency. More information on transportation mitigation measures can be found at: https://ww2.valleyair.org/media/ob0pweru/clean-air-measures.pdf

1c) Project Trip Length for HHD Truck Travel

The City's environmental review should adequately characterize and justify an appropriate trip length distance for off-site HHD truck travel to and from the Project site. Based on the following factors: 1) the Project consists of a commercial development that may generate a high volume of HHD truck trips, and 2) HHD trucks generally travel further distances for distribution. The District recommends the environmental review include a discussion characterizing an appropriate trip length distance for HHD truck travel, and reflect such appropriate distance supported by project-specific factors.

1d) Recommended Model for Quantifying Air Emissions

Project-related criteria pollutant emissions from construction and operational sources should be identified and quantified. Emissions analysis should be performed using the California Emission Estimator Model (CalEEMod), which uses the most recent CARB-approved version of relevant emissions models

and emission factors. CalEEMod is available to the public and can be downloaded from the CalEEMod website at: www.caleemod.com.

2) Health Risk Screening/Assessment

The City should evaluate the risk associated with the Project for sensitive receptors (residences, businesses, hospitals, day-care facilities, health care facilities, etc.) in the area and mitigate any potentially significant risk to help limit exposure of sensitive receptors to emissions.

To determine potential health impacts on surrounding receptors (residences, businesses, hospitals, day-care facilities, health care facilities, etc.) a Prioritization and/or a Health Risk Assessment (HRA) should be performed for the Project. These health risk determinations should quantify and characterize potential Toxic Air Contaminants (TACs) identified by the Office of Environmental Health Hazard Assessment/California Air Resources Board (OEHHA/CARB) that pose a present or potential hazard to human health.

Health risk analyses should include all potential air emissions from the project, which include emissions from construction of the project, including multi-year construction, as well as ongoing operational activities of the project. Note, two common sources of TACs can be attributed to diesel exhaust emitted from heavy-duty off-road earth moving equipment during construction, and from ongoing operation of heavy-duty on-road trucks.

Prioritization (Screening Health Risk Assessment):
A "Prioritization" is the recommended method for a conservative screening-level health risk assessment. The Prioritization should be performed using the California Air Pollution Control Officers Association's (CAPCOA) methodology. Please contact the District for assistance with performing a Prioritization analysis.

The District recommends that a more refined analysis, in the form of an HRA, be performed for any project resulting in a Prioritization score of 10 or greater. This is because the prioritization results are a conservative health risk representation, while the detailed HRA provides a more accurate health risk evaluation.

Health Risk Assessment:
Prior to performing an HRA, it is strongly recommended that land use agencies/ project proponents develop and submit for District review a health risk modeling protocol that outlines the sources and methodologies that will be used to perform the HRA.

A development project would be considered to have a potentially significant health risk if the HRA demonstrates that the health impacts would exceed the District's established risk thresholds, which can be found here:
http://www.valleyair.org/transportation/ceqa_idx.htm.

A project with a significant health risk would trigger all feasible mitigation measures. The District strongly recommends that development projects that result in a significant health risk not be approved by the land use agency.

The District is available to review HRA protocols and analyses. For HRA submittals please provide the following information electronically to the District for review:

- HRA (AERMOD) modeling files
- HARP2 files
- Summary of emissions source locations, emissions rates, and emission factor calculations and methodologies.

For assistance, please contact the District's Technical Services Department by:

- E-Mailing inquiries to: hramodeler@valleyair.org
- Calling (559) 230-5900

Recommended Measure: Development projects resulting in TAC emissions should be located an adequate distance from residential areas and other sensitive receptors to prevent the creation of a significant health risk in accordance to CARB's Air Quality and Land Use Handbook: A Community Health Perspective located at https://ww2.arb.ca.gov/our-work/programs/resource-center/strategy-development/land-use-resources.

3) Ambient Air Quality Analysis

An Ambient Air Quality Analysis (AAQA) uses air dispersion modeling to determine if emissions increases from a project will cause or contribute to a violation of State or National Ambient Air Quality Standards. The District recommends an AAQA be performed for the Project with emissions that exceed 100 pounds per day of any pollutant.

An AAQA uses air dispersion modeling to determine if emission increase from a project will cause or contribute to a violation of State or National Ambien Air Quality Standards. An acceptable analysis would include emissions from both project-specific permitted and non-permitted equipment and activities. The District recommends consultation with District staff to determine the appropriate model and input data to use in the analysis.

Specific information for assessing significance, including screening tools and modeling guidance, is available online at the District's website: www.valleyair.org/ceqa.

4) Voluntary Emission Reduction Agreement

Criteria pollutant emissions may result in emissions exceeding the District's significance thresholds, potentially resulting in a significant impact on air quality. When a project is expected to have a significant impact, the District recommends the EIR also include a discussion on the feasibility of implementing a Voluntary Emission Reduction Agreement (VERA) for this Project.

A VERA is a mitigation measure by which the project proponent provides pound-for-pound mitigation of emissions increases through a process that develops, funds, and implements emission reduction projects, with the District serving a role of administrator of the emissions reduction projects and verifier of the successful mitigation effort. To implement a VERA, the project proponent and the District enter into a contractual agreement in which the project proponent agrees to mitigate project specific emissions by providing funds for the District's incentives programs. The funds are disbursed by the District in the form of grants for projects that achieve emission reductions. Thus, project-related impacts on air quality can be mitigated. Types of emission reduction projects that have been funded in the past include electrification of stationary internal combustion engines (such as agricultural irrigation pumps), replacing old heavy-duty trucks with new, cleaner, more efficient heavy-duty trucks, and replacement of agricultural equipment with the latest generation technologies.

In implementing a VERA, the District verifies the actual emission reductions that have been achieved as a result of completed grant contracts, monitors the emission reduction projects, and ensures the enforceability of achieved reductions. After the project is mitigated, the District certifies to the Lead Agency that the mitigation is completed, providing the Lead Agency with an enforceable mitigation measure demonstrating that project-related emissions have been mitigated. To assist the Lead Agency and project proponent in ensuring that the environmental document is compliant with CEQA, the District recommends the environmental document includes an assessment of the feasibility of implementing a VERA.

5) Industrial/Commercial Emission Reduction Strategies

Since the Project consists of a commercial development that may generate a high volume of HHD truck trips, the District recommends the City incorporate emission reduction strategies that can reduce potential harmful health impacts, such as those listed below:

- Require cleanest available heavy-duty trucks and off-road equipment (see comment 8)
- Require HHD truck routing patterns that limit exposure of residential communities and sensitive receptors to emissions (see comment 7)
- Require minimization of heavy-duty truck idling (see comment 9)
- Require solid screen buffering trees, solid decorative walls, and/or other

natural ground landscaping techniques are implemented along the property line of adjacent sensitive receptors
- Orient loading docks away from sensitive receptors unless physically impossible
- Require loading docks a minimum of 300 feet away from the property line of sensitive receptor unless dock is exclusively used for electric trucks
- Incorporate signage and "pavement markings" to clearly identify on-site circulation patterns to minimize unnecessary on-site vehicle travel
- Require truck entries be located on streets of a higher commercial classification
- Require projects be designed to provide the necessary infrastructure to support use of zero-emissions on-road vehicles and off-road equipment (see comment 14)
- Require all building roofs are solar-ready
- Require all portions of roof tops that are not covered with solar panels are constructed to have light colored roofing material with a solar reflective index of greater than 78
- Ensure rooftop solar panels are installed and operated to supply 100% of the power needed to operate all non-refrigerated portions of the development project
- Require power sources at loading docks for all refrigerated trucks have "plugin" capacity, which will eliminate prolonged idling while loading and unloading goods
- Incorporate bicycle racks and electric bike plug-ins
- Require the use of low volatile organic compounds (VOC) architectural and industrial maintenance coatings
- Designate an area during construction to charge electric powered construction vehicles and equipment, if temporary power is available
- Prohibit the use of non-emergency diesel-powered generators during construction
- Inform the project proponent of the incentive programs (e.g., Carl Moyer Program and Voucher Incentive Program) offered to reduce air emissions from the Project
- Ensure all landscaping be drought tolerant

6) <u>Truck Routing</u>

Truck routing involves the assessment of which roads Heavy Heavy-Duty (HHD) trucks take to and from their destination, and the emissions impact that the HHD trucks may have on residential communities and sensitive receptors.

The District recommends the City evaluate HHD truck routing patterns for the Project, with the aim of limiting exposure of residential communities and sensitive receptors to emissions. This evaluation would consider the current truck routes, the quantity and type of each truck (e.g., Medium Heavy-Duty, HHD, etc.), the

destination and origin of each trip, traffic volume correlation with the time of day or the day of the week, overall Vehicle Miles Traveled (VMT), and associated exhaust emissions. The truck routing evaluation would also identify alternative truck routes and their impacts on VMT and air quality.

7) Cleanest Available Heavy-Duty Trucks

The San Joaquin Valley will not be able to attain stringent health-based federal air quality standards without significant reductions in emissions from HHD trucks, the single largest source of NOx emissions in the San Joaquin Valley. Accordingly, to meet federal air quality attainment standards, the District's ozone and particulate matter attainment plans rely on a significant and rapid transition of HHD fleets to zero or near-zero emissions technologies.

Since the Project may include commercial development, there may be potential for HHD trucks traveling long distances. The District recommends that the following measures be considered by the City to reduce Project-related operational emissions:

- *Recommended Measure*: Fleets associated with operational activities utilize the cleanest available HHD trucks, including zero and near-zero technologies.

- *Recommended Measure*: All on-site service equipment (cargo handling, yard hostlers, forklifts, pallet jacks, etc.) utilize zero-emissions technologies.

8) Reduce Idling of Heavy-Duty Trucks

The goal of this strategy is to limit the potential for localized PM2.5 and toxic air contaminant impacts associated with the idling of Heavy-Duty trucks. The diesel exhaust from idling has the potential to impose significant adverse health and environmental impacts.

Since the Project is expected to result in HHD truck trips, the District recommends the EIR include measures to ensure compliance of the state anti-idling regulation (13 CCR § 2485 and 13 CCR § 2480) and discuss the importance of limiting the amount of idling, especially near sensitive receptors. In addition, the District recommends the City consider the feasibility of implementing a more stringent 3-minute idling restriction and requiring appropriate signage and enforcement of idling restrictions.

9) Under-fired Charbroilers

The Project may have the potential to occupy restaurants with under-fired charbroilers. Such charbroilers may pose the potential for immediate health risk, particularly when located in densely populated areas or near sensitive receptors.

Since the cooking of meat can release carcinogenic PM2.5 species, such as polycyclic aromatic hydrocarbons, controlling emissions from new under-fired

charbroilers will have a substantial positive impact on public health. The air quality impacts on neighborhoods near restaurants with under-fired charbroilers can be significant on days when meteorological conditions are stable, when dispersion is limited and emissions are trapped near the surface within the surrounding neighborhoods. This potential for neighborhood-level concentration of emissions during evening or multi-day stagnation events raises air quality concerns.

Furthermore, reducing commercial charbroiling emissions is essential to achieving attainment of multiple federal PM2.5 standards. Therefore, the District recommends that the EIR include a measure requiring the assessment and potential installation, as technologically feasible, of particulate matter emission control systems for new large restaurants operating under-fired charbroilers.

The District is available to assist the City and project proponents with this assessment. Additionally, the District is currently offering substantial incentive funding that covers the full cost of purchasing, installing, and maintaining the system during a demonstration period covering two years of operation. Please contact the District at (559) 230-5800 or technology@valleyair.org for more information, or visit: http://valleyair.org/grants/rctp.htm

10) Vegetative Barriers and Urban Greening

There are residential units located south and west of the Project. The District suggests the City consider the feasibility of incorporating vegetative barriers and urban greening as a measure to further reduce air pollution exposure on sensitive receptors (e.g., residential units).

While various emission control techniques and programs exist to reduce air quality emissions from mobile and stationary sources, vegetative barriers have been shown to be an additional measure to potentially reduce a population's exposure to air pollution through the interception of airborne particles and the update of gaseous pollutants. Examples of vegetative barriers include, but are not limited to the following: trees, bushes, shrubs, or a mix of these. Generally, a higher and thicker vegetative barrier with full coverage will result in greater reductions in downwind pollutant concentrations. In the same manner, urban greening is also a way to help improve air quality and public health in addition to enhancing the overall beautification of a community with drought tolerant, low-maintenance greenery.

11) Clean Lawn and Garden Equipment in the Community

Since the Project consists of residential and commercial development, gas-powered residential and commercial lawn and garden equipment have the potential to result in an increase of NOx and PM2.5 emissions. Utilizing electric lawn care equipment can provide residents with immediate economic, environmental, and health benefits. The District recommends the Project proponent consider the District's Clean Green Yard Machines (CGYM) program which provides incentive funding for replacement

of existing gas powered lawn and garden equipment. More information on the District CGYM program and funding can be found at: http://www.valleyair.org/grants/cgym.htm and http://valleyair.org/grants/cgym-commercial.htm.

12) On-Site Solar Deployment

It is the policy of the State of California that renewable energy resources and zero-carbon resources supply 100% of retail sales of electricity to California end-use customers by December 31, 2045. While various emission control techniques and programs exist to reduce air quality emissions from mobile and stationary sources, the production of solar energy is contributing to improving air quality and public health. The District suggests that the City consider incorporating solar power systems as an emission reduction strategy for the Project.

13) Electric Infrastructure

The District recommends that the City require all nonresidential buildings be designed to provide electric infrastructure to support the use of on-road zero emissions vehicles, such as HHD trucks associated with a warehouse or commercial project.

To support and accelerate the installation of electric vehicle charging equipment and development of required infrastructure, the District offers incentives to public agencies, businesses, and property owners of multi-unit dwellings to install electric charging infrastructure (Level 2 and 3 chargers). The purpose of the District's Charge Up! Incentive program is to promote clean air alternative-fuel technologies and the use of low or zero-emission vehicles. The District recommends that the City and project proponents install electric vehicle chargers at project sites, and at strategic locations.

Please visit www.valleyair.org/grants/chargeup.htm for more information.

14) District's Bikeway Incentive Program

Incorporating design elements (e.g., installing bikeways) within the Project that enhance walkability and connectivity can result in an overall reduction of vehicles miles traveled (VMT) and improve air quality within the area. The Project is expected to result in an overall reduction in VMT by installing bikeways, and may be eligible for funding through the District's Bikeway Incentive Program. The Bikeway Incentive Program provides funding for eligible Class 1 (Bicycle Path Construction), Class II (Bicycle Lane Striping), or Class III (Bicycle Route) projects. These incentives are designed to support the construction of new bikeway projects to promote clean air through the development of a widespread, interconnected network of bike paths, lanes, or routes and improving the general safety conditions for commuter bicyclists. Only municipalities, government agencies, or public educational institutions are

eligible to apply. More information on the grant program can be found at: http://valleyair.org/grants/bikepaths.htm

Guidelines and Project Eligibility for the grant program can be found at: http://valleyair.org/grants/documents/bikepaths/2015_Bikeway_Guidelines.pdf

15) Nuisance Odors

While offensive odors rarely cause any physical harm, they can be unpleasant, leading to considerable distress among the public and often resulting in citizen complaints.

The City should consider all available pertinent information to determine if the Project could have a significant impact related to nuisance odors. Nuisance odors may be assessed qualitatively taking into consideration the proposed business or industry type and its potential to create odors, as well as proximity to off-site receptors that potentially would be exposed to objectionable odors. The intensity of an odor source's operations and its proximity to receptors influences the potential significance of malodorous emissions. Any project with the potential to frequently expose members of the public to objectionable odors should be deemed to have a significant impact.

According to the District Guidance for Assessing and Mitigating air Quality Impacts (GAMAQI), a significant odor impact is defined as more than one confirmed complaint per year averaged over a three-year period, or three unconfirmed complaints per year averaged over a three-year period. An unconfirmed complaint means that either the odor or air contaminant release could not be detected, or the source of the odor could not be determined.

The District is available to assist the City with information regarding specific facilities and categories of facilities, and associated odor complaint records.

16) District Rules and Regulations

The District issues permits for many types of air pollution sources, and regulates some activities that do not require permits. A project subject to District rules and regulations would reduce its impacts on air quality through compliance with the District's regulatory framework. In general, a regulation is a collection of individual rules, each of which deals with a specific topic. As an example, Regulation II (Permits) includes District Rule 2010 (Permits Required), Rule 2201 (New and Modified Stationary Source Review), Rule 2520 (Federally Mandated Operating Permits), and several other rules pertaining to District permitting requirements and processes.

The list of rules below is neither exhaustive nor exclusive. Current District rules can be found online at: www.valleyair.org/rules/1ruleslist.htm. To identify other District

rules or regulations that apply to future projects, or to obtain information about District permit requirements, the project proponents are strongly encouraged to contact the District's Small Business Assistance (SBA) Office at (559) 230-5888.

16a) District Rules 2010 and 2201 - Air Quality Permitting for Stationary Sources

Stationary Source emissions include any building, structure, facility, or installation which emits or may emit any affected pollutant directly or as a fugitive emission. District Rule 2010 (Permits Required) requires operators of emission sources to obtain an Authority to Construct (ATC) and Permit to Operate (PTO) from the District. District Rule 2201 (New and Modified Stationary Source Review) requires that new and modified stationary sources of emissions mitigate their emissions using Best Available Control Technology (BACT).

This Project may be subject to District Rule 2010 (Permits Required) and Rule 2201 (New and Modified Stationary Source Review) and may require District permits. Prior to construction, the Project proponent should submit to the District an application for an ATC. For further information or assistance, the project proponent may contact the District's SBA Office at (559) 230-5888.

16b) District Rule 9510 - Indirect Source Review (ISR)

The Project is subject to District Rule 9510 because it will receive a project-level discretionary approval from a public agency and will equal or exceed the Rule 9510 applicability thresholds for residential and commercial for example.

The purpose of District Rule 9510 is to reduce the growth in both NOx and PM emissions associated with development and transportation projects from mobile and area sources; specifically, the emissions associated with the construction and subsequent operation of development projects. The ISR Rule requires developers to mitigate their NOx and PM emissions by incorporating clean air design elements into their projects. Should the proposed development project clean air design elements be insufficient to meet the required emission reductions, developers must pay a fee that ultimately funds incentive projects to achieve off-site emissions reductions.

Per Section 5.0 of the ISR Rule, an Air Impact Assessment (AIA) application is required to be submitted no later than applying for project-level approval from a public agency.

The Project is subject to Rule 9510 because it will receive a project-level discretionary approval from a public agency and will equal or exceed 9,000 square feet of development space. As of the date of this letter, the District has not received an AIA application for the Project. Please inform the project

proponent to submit an AIA application to the District to comply with District Rule 9510 so that proper mitigation and clean air design under ISR can be incorporated into the Project's design.

Accordingly, future development projects, may be subject to District Rule 9510 if upon full buildout, the project would equal or exceed any of the following applicability thresholds, depending on the type of development and public agency approval mechanism:

Table 1: ISR Applicability Thresholds

Development Type	Discretionary Approval Threshold	Ministerial Approval / Allowed Use / By Right Thresholds
Residential	50 dwelling units	250 dwelling units
Commercial	2,000 square feet	10,000 square feet
Light Industrial	25,000 square feet	125,000 square feet
Heavy Industrial	100,000 square feet	500,000 square feet
Medical Office	20,000 square feet	100,000 square feet
General Office	39,000 square feet	195,000 square feet
Educational Office	9,000 square feet	45,000 square feet
Government	10,00 square feet	50,000 square feet
Recreational	20,000 square feet	100,000 square feet
Other	9,000 square feet	45,000 square feet

District Rule 9510 also applies to any transportation or transit development projects where construction exhaust emissions equal or exceed two tons of NOx or two tons of PM.

The purpose of District Rule 9510 is to reduce the growth in both NOx and PM emissions associated with development and transportation projects from mobile and area sources; specifically, the emissions associated with the construction and subsequent operation of development projects. The Rule requires developers to mitigate their NOx and PM emissions by incorporating clean air design elements into their projects. Should the proposed development project clean air design elements be insufficient to meet the required emission reductions, developers must pay a fee that ultimately funds incentive projects to achieve off-site emissions reductions.

In the case the individual development project is subject to District Rule 9510, per Section 5.0 of the rule, an Air Impact Assessment (AIA) application is required to be submitted no later than applying for project-level approval from a public agency so that proper mitigation and clean air design under ISR can be incorporated into the public agency's analysis.

Information about how to comply with District Rule 9510 can be found online at: http://www.valleyair.org/ISR/ISRHome.htm.

The AIA application form can be found online at: http://www.valleyair.org/ISR/ISRFormsAndApplications.htm.

District staff is available to provide assistance and can be reached by phone at (559) 230-5900 or by email at ISR@valleyair.org.

16c) District Rule 9410 (Employer Based Trip Reduction)

The Project may be subject to District Rule 9410 (Employer Based Trip Reduction) if the project would result in employment of 100 or more "eligible" employees. District Rule 9410 requires employers with 100 or more "eligible" employees at a worksite to establish an Employer Trip Reduction Implementation Plan (eTRIP) that encourages employees to reduce single-occupancy vehicle trips, thus reducing pollutant emissions associated with work commutes. Under an eTRIP plan, employers have the flexibility to select the options that work best for their worksites and their employees.

Information about District Rule 9410 can be found online at: www.valleyair.org/tripreduction.htm.

For additional information, you can contact the District by phone at 559-230-6000 or by e-mail at etrip@valleyair.org

16d) District Rule 4002 (National Emissions Standards for Hazardous Air Pollutants)

In the event an existing building will be renovated, partially demolished or removed, the Project may be subject to District Rule 4002. This rule requires a thorough inspection for asbestos to be conducted before any regulated facility is demolished or renovated. Information on how to comply with District Rule 4002 can be found online at: http://www.valleyair.org/busind/comply/asbestosbultn.htm.

16e) District Rule 4601 (Architectural Coatings)

The Project may be subject to District Rule 4601 since it is expected to utilize architectural coatings. Architectural coatings are paints, varnishes, sealers, or stains that are applied to structures, portable buildings, pavements or curbs. The purpose of this rule is to limit VOC emissions from architectural coatings. In addition, this rule specifies architectural coatings storage, cleanup and labeling requirements. Additional information on how to comply with District Rule 4601 requirements can be found online at: http://www.valleyair.org/rules/currntrules/r4601.pdf

16f) District Regulation VIII (Fugitive PM10 Prohibitions)

The project proponent may be required to submit a Construction Notification Form or submit and receive approval of a Dust Control Plan prior to commencing any earthmoving activities as described in Regulation VIII, specifically Rule 8021 – *Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities.*
Should the project result in at least 1-acre in size, the project proponent shall provide written notification to the District at least 48 hours prior to the project proponents intent to commence any earthmoving activities pursuant to District Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities). Also, should the project result in the disturbance of 5-acres or more, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials, the project proponent shall submit to the District a Dust Control Plan pursuant to District Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities). For additional information regarding the written notification or Dust Control Plan requirements, please contact District Compliance staff at (559) 230-5950.

The application for both the Construction Notification and Dust Control Plan can be found online at:
https://www.valleyair.org/busind/comply/PM10/forms/DCP-Form.docx

Information about District Regulation VIII can be found online at:
http://www.valleyair.org/busind/comply/pm10/compliance_pm10.htm

16g) District Rule 4901 - Wood Burning Fireplaces and Heaters

The purpose of this rule is to limit emissions of carbon monoxide and particulate matter from wood burning fireplaces, wood burning heaters, and outdoor wood burning devices. This rule establishes limitations on the installation of new wood burning fireplaces and wood burning heaters. Specifically, at elevations below 3,000 feet in areas with natural gas service, no person shall install a wood burning fireplace, low mass fireplace, masonry heater, or wood burning heater.

Information about District Rule 4901 can be found online at:
http://valleyair.org/rule4901/

16h) Other District Rules and Regulations

The Project may also be subject to the following District rules: Rule 4102 (Nuisance) and Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations).

17) Future Projects / Land Use Agency Referral Documents

Future development projects may require an environmental review and air emissions mitigation. A project's referral documents and environmental review documents provided to the District for review should include a project summary, the land use designation, project size, air emissions quantifications and impacts, and proximity to sensitive receptors and existing emission sources, and air emissions mitigation measures. For reference and guidance, more information can be found in the District's Guidance for Assessing and Mitigating Air Quality Impacts at: https://www.valleyair.org/transportation/GAMAQI.pdf

18) District Comment Letter

The District recommends that a copy of the District's comments be provided to the Project proponent.

If you have any questions or require further information, please contact Ryan Grossman by e-mail at Ryan.grossman@valleyair.org or by phone at (559) 230-6569.

Sincerely,

Brian Clements
Director of Permit Services

Mark Montelongo
Program Manager

California Department of Transportation

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www.dot.ca.gov

November 16, 2023

FRE-168-R10.111
NOP – Notice of Preparation of an EIR
Vista Ranch Project
https://ld-igr-gts.dot.ca.gov/district/6/report/31200

SENT VIA EMAIL

McKencie Perez, Senior Planner
Planning and Development Services Department
City of Clovis
1033 Fifth Street
Clovis, CA 93612

Dear Mx. Perez:

Thank you for the opportunity to review the Notice of Preparation (NOP) of a Draft Environmental Impact Report for the Vista Ranch Project. The project proposes to analyze/develop 952 acres of land which includes the area within the Vista Ranch Master Plan (507 acres) as well as 445 acres of non-development area. The area within the Vista Ranch Master Plan includes a mix of urban uses such as approximately 3,200 residential units, commercial development, and community recreational facilities. The project is located north of Shepherd Avenue, south of Behymer Avenue, west of Carson Avenue directly northeast of the City of Clovis' city limits, generally located on the northwest quadrant of Shepherd Avenue and De Wolf Avenue.

Additional subsequent actions and approvals from the City for a section of the project area includes annexation, general plan amendments, pre-zoning, master plan community overlay district and vesting tentative map.

The mission of Caltrans is to provide a safe and reliable transportation network that serves all people and respects the environment. To ensure a safe and efficient transportation system, we encourage early consultation and coordination with local jurisdictions and project proponents on all development projects that utilize the multimodal transportation networks

Caltrans provides the following comments consistent with the State's smart mobility goals that support a vibrant economy and sustainable communities:

1. Given the proposed number of residential units and commercial development, the proposed project could have significant potential impacts on local state highway facilities. Caltrans recommends that a transportation impact study (TIS) including a vehicle miles traveled (VMT) analysis be conducted.

2. Caltrans requests that prior to initiating the TIS and VMT analysis, the scope of work and study assumptions including trip generations, trip distributions, and proposed study locations be submitted for review. If a kick-off meeting for the development of the TIS and VMT analysis is planned to be held by the City, Caltrans requests to be included in this meeting

3. Caltrans requests that the Draft EIR be submitted for review once completed and circulated by the City.

4. Caltrans recommends that future residential development project proponents consider working with the City to convert a portion of the planned residential units to affordable housing units.

5. It is recommended that the City consider a multimodal transportation system (such as bicycle and pedestrian facilities as well as public transportation) to provide connectivity of modes between the residential uses and commercial/retail uses to reduce VMT impacts from the project.

6. Caltrans recommends the City consider creating a VMT Mitigation Impact Fee to help reduce potential impacts on the State Highway System.

7. Alternative transportation policies should be applied to the development. An assessment of multimodal facilities should be conducted to develop an integrated multimodal transportation system to serve and help alleviate traffic congestion resulting from the project and related development in the area of the City. The assessment should include the following:

    a. Pedestrian walkways should not only be limited to the project's internal connectivity but be connected to existing walkways and transit facilities outside the project area.

    b. The project should consider coordinating connections to local and regional bicycle pathways to encourage the use of bicycles for commuter and recreational purposes.

c. If transit is not available within 1/4-mile of the project area, transit should be extended to provide services to high activity centers of the project.

8. As part of the statewide effort to reduce greenhouse gas emissions, Caltrans recommends the project proponents consider the installation of public Level 2 Electric Vehicle (EV) and DC Fast Charging EV charging stations.

9. Active Transportation Plans and Smart Growth efforts support the state's 2050 Climate goals. Caltrans supports reducing VMT and GHG emissions in ways that increase the likelihood people will use and benefit from a multimodal transportation network.

If you have any other questions, please call or email Christopher Xiong at (559) 908-7064 or Christopher.Xiong@dot.ca.gov.

Sincerely,

DAVID PADILLA, Branch Chief
Transportation Planning – North

Fresno Metropolitan Flood Control District
Capturing Stormwater since 1956

File 170.141
310. "BX", "BY_1"
550.30 "BX", "BY_1"

November 17, 2023

Ms. McKencie Perez, MPA, Senior Planner
City of Clovis, Planning Division
1033 Fifth Street
Clovis, CA 93612

Dear Ms. Perez,

Fresno Metropolitan Flood Control District Comments for
Notice of Preparation of an Environmental Impact Report for
Vista Ranch Project
Drainage Areas "BX" and "BY_1"

General Comments

This letter is in response to the City's request for comments regarding the Notice of Preparation of an Environmental Impact Report for the Vista Ranch Project planning area boundary "Project Area". The Fresno Metropolitan Flood Control District (District) bears responsibility for storm water management within the Fresno-Clovis metropolitan area, including the area of the "Project Area". Within the metropolitan area, storm runoff produced by land development is to be controlled through a system of pipelines and storm drainage retention basins. The community has developed and adopted a Storm Drainage and Flood Control Master Plan. Each property contributes its pro-rata share to the cost of the public drainage system. All properties are required to participate in the community system for everyone. It is this form of participation in the cost and/or construction of the drainage system that will mitigate the impact of development.

The subject "Project Area" shall pay drainage fees pursuant to the Drainage Fee Ordinance prior to approval of any final maps and/or issuance of building permits at the rates in effect at the time of such approval. Instances when the proposed density is reduced and the Master Plan facilities have been constructed, the proposed development will be subject to the rate anticipated to be collected commensurate to the higher density. Should land use densities of existing areas be increased, the property would be subject to a reassessment of drainage fees based on the proposed increased land uses and may include the requirement of additional drainage fees to be paid to offset the increased land use. Each proposed development will be reviewed and assessed upon submittal to the District. Please contact the District for a final fee obligation prior to issuance of any construction permits. Any drainage fees previously paid on a property would be given a credit against any new fee responsibility.

5469 E. Olive Avenue • Fresno, CA 93727 • (559) 456-3292 • FAX (559) 456-3194
www.fresnofloodcontrol.org

Lot coverage must be provided to the District prior to submittal of improvement plans. The final drainage fee will be calculated commensurate with the lot coverage provided by the developer. If the lot coverage indicates a density higher than Master Planned, mitigation may be required. The lot coverage calculated by the District includes the front yard walkway, sidewalk walkway and the rear yard patio equaling an additional 6% of impervious area in addition to the City's typical lot coverage calculation.

The grading of any proposed development within the "Project Area", including public street areas, shall be consistent with the District Master Plan. Additionally, grading shall not have an adverse impact to major storm conveyance, and to the passage of storm water to the adjacent roadways and existing storm drainage pipelines and inlets. The "Project Area" shall provide the appropriate surface flowage easements or covenants for any portion of the development area that cannot convey storm water to the public right-of-way without crossing private property.

If there are to be storm water discharges from private facilities to the District's storm drainage system, they shall consist only of storm water runoff and shall be free of solids and debris. Landscape and/or area drains are not allowed to connect directly to the District's facilities.

The District will need to review and approve the final improvement plans for all development (i.e. grading, street improvement and storm drain facilities) within the boundaries of the "Project Area" to insure consistency with the approved Storm Drainage Master Plan.

The Master Plan system has been designed such that during a two-year event flow will not exceed the height of the 6-inch curb. Should wedge curb (4.5 inches height) be used the same criteria shall apply whereby flow remains below the top of curb. Any extensions or pipe size increases due to meeting the requirement listed above shall be at the developer's expense.

A minimum fifteen-foot (15') wide storm drain easement will be required whenever storm drain facilities are located on private property. No encroachments into the easement will be permitted including, but not limited to, foundations, roof overhangs, swimming pools, and trees.

The District may require the developer to construct certain storm drain facilities as described in the Storm Drain Master Plan. The cost of construction of Master Plan facilities excluding dedication of storm drainage easements is eligible for credit against the drainage fee of the drainage area served by the facilities. A development agreement shall be executed with the District to affect such credit. Reimbursement provisions, in accordance with the Drainage Fee Ordinance, will be included to the extent that developer's Master Plan costs for an individual drainage area exceed the fee of said area. Should the facilities cost for such individual area total less than the fee of said area, the difference shall be paid upon demand to the City or the District.

In an effort to improve storm runoff quality, outdoor storage areas shall be constructed and maintained such that material that may generate contaminants will be prevented from contact with rainfall and runoff and thereby prevent the conveyance of contaminants in runoff into the storm drain system.

The District encourages, but does not require that roof drains from non-residential development be constructed such that they are directed onto and through a landscaped grassy swale area to filter out pollutants from roof runoff.

Runoff from areas where industrial activities, product, or merchandise come into contact with and may contaminate storm water must be directed through landscaped areas or otherwise treated before discharging it off-site or into a storm drain. Roofs covering such areas are recommended. Cleaning of such areas by sweeping instead of washing is to be required unless such wash water can be directed to the sanitary sewer system. Storm drains receiving untreated runoff from such areas that directly connect to the District's system will not be permitted. Loading docks, depressed areas, and areas servicing or fueling vehicles are specifically subject to these requirements. The District's policy governing said industrial site NPDES program requirements are available. Contract the District's Environmental Department for further information regarding these policies related to industrial site requirements.

Specific Comments to the Vista Ranch Project

The "Project Area" is currently located within the District's adopted Rural Master Plan Drainage Area "BY_1" and Urban Master Plan Drainage Area "BX", as shown on Exhibit No. 1.

The adopted "BY_1" Rural Master Plan drainage system is designed to serve the existing land uses of open space, range/pasture and rural residential housing densities ranging from 0 to 0.7 dwelling unit/acre (du/ac). The existing rural planned drainage facilities do not have capacity to serve the proposed higher Mixed Use Village (MU-V) land use. All impacts to storm water runoff created by increasing densities within Drainage Area "BY_1" that effect the capacity of the existing Rural Master Plan drainage system must be fully mitigated. Either storm drainage pipeline facilities will be needed to provide conveyance to the District's basin or construct some type of on-site permanent peak reducing facility to match the adopted Rural Master Plan flow rates and eliminate any adverse impacts on the downstream drainage system. It is the District's intention to work with the developer to provide an acceptable drainage system to serve the proposed increased density. Implementation of the mitigation measures may be deferred until the time of development.

The District has reviewed the land use changes proposed and located within the adopted "BX" Urban Master Plan with regards to possible impacts on the planned and/or existing public drainage system. It has been determined that the proposed land use is slightly increasing from what was originally planned. Drainage Area "BX" has existing drainage facilities located downstream and some type of mitigation to accommodate the increased flow such as parallel pipes and/or on-site retention may be required.

The District requests that the grading Engineer contact the District as early as possible to review the proposed site grading for verification and acceptance of a mitigation design prior to preparing a grading plan for the "Development Area" (MPArea 1 and MPArea 2).

The "Development Area" within the "Project Area" shall not block the historical drainage patterns of existing properties located north, west, and east of the "Development Area". More specifically, the District's drive entrance to the Big Dry Creek Reservoir located at the southeast corner of the "Project Area" along shepherd Avenue must remain in place and shall not be relocated by the project without District's approval. The "Development Area" shall verify to the satisfaction of the District that runoff from these areas has the ability to surface drain to adjacent streets.

The "Development Area" must identify what streets will pass the major storm and provide calculations that show structures will have adequate flood protection. Based on historical drainage patterns some of the streets located within the "Development Area" may need to be resized or reconfigured (including but not limited to streets that include traffic calming curbs) to pass larger event storms. District approval is not extended to street configuration. A drainage report indicating the path of the major storm flow and calculations confirming there is adequate protection of finished floors will be necessary.

Big Dry Reservoir and Dam are located northeast of the proposed development. The function of the earthen dam includes a seepage component at the downstream face and it is unsuitable to designate development in this area. Several years ago, the District constructed a deeper toe drain to reduce downstream seepage from the dam. However, due to the extended drought and subsequent lack of impoundment of flood waters behind the dam, the District has not recorded sufficient data to analyze the effectiveness of the deeper toe drain. Therefore, the District recommends that a minimum 500-foot wide area adjacent to the dam face be kept clear of development and designated as open space. If development occurs within the 500-foot buffer zone before the impact of the deeper toe drain is known, then said development shall be at the risk of the Developer. The buffer between the dam and the development is shown on Exhibit No. 1.

Big Dry Creek and Behymer Tributaries MID-1 and MID-4 are natural stream courses traversing the "Development Area". Behymer Tributaries MID-2 and MID-3 are natural stream courses outside of the "Development Area", but within the "Project Area". These stream courses are shown on the Storm Drainage and Flood Control Master Plan (see Exhibit No. 1). Should a developer choose to modify or relocate these channels, the developer must contact all agencies having an interest in these channels and comply with their regulations. These agencies may include State of California Fish and Wildlife, State of California Regional Water Quality Control Board (Section 401 of the Clean Water Act), and the U.S. Army Corps of Engineers (USACE) (Section 404 of the Clean Water Act). Furthermore, if a USACE Clean Water Act Section 404 permit application package is prepared, the District requests an opportunity to review the application prior to submittal.

These channels must be protected and preserved in their current location or an accepted relocation plan must be provided. The protection and preservation of these channels is necessary to convey upland surface runoff through the proposed "Development Area" without adversely affecting other property owners and also to provide safe conveyance through the "Development Area". The plans to retain or relocate a channel must be addressed in a drainage report prepared by the developer's engineer and submitted to the District for the project and include a study of any affect to the hydraulic performance of the channel.

If a developer proposes to relocate channels within the project area, he must identify a plan that is acceptable to the District and perhaps state and federal agencies identified above. Wherever the developer proposes these channels, adequate easement width shall be dedicated to the District prior to approval of the Final Map. The easement shall be of sufficient width to accommodate the Master Plan flow rates and also provide adequate maintenance access. Development within easements is prohibited. Fences will not be permitted across the channel, unless approved by the District.

While the District accepts the channel easements for Behymer Tributaries MID-1, MID-3, and MID-4 to assure their protection, the maintenance of the channels will remain with the property owner. The easement dedication document will require reimbursement of costs should the District need to intervene in order to perform maintenance and/or otherwise preserve the channel. The District would prefer that the "Development Area" establish a homeowner's association to maintain the channels, but if that is not feasible, each parcel owner along the channels will be burdened with the maintenance of the channel within their property and fences will not be permitted across the channel.

Some thought needs to be put into both private and public channel crossings. Preferably, channel crossings will be kept to a minimum and each crossing will require an encroachment agreement identifying the applicant as responsible for the long-term maintenance and potential removal of the encroachment.

As channel designs and construction will affect lot patterns and configurations, the District will review the work of the developer's engineer to determine easement limits at the time of dedication. The Channel designs must be completed prior to tentative map approval to ensure the easement areas are known and adequate space is allotted for the channels. It is in the developer's interest to identify the channel designs as early as possible so that appropriate lot configurations are selected. The hydraulic study must reflect culverts where roads and driveways cross the channels. Easement areas must be adequate to convey the design flows.

Should the developer choose to improve the channels, the developer shall comply with the following requirements. The standard geometry for Big Dry Creek is a minimum 20-foot wide bottom and maximum 4:1 side slopes. Big Dry Creek must be designed and constructed to accommodate the flow rate of 150 cfs as identified in the Master Plan. The standard geometry for all Behymer Tributaries is a 6-foot wide bottom and 4:1 side slopes. These channels must be designed and constructed to accommodate the flow rate of 9 cfs for MID-1 prior to the confluence with MID-4, 16 cfs for MID-1 after the confluence with MID-4, 31 cfs for MID-1 downstream of Fowler Ave., 40 cfs for MID-1 downstream of Stanford Ave., and 1 cfs for MID-3. The channel design must include hydraulic modeling using the HEC-RAS computer program. Channel design and hydraulic study must also consider the attenuation currently provided by the developer's property and not reduce the attenuation or otherwise increase conveyance to downstream properties.

The District will accept the easement dedications for the channels following completion of construction, including any mitigation obligations, and acceptance under required permits. Any proposed landscaping within the channel easements shall require (i) review and approval by the District, and (ii) maintenance by the property owner.

Big Dry Creek is a natural stream with a man-made component known as the Big Dry Creek Reservoir Outlet Works Channel ("BDR Outlet Channel"). The BDR Outlet Channel is within the "Development Area" and shown on Exhibit No. 1. This man-made channel conveys controlled stormwater releases from Big Dry Creek Reservoir until it converges with the native stream course of Big Dry Creek near the southwest corner of the proposed development. The BDR Outlet Channel must be protected in its current location and alteration and/or relocation is prohibited. Maintenance of this channel is reserved for the District and the developer must provide adequate access for maintenance vehicles.

A portion of the proposed development is in a Federal Emergency Management Agency (FEMA) Zone "A" and "AH" flood zone areas requiring additional processing and consideration. The developer shall contact FEMA to obtain their requirements.

The City of Fresno, the District, the County of Fresno, the City of Clovis, and the California State University, Fresno are currently covered as Co-Permittees for Municipal Separate Storm Sewer System (MS4) discharges through National Pollutant Discharge Elimination System (NPDES) General Order No. R5-2016-0040 and NPDES Permit No. CAS0085324 (Storm Water Permit) effective May 17, 2018. The previous Storm Water Permit adopted on May 31, 2013 required the adoption of Stormwater Quality Management Program (SWQMP) that describes the Storm Water Permit implementation actions and Co-Permittee responsibilities. That SWQMP was approved by the Central Valley Regional Water Quality Control Board on April 17, 2015 and is effective until adoption of a new SWQMP, which is anticipated within the next two years.

It is the District's understanding that the City will adopt a Program EIR for the proposed Vista Ranch Project and that the Program EIR may be used when considering approval of future discretionary actions. The Storm Water Permit requires that Co-Permittees update their CEQA process to incorporate procedures for considering potential stormwater quality impacts when preparing and reviewing CEQA documents. This requirement is found on Provision D.14 of the 2013 Storm Water Permit and in Section 7: Planning and Land Development Program – PLD 3 – Update CEQA Process. The District has created a guidance document that will meet this Storm Water Permit requirement entitled *Guidance for Addressing Stormwater Quality for CEQA Review*, which has been attached. In an effort to streamline future CEQA processing and maintain compliance with the Storm Water Permit, the District recommends that all future CEQA review within the City of Clovis utilize the attached guidance document Exhibit "A".

The District offers the following comments specific to the review of the Vista Ranch Project NOP (the individual pages are included, and the section or sentence has been highlighted for your reference):

1. Page 2, Existing Site Uses Paragraph 2: Spillway is near Copper Avenue. Consider revising "…is bifurcated by the Big Dry Creek Spillway" to "by Dry Creek, a natural stream course, and the Big Dry Creek Reservoir Outlet Works Channel".
2. Page 23, Figure 9: Recommend extending the Open Space-Corridor 500-feet from the toe of the Big Dry Creek Reservoir along the "Development Area" to Shepherd Avenue.

Thank you for the opportunity to comment. Please keep our office informed on the development of these plans. If you should have any questions or comments, please contact the District at (559) 456-3292.

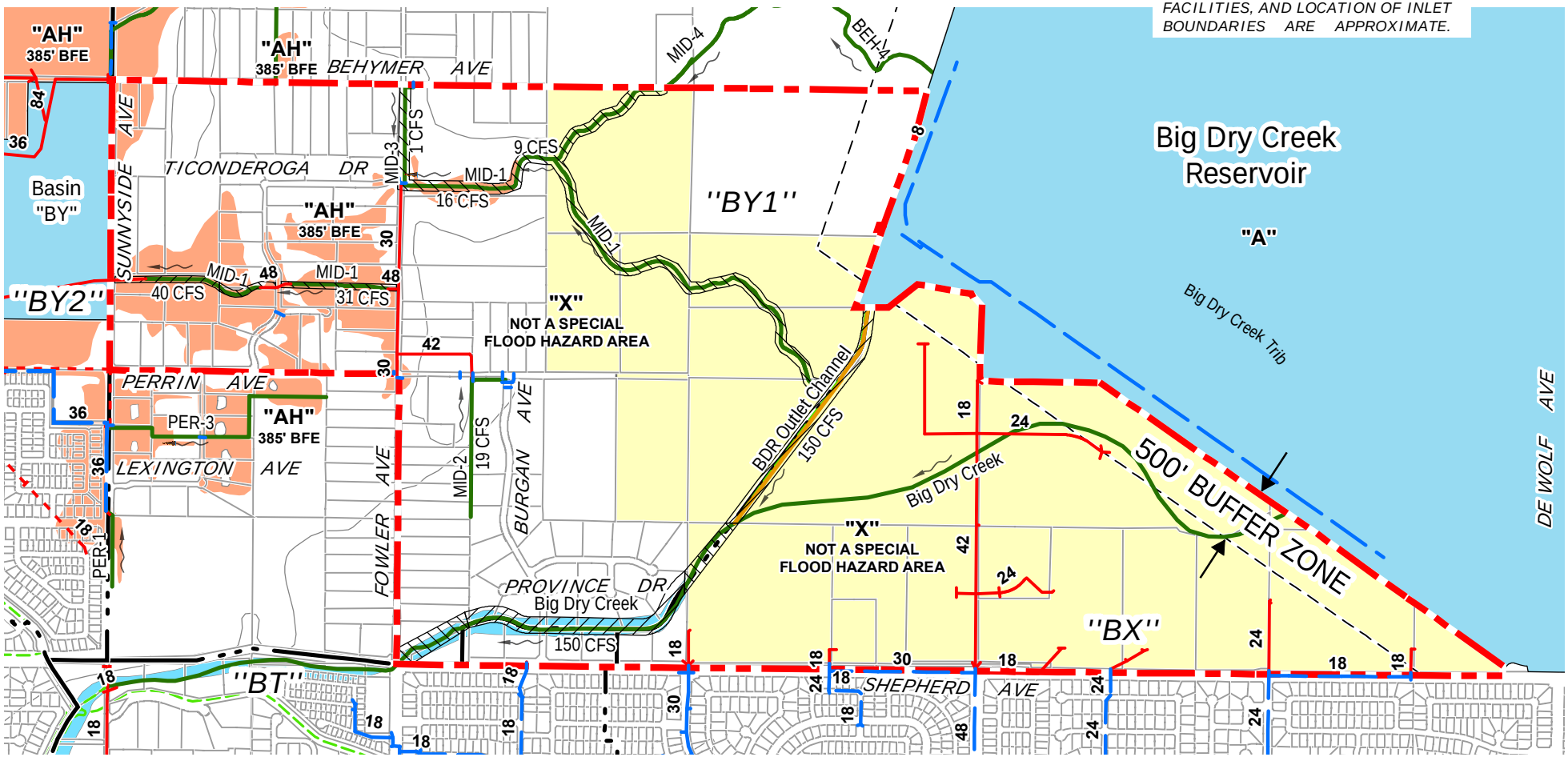
Sincerely,

Denise Wade
Master Plan Special Projects Manager

DW/lrl

Attachments

NOTE: THIS MAP IS SCHEMATIC. DISTANCES, AMOUNT OF CREDITABLE FACILITIES, AND LOCATION OF INLET BOUNDARIES ARE APPROXIMATE.



LEGEND

- Existing Master Plan Facilities
- Future Master Plan Facilities
- Drainage Area Boundary
- Existing Major Stream Course (Master Plan Channel)
- Existing Major Stream Course (Master Plan Channel)
- Existing FID Facilities
- FEMA Flood Zone "A"
- FEMA Flood Zone "AH"
- Project Area Boundary
- Existing Rural Stream Easement
- Proposed Rural Stream Easement
- Development Area

1 " = 1400 '

VISTA RANCH PROJECT

DRAINAGE AREA "BC", "BX", & "BY1"

EXHIBIT NO. 1

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT

Prepared by: coreym
Date: 11/16/2023
Path: K:\Autocad\DWGS\0EXHIBIT\MISC\Vista Ranch Project.mxd

EXHIBIT "A"

Fresno Metropolitan Flood Control District

Guidance for Addressing Stormwater Quality for CEQA Review

Stormwater Checklist for CEQA Review

a. Potential impact of project construction on stormwater runoff.

Stormwater runoff from construction activities can have a significant impact on water quality. To build on sites with over one acre of disturbed land, property owners must obtain coverage under the California Construction General Permit for Discharges of Stormwater (CGP). The CGP is issued by the State Water Resources Control Board (SWRCB). The CGP requires sites that do not qualify for an erosivity waiver to create a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP is a site-specific plan that is designed to control the discharge of pollutants from the construction site to local storm drains and waterways.

b. Potential impact of project post-construction activity on stormwater runoff.

FMFCD operates the Regional Stormwater Mitigation System, which consists of facilities to handle stormwater runoff and non-stormwater discharges in the FMFCD service area. However, river discharging drainage areas and drainage areas without basin service are subject to FMFCD Policy: Providing for Compliance with Post-Development and Industrial Storm Water Pollution Control Requirements (Policy).

Development and redevelopment projects can result in discharge of pollutants to receiving waters. Pollutants of concern for a project site depend on the following factors:

- Project location;
- Land use and activities that have occurred on the project site in the past;
- Land use and activities that are likely to occur in the future; and
- Receiving water impairments.

As land use activities and site design practices evolve, particularly with increased incorporation of stormwater quality BMPs, characteristic stormwater runoff concentrations and pollutants of concern from various land use types are also likely to change.

Typical Pollutants of Concern and Sources for Post-Development Areas

Pollutant	Potential Sources
Sediment (total suspended solids and turbidity), trash and debris (gross solids and floatables)	Streets, landscaped areas, driveways, roads, construction activities, atmospheric deposition, soil erosion (channels and slopes)

Pesticides and herbicides	Residential lawns and gardens, roadsides, utility right-of-ways, commercial and industrial landscaped areas, soil wash-off
Organic materials/oxygen demanding substances	Residential laws and gardens, commercial landscaping, animal waste
Metals	Automobiles, bridges, atmospheric deposition, industrial areas, soil erosion, metal surfaces, combustion processes
Oil and grease, organics associated with petroleum	Roads, driveways, parking lots, vehicle maintenance areas, gas stations, illicit dumping to storm drains, automobile emissions, and fats, oils, and grease from restaurants
Bacteria and viruses	Lawns, roads, leaking sanitary sewer lines, sanitary sewer cross-connections, animal waste (domestic and wild), septic systems, homeless encampments, sediments/biofilms in storm drain system
Nutrients	Landscape fertilizers, atmospheric deposition, automobile exhaust, soil erosion, animal waste, detergents

Source: Adapted from USEPA, 1999 (Preliminary Data Summary of Urban Storm Water BMPs)

FMFCD's Post-Development Standards Technical Manual provides guidance for implementing stormwater quality Best Management Practices (BMPs) for drainage areas subject to the Policy, with the intention of improving water quality and mitigating potential water quality impacts from stormwater and non-stormwater discharges. The Post-Development Standards Technical Manual addresses the following objectives and goals:

- Minimize impervious surfaces and directly connect impervious surfaces in areas of new development and redevelopment, and where feasible, to maximize on-site infiltration of stormwater runoff;
- Implement pollution prevention methods supplemented by pollutant source controls and treatment, and where practical, use strategies that control the sources of pollutants or constituents (i.e., where water initially meets the ground) to minimize the transport of runoff and pollutants offsite and into MS4s;
- Preserve, and where possible create or restore, areas that provide important water quality benefits, such as riparian corridors, wetlands, or buffer zones
- Limit disturbances of natural water bodies and natural drainage systems by development, including roads, highways, and bridges;
- Identify and avoid development in areas that are particularly susceptible to erosion and sediment loss or establish guidance that protects areas from erosion and sediment loss;
- Implement source and structural controls as necessary and appropriate to protect downstream receiving water quality from increased pollutant loadings and flows (hydromodification concepts) from new development and significant redevelopment;

- Control the post-development peak stormwater runoff discharge rates and velocities to maintain or reduce pre-development downstream erosion and to protect downstream habitat; and
- Consider integration of Low Impact Development (LID) principles into project design.

The Post-Development Standards Technical Manual describes the stormwater management requirements for Priority Projects, which are identified as meeting one or more of the following and discharge to the San Joaquin River or do not have basin service:

- Home subdivisions of 10 housing units or more;
- Commercial developments greater than 100,000 square feet;
- Automotive repair shops;
- Restaurants;
- Parking lots 5,000 square feet or greater with 25 or more parking spaces and potentially exposed to urban runoff;
- Streets and roads;
- Retail gasoline outlets (RGOs); and
- Significant redevelopment projects, which are developments that result in creation or addition of at least 5,000 square feet of impervious surface on an already developed site. Significant redevelopment includes, but is not limited to, expansion of a building footprint or addition or replacement of a structure, structural developing including an increase in gross floor area and/or exterior construction or remodeling, replacement of impervious surface that is not part of a routine maintenance activity, and land disturbing activities related with structural or impervious surfaces. Where significant redevelopment results in an increase of less than 50 percent of the impervious surfaces of a previously existing development and the existing development was not subject to Post-Construction Standards, only the proposed alteration must meet the requirements of the Post-Development Standards Technical Manual.

All Priority Projects must mitigate the Stormwater Quality Design Volume (SWQDV) or Stormwater Quality Design Flow (SWQDF) through LID- or treatment-based stormwater quality BMPs or a combination thereof.

For new development or significant redevelopment projects for restaurants with less than 5,000 square feet, the project applicant must meet all the requirements of the Post-Development Standards Technical Manual except for mitigating the SWQDV or SWQDF and implementing stormwater quality BMPs.

The Post-Development Standards Technical Manual can be found on FMFCD's website here:

http://www.fresnofloodcontrol.org/wp-content/uploads/2014/11/Post-Development-Standards-Technical-Manual.pdf

c. Potential for discharge of stormwater from areas from material storage, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas or loading docks, or other outdoor work areas.

Development projects may create potential impacts to stormwater from non-stormwater discharge from areas with material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas or loading docks, or other outdoor work area.

Some materials, such as those containing heavy metals or toxic compounds, are of more concern than other materials. Toxic and hazardous materials must be prevented from coming in contact with stormwater runoff. Non-toxic or non-hazardous materials, such as debris and sediment, can also have significant impacts on receiving waters. Contact between non-toxic or non-hazardous materials and stormwater runoff should be limited, and such materials prevented from being discharged with stormwater runoff. To help mitigate these potential impacts, BMPs should be included to prevent discharges from leaving the property.

Refer to FMFCD Post-Development Standards Technical Manual for more information or go to http://water.epa.gov/polwaste/nps/urban.cfm.

d. Potential for discharge of stormwater to impact the beneficial uses of the receiving waters or areas that provide water quality benefits.

Identify receiving waters and describe activities that may impact the beneficial uses of the receiving waters or that project water quality benefits. Project that can impact beneficial uses or receiving waters may be mitigated by implementation of the FMFCD Post-Development Standards Technical Manual.

e. Potential for the discharge of stormwater to cause significant harm on the biological integrity of the water ways and water bodies.

Conservation of natural areas, soils, and vegetation helps to retain numerous functions of pre-development hydrology, including rainfall interception, infiltration, and evapotranspiration. Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Sensitive areas, such as streams and their buffers, floodplains, wetlands, steep slopes, and highly-permeable soils, should be protected and/or restored. Slopes can be a major source of sediment and should be properly protected and stabilized. Locating development in less sensitive areas of a project site and conserving naturally vegetated areas can minimize environmental impacts from stormwater runoff.

The evaluation of a project's effect on sensitive natural communities should encompass aquatic and wetland habitats. Consider "aquatic and wetland habitat" as examples of sensitive habitat.

f. Potential for significant changes in the flow velocity or volume of stormwater runoff that can cause environmental harm.

The evaluation of a project's effect on drainage patterns should refer to the FMFCD's Storm Drainage and Flood Control Master Plan and have their project reviewed by FMFCD to assess the significance of altering existing drainage patterns and to develop any mitigation measures in addition to our stormwater mitigation system. The evaluation should also consider any potential for streambed or bank erosion downstream from the project.

g. Potential for significant increases in erosion of the project site or surrounding areas.

The evaluation of a project's effect on drainage patterns should refer to the FMFCD's Storm Drainage and Flood Control Master Plan and have their project reviewed by FMFCD to assess the significance of altering existing drainage patterns and to develop any mitigation measures in addition to our stormwater mitigation system. The evaluation should also consider any potential for streambed or bank erosion downstream from the project.

urban uses. This area is anticipated to have a programmatic-level analysis in the EIR. Future development of this area is at the discretion of the property owners and subject to project level analysis.

- **Non-Development Area** – Includes approximately 445 acres that have not requested nor will receive any entitlements other than to be included in the SOI expansion. The Non-Development Area is anticipated to have a programmatic-level analysis in the EIR.

PROJECT SETTING

EXISTING SITE CONDITIONS

The Project site is approximately 952 acres and includes 139 Assessor parcels. Figure 3 depicts the parcels within the Project site and the proposed new SOI boundary, with specific APNs identified for the Master Plan area. In addition, APNs 557-031-30, 32S, 34, 36, 38, 40, 43S, & 45 are located along the north side of Shepherd Avenue and are owned by the City of Clovis for future roadway rights-of-way.

SITE TOPOGRAPHY

Topographically, the site is characterized as flat to gently sloping southerly and westerly with elevations varying from approximately 385 to 400 feet above mean sea level. There is a knoll at the northeast corner of the Project Area that varies in elevation from 395 to 440 feet above mean sea level.

EXISTING SITE USES

Presently, the Project site consists of a combination of fallow and grazing land, several rural residences, offices and yard for Landscape Contractors and small tree nursery.

The proposed Master Plan portion of the Project site ~~is bifurcated by the Big Dry Creek Spillway.~~

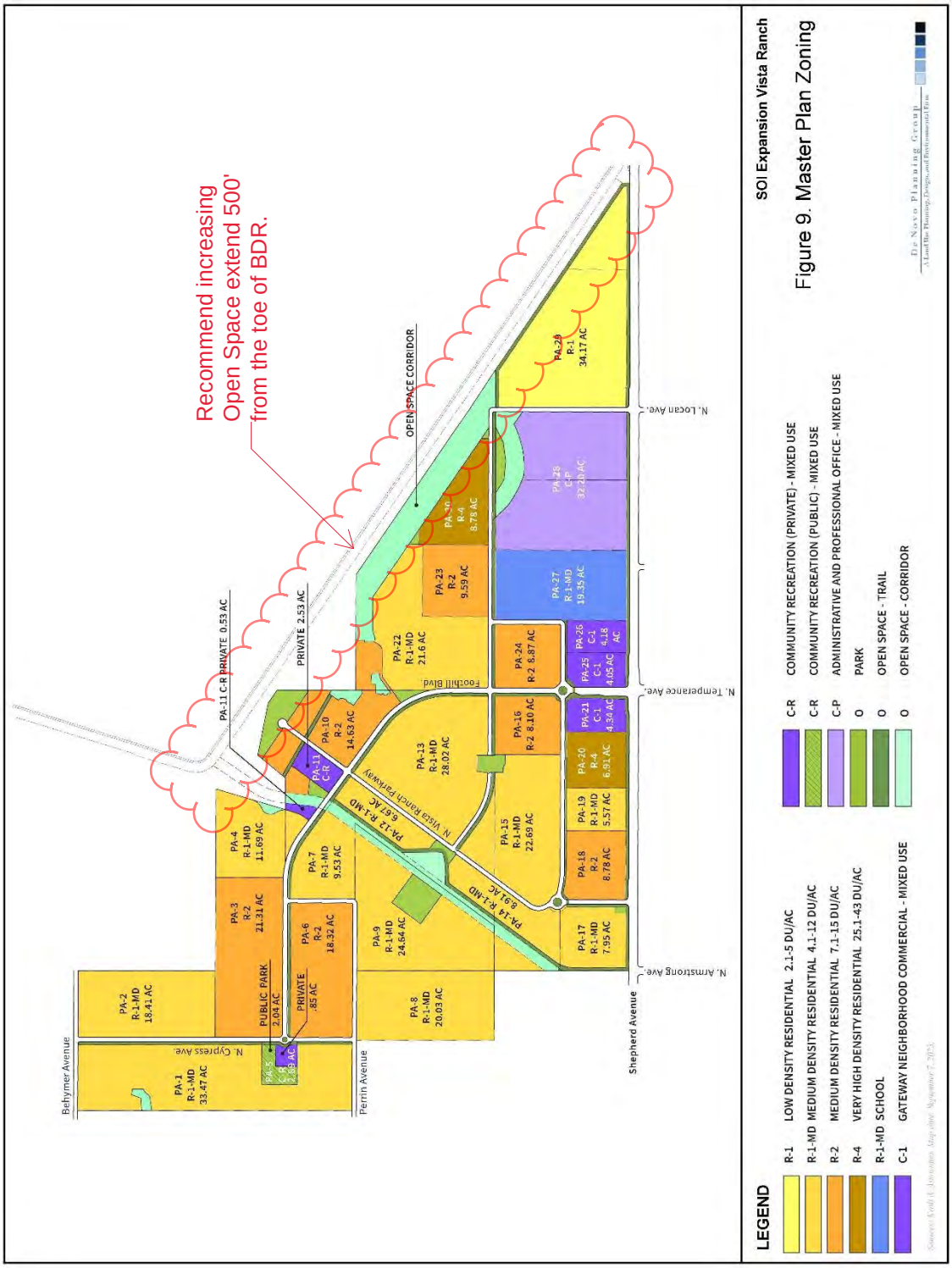
East Shepherd Avenue, along the southern boundary, is identified as an Expressway in the Clovis General Plan Circulation Plan and is partially improved to an urban level adjacent to the Project site. East Perrin Avenue and East Behymer Avenue are County roads ar within the Project area, both streets provide access to North East Behymer Avenue also extends to North Sunnyside Ave

Spillway is near Copper Avenue. Revise to read: by Big Dry Creek, a natural stream course, and the Big Dry Creek Reservoir Outlet Works Channel.

The Non-Development Area contains existing rural residential residences and agricultural fields. The Non-Development Area is located within the City of Clovis' Planning Area but is outside of the City's existing Sphere of Influence. Figure 4 shows aerial imagery of the existing site uses within the Project site.

EXISTING SURROUNDING USES

The Project site is surrounded by single-family residential, rural residential, a few agricultural orchards, grazing land and open space land uses. Uses immediately east of the Project site consist of the Big Dry Creek Reservoir, an existing earthen Dam owned and operated by the Fresno Metropolitan Flood Control District. Uses immediately south of the Project site are primarily single family residential. Uses


Recommend increasing Open Space extend 500' from the toe of BDR.
SOI Expansion Vista Ranch
Figure 9. Master Plan Zoning
LEGEND
R-1 LOW DENSITY RESIDENTIAL 2.1-5 DU/AC
R-1-MD MEDIUM DENSITY RESIDENTIAL 4.1-12 DU/AC
R-2 MEDIUM DENSITY RESIDENTIAL 7.1-15 DU/AC
R-4 VERY HIGH DENSITY RESIDENTIAL 25.1-43 DU/AC
R-1-MD SCHOOL
C-1 GATEWAY NEIGHBORHOOD COMMERCIAL - MIXED USE
C-R COMMUNITY RECREATION (PRIVATE) - MIXED USE
C-R COMMUNITY RECREATION (PUBLIC) - MIXED USE
C-P ADMINISTRATIVE AND PROFESSIONAL OFFICE - MIXED USE
O PARK
O OPEN SPACE - TRAIL
O OPEN SPACE - CORRIDOR
OPEN SPACE CORRIDOR
PA-11 C-R PRIVATE 0.53 AC
PRIVATE 2.53 AC
PA-1 R-1-MD 33.47 AC
PA-2 R-1-MD 18.41 AC
PA-3 R-2 21.31 AC
PA-4 R-1-MD 11.69 AC
PA-5 C-R 2.89 AC
PUBLIC PARK 2.04 AC
PRIVATE .85 AC
PA-6 R-2 18.32 AC
PA-7 R-1-MD 9.53 AC
PA-8 R-1-MD 20.03 AC
PA-9 R-1-MD 24.64 AC
PA-10 R-2 14.63 AC
PA-11 C-R
PA-12 R-1-MD 5.67 AC
PA-13 R-1-MD 28.02 AC
PA-14 R-1-MD 8.94 AC
PA-15 R-1-MD 22.69 AC
PA-16 R-2 8.10 AC
PA-17 R-1-MD 7.95 AC
PA-18 R-2 8.78 AC
PA-19 R-1-MD 5.57 AC
PA-20 R-4 6.91 AC
PA-21 C-1 4.34 AC
PA-22 R-1-MD 21.6 AC
PA-23 R-2 9.59 AC
PA-24 R-2 8.87 AC
PA-25 C-1 4.05 AC
PA-26 C-1 4.18 AC
PA-27 R-1-MD 19.35 AC
PA-28 R-1 34.17 AC
PA-29 R-4 8.78 AC
PA-30 C-P 32.26 AC
Behymer Avenue
Perrin Avenue
Shepherd Avenue
N. Cypress Ave.
N. Armstrong Ave.
N. Temperance Ave.
N. Locan Ave.
N. Vista Ranch Parkway
Foothill Blvd.
De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm

Fresno Metropolitan Flood Control District
Capturing Stormwater since 1956

File 170.141
310. "BX", "BY_1"
550.30 "BX", "BY_1"

November 17, 2023

Ms. McKencie Perez, MPA, Senior Planner
City of Clovis, Planning Division
1033 Fifth Street
Clovis, CA 93612

Dear Ms. Perez,

Fresno Metropolitan Flood Control District Comments for
Notice of Preparation of an Environmental Impact Report for
Vista Ranch Project
Drainage Areas "BX" and "BY_1"

General Comments

This letter is in response to the City's request for comments regarding the Notice of Preparation of an Environmental Impact Report for the Vista Ranch Project planning area boundary "Project Area". The Fresno Metropolitan Flood Control District (District) bears responsibility for storm water management within the Fresno-Clovis metropolitan area, including the area of the "Project Area". Within the metropolitan area, storm runoff produced by land development is to be controlled through a system of pipelines and storm drainage retention basins. The community has developed and adopted a Storm Drainage and Flood Control Master Plan. Each property contributes its pro-rata share to the cost of the public drainage system. All properties are required to participate in the community system for everyone. It is this form of participation in the cost and/or construction of the drainage system that will mitigate the impact of development.

The subject "Project Area" shall pay drainage fees pursuant to the Drainage Fee Ordinance prior to approval of any final maps and/or issuance of building permits at the rates in effect at the time of such approval. Instances when the proposed density is reduced and the Master Plan facilities have been constructed, the proposed development will be subject to the rate anticipated to be collected commensurate to the higher density. Should land use densities of existing areas be increased, the property would be subject to a reassessment of drainage fees based on the proposed increased land uses and may include the requirement of additional drainage fees to be paid to offset the increased land use. Each proposed development will be reviewed and assessed upon submittal to the District. Please contact the District for a final fee obligation prior to issuance of any construction permits. Any drainage fees previously paid on a property would be given a credit against any new fee responsibility.

5469 E. Olive Avenue • Fresno, CA 93727 • (559) 456-3292 • FAX (559) 456-3194
www.fresnofloodcontrol.org

Lot coverage must be provided to the District prior to submittal of improvement plans. The final drainage fee will be calculated commensurate with the lot coverage provided by the developer. If the lot coverage indicates a density higher than Master Planned, mitigation may be required. The lot coverage calculated by the District includes the front yard walkway, sidewalk walkway and the rear yard patio equaling an additional 6% of impervious area in addition to the City's typical lot coverage calculation.

The grading of any proposed development within the "Project Area", including public street areas, shall be consistent with the District Master Plan. Additionally, grading shall not have an adverse impact to major storm conveyance, and to the passage of storm water to the adjacent roadways and existing storm drainage pipelines and inlets. The "Project Area" shall provide the appropriate surface flowage easements or covenants for any portion of the development area that cannot convey storm water to the public right-of-way without crossing private property.

If there are to be storm water discharges from private facilities to the District's storm drainage system, they shall consist only of storm water runoff and shall be free of solids and debris. Landscape and/or area drains are not allowed to connect directly to the District's facilities.

The District will need to review and approve the final improvement plans for all development (i.e. grading, street improvement and storm drain facilities) within the boundaries of the "Project Area" to insure consistency with the approved Storm Drainage Master Plan.

The Master Plan system has been designed such that during a two-year event flow will not exceed the height of the 6-inch curb. Should wedge curb (4.5 inches height) be used the same criteria shall apply whereby flow remains below the top of curb. Any extensions or pipe size increases due to meeting the requirement listed above shall be at the developer's expense.

A minimum fifteen-foot (15') wide storm drain easement will be required whenever storm drain facilities are located on private property. No encroachments into the easement will be permitted including, but not limited to, foundations, roof overhangs, swimming pools, and trees.

The District may require the developer to construct certain storm drain facilities as described in the Storm Drain Master Plan. The cost of construction of Master Plan facilities excluding dedication of storm drainage easements is eligible for credit against the drainage fee of the drainage area served by the facilities. A development agreement shall be executed with the District to affect such credit. Reimbursement provisions, in accordance with the Drainage Fee Ordinance, will be included to the extent that developer's Master Plan costs for an individual drainage area exceed the fee of said area. Should the facilities cost for such individual area total less than the fee of said area, the difference shall be paid upon demand to the City or the District.

In an effort to improve storm runoff quality, outdoor storage areas shall be constructed and maintained such that material that may generate contaminants will be prevented from contact with rainfall and runoff and thereby prevent the conveyance of contaminants in runoff into the storm drain system.

The District encourages, but does not require that roof drains from non-residential development be constructed such that they are directed onto and through a landscaped grassy swale area to filter out pollutants from roof runoff.

Runoff from areas where industrial activities, product, or merchandise come into contact with and may contaminate storm water must be directed through landscaped areas or otherwise treated before discharging it off-site or into a storm drain. Roofs covering such areas are recommended. Cleaning of such areas by sweeping instead of washing is to be required unless such wash water can be directed to the sanitary sewer system. Storm drains receiving untreated runoff from such areas that directly connect to the District's system will not be permitted. Loading docks, depressed areas, and areas servicing or fueling vehicles are specifically subject to these requirements. The District's policy governing said industrial site NPDES program requirements are available. Contract the District's Environmental Department for further information regarding these policies related to industrial site requirements.

Specific Comments to the Vista Ranch Project

The "Project Area" is currently located within the District's adopted Rural Master Plan Drainage Area "BY_1" and Urban Master Plan Drainage Area "BX", as shown on Exhibit No. 1.

The adopted "BY_1" Rural Master Plan drainage system is designed to serve the existing land uses of open space, range/pasture and rural residential housing densities ranging from 0 to 0.7 dwelling unit/acre (du/ac). The existing rural planned drainage facilities do not have capacity to serve the proposed higher Mixed Use Village (MU-V) land use. All impacts to storm water runoff created by increasing densities within Drainage Area "BY_1" that effect the capacity of the existing Rural Master Plan drainage system must be fully mitigated. Either storm drainage pipeline facilities will be needed to provide conveyance to the District's basin or construct some type of on-site permanent peak reducing facility to match the adopted Rural Master Plan flow rates and eliminate any adverse impacts on the downstream drainage system. It is the District's intention to work with the developer to provide an acceptable drainage system to serve the proposed increased density. Implementation of the mitigation measures may be deferred until the time of development.

The District has reviewed the land use changes proposed and located within the adopted "BX" Urban Master Plan with regards to possible impacts on the planned and/or existing public drainage system. It has been determined that the proposed land use is slightly increasing from what was originally planned. Drainage Area "BX" has existing drainage facilities located downstream and some type of mitigation to accommodate the increased flow such as parallel pipes and/or on-site retention may be required.

The District requests that the grading Engineer contact the District as early as possible to review the proposed site grading for verification and acceptance of a mitigation design prior to preparing a grading plan for the "Development Area" (MPArea 1 and MPArea 2).

The "Development Area" within the "Project Area" shall not block the historical drainage patterns of existing properties located north, west, and east of the "Development Area". More specifically, the District's drive entrance to the Big Dry Creek Reservoir located at the southeast corner of the "Project Area" along shepherd Avenue must remain in place and shall not be relocated by the project without District's approval. The "Development Area" shall verify to the satisfaction of the District that runoff from these areas has the ability to surface drain to adjacent streets.

The "Development Area" must identify what streets will pass the major storm and provide calculations that show structures will have adequate flood protection. Based on historical drainage patterns some of the streets located within the "Development Area" may need to be resized or reconfigured (including but not limited to streets that include traffic calming curbs) to pass larger event storms. District approval is not extended to street configuration. A drainage report indicating the path of the major storm flow and calculations confirming there is adequate protection of finished floors will be necessary.

Big Dry Reservoir and Dam are located northeast of the proposed development. The function of the earthen dam includes a seepage component at the downstream face and it is unsuitable to designate development in this area. Several years ago, the District constructed a deeper toe drain to reduce downstream seepage from the dam. However, due to the extended drought and subsequent lack of impoundment of flood waters behind the dam, the District has not recorded sufficient data to analyze the effectiveness of the deeper toe drain. Therefore, the District recommends that a minimum 500-foot wide area adjacent to the dam face be kept clear of development and designated as open space. If development occurs within the 500-foot buffer zone before the impact of the deeper toe drain is known, then said development shall be at the risk of the Developer. The buffer between the dam and the development is shown on Exhibit No. 1.

Big Dry Creek and Behymer Tributaries MID-1 and MID-4 are natural stream courses traversing the "Development Area". Behymer Tributaries MID-2 and MID-3 are natural stream courses outside of the "Development Area", but within the "Project Area". These stream courses are shown on the Storm Drainage and Flood Control Master Plan (see Exhibit No. 1). Should a developer choose to modify or relocate these channels, the developer must contact all agencies having an interest in these channels and comply with their regulations. These agencies may include State of California Fish and Wildlife, State of California Regional Water Quality Control Board (Section 401 of the Clean Water Act), and the U.S. Army Corps of Engineers (USACE) (Section 404 of the Clean Water Act). Furthermore, if a USACE Clean Water Act Section 404 permit application package is prepared, the District requests an opportunity to review the application prior to submittal.

These channels must be protected and preserved in their current location or an accepted relocation plan must be provided. The protection and preservation of these channels is necessary to convey upland surface runoff through the proposed "Development Area" without adversely affecting other property owners and also to provide safe conveyance through the "Development Area". The plans to retain or relocate a channel must be addressed in a drainage report prepared by the developer's engineer and submitted to the District for the project and include a study of any affect to the hydraulic performance of the channel.

If a developer proposes to relocate channels within the project area, he must identify a plan that is acceptable to the District and perhaps state and federal agencies identified above. Wherever the developer proposes these channels, adequate easement width shall be dedicated to the District prior to approval of the Final Map. The easement shall be of sufficient width to accommodate the Master Plan flow rates and also provide adequate maintenance access. Development within easements is prohibited. Fences will not be permitted across the channel, unless approved by the District.

While the District accepts the channel easements for Behymer Tributaries MID-1, MID-3, and MID-4 to assure their protection, the maintenance of the channels will remain with the property owner. The easement dedication document will require reimbursement of costs should the District need to intervene in order to perform maintenance and/or otherwise preserve the channel. The District would prefer that the "Development Area" establish a homeowner's association to maintain the channels, but if that is not feasible, each parcel owner along the channels will be burdened with the maintenance of the channel within their property and fences will not be permitted across the channel.

Some thought needs to be put into both private and public channel crossings. Preferably, channel crossings will be kept to a minimum and each crossing will require an encroachment agreement identifying the applicant as responsible for the long-term maintenance and potential removal of the encroachment.

As channel designs and construction will affect lot patterns and configurations, the District will review the work of the developer's engineer to determine easement limits at the time of dedication. The Channel designs must be completed prior to tentative map approval to ensure the easement areas are known and adequate space is allotted for the channels. It is in the developer's interest to identify the channel designs as early as possible so that appropriate lot configurations are selected. The hydraulic study must reflect culverts where roads and driveways cross the channels. Easement areas must be adequate to convey the design flows.

Should the developer choose to improve the channels, the developer shall comply with the following requirements. The standard geometry for Big Dry Creek is a minimum 20-foot wide bottom and maximum 4:1 side slopes. Big Dry Creek must be designed and constructed to accommodate the flow rate of 150 cfs as identified in the Master Plan. The standard geometry for all Behymer Tributaries is a 6-foot wide bottom and 4:1 side slopes. These channels must be designed and constructed to accommodate the flow rate of 9 cfs for MID-1 prior to the confluence with MID-4, 16 cfs for MID-1 after the confluence with MID-4, 31 cfs for MID-1 downstream of Fowler Ave., 40 cfs for MID-1 downstream of Stanford Ave., and 1 cfs for MID-3. The channel design must include hydraulic modeling using the HEC-RAS computer program. Channel design and hydraulic study must also consider the attenuation currently provided by the developer's property and not reduce the attenuation or otherwise increase conveyance to downstream properties.

The District will accept the easement dedications for the channels following completion of construction, including any mitigation obligations, and acceptance under required permits. Any proposed landscaping within the channel easements shall require (i) review and approval by the District, and (ii) maintenance by the property owner.

Big Dry Creek is a natural stream with a man-made component known as the Big Dry Creek Reservoir Outlet Works Channel ("BDR Outlet Channel"). The BDR Outlet Channel is within the "Development Area" and shown on Exhibit No. 2. This man-made channel conveys controlled stormwater releases from Big Dry Creek Reservoir until it converges with the native stream course of Big Dry Creek near the southwest corner of the proposed development. The BDR Outlet Channel must be protected in its current location and alteration and/or relocation is prohibited. Maintenance of this channel is reserved for the District and the developer must provide adequate access for maintenance vehicles.

A portion of the proposed development is in a Federal Emergency Management Agency (FEMA) Zone "A" and "AH" flood zone areas requiring additional processing and consideration. The developer shall contact FEMA to obtain their requirements.

The City of Fresno, the District, the County of Fresno, the City of Clovis, and the California State University, Fresno are currently covered as Co-Permittees for Municipal Separate Storm Sewer System (MS4) discharges through National Pollutant Discharge Elimination System (NPDES) General Order No. R5-2016-0040 and NPDES Permit No. CAS0085324 (Storm Water Permit) effective May 17, 2018. The previous Storm Water Permit adopted on May 31, 2013 required the adoption of Stormwater Quality Management Program (SWQMP) that describes the Storm Water Permit implementation actions and Co-Permittee responsibilities. That SWQMP was approved by the Central Valley Regional Water Quality Control Board on April 17, 2015 and is effective until adoption of a new SWQMP, which is anticipated within the next two years.

It is the District's understanding that the City will adopt a Program EIR for the proposed Vista Ranch Project and that the Program EIR may be used when considering approval of future discretionary actions. The Storm Water Permit requires that Co-Permittees update their CEQA process to incorporate procedures for considering potential stormwater quality impacts when preparing and reviewing CEQA documents. This requirement is found on Provision D.14 of the 2013 Storm Water Permit and in Section 7: Planning and Land Development Program – PLD 3 – Update CEQA Process. The District has created a guidance document that will meet this Storm Water Permit requirement entitled *Guidance for Addressing Stormwater Quality for CEQA Review*, which has been attached. In an effort to streamline future CEQA processing and maintain compliance with the Storm Water Permit, the District recommends that all future CEQA review within the City of Clovis utilize the attached guidance document Exhibit "A".

The District offers the following comments specific to the review of the Vista Ranch Project NOP (the individual pages are included, and the section or sentence has been highlighted for your reference):

1. Page 2, Existing Site Uses Paragraph 2: Spillway is near Copper Avenue. Consider revising "…is bifurcated by the Big Dry Creek Spillway" to "by Dry Creek, a natural stream course, and the Big Dry Creek Reservoir Outlet Works Channel".
2. Page 23, Figure 9: Recommend extending the Open Space-Corridor 500-feet from the toe of the Big Dry Creek Reservoir along the "Development Area" to Shepherd Avenue.

Thank you for the opportunity to comment. Please keep our office informed on the development of these plans. If you should have any questions or comments, please contact the District at (559) 456-3292.

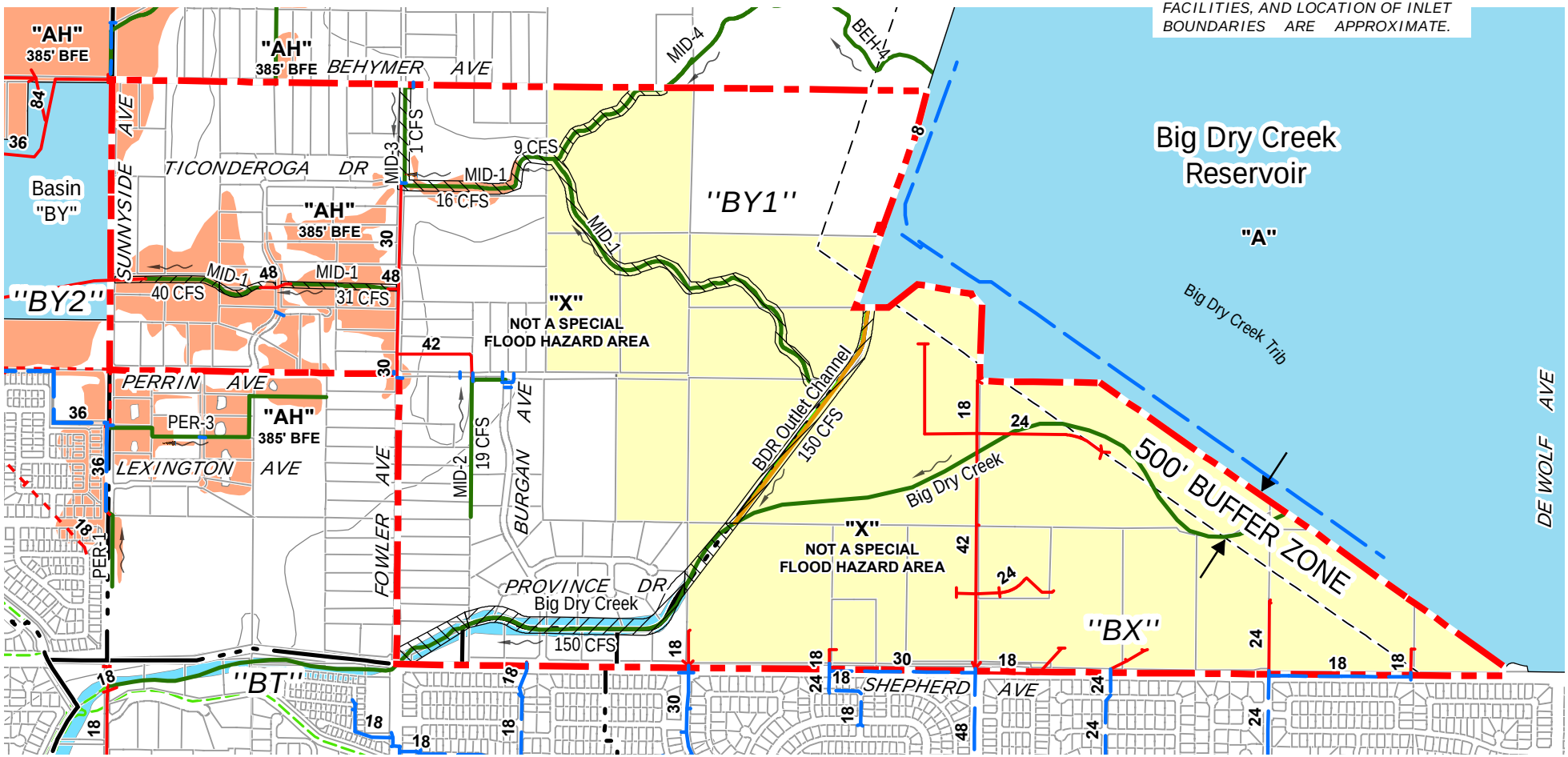
Sincerely,

Denise Wade
Master Plan Special Projects Manager

DW/lrl

Attachments

NOTE: THIS MAP IS SCHEMATIC. DISTANCES, AMOUNT OF CREDITABLE FACILITIES, AND LOCATION OF INLET BOUNDARIES ARE APPROXIMATE.



LEGEND

- Existing Master Plan Facilities
- Future Master Plan Facilities
- Drainage Area Boundary
- Existing Major Stream Course (Master Plan Channel)
- Existing Major Stream Course (Master Plan Channel)
- Existing FID Facilities
- FEMA Flood Zone "A"
- FEMA Flood Zone "AH"
- Project Area Boundary
- Existing Rural Stream Easement
- Proposed Rural Stream Easement
- Development Area

1 " = 1400 '

VISTA RANCH PROJECT

DRAINAGE AREA "BC", "BX", & "BY1"

EXHIBIT NO. 1

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT

Prepared by: coreym
Date: 11/16/2023
Path: K:\Autocad\DWGS\0EXHIBIT\MISC\Vista Ranch Project.mxd

EXHIBIT "A"

Fresno Metropolitan Flood Control District

Guidance for Addressing Stormwater Quality for CEQA Review

Stormwater Checklist for CEQA Review

a. Potential impact of project construction on stormwater runoff.

Stormwater runoff from construction activities can have a significant impact on water quality. To build on sites with over one acre of disturbed land, property owners must obtain coverage under the California Construction General Permit for Discharges of Stormwater (CGP). The CGP is issued by the State Water Resources Control Board (SWRCB). The CGP requires sites that do not qualify for an erosivity waiver to create a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP is a site-specific plan that is designed to control the discharge of pollutants from the construction site to local storm drains and waterways.

b. Potential impact of project post-construction activity on stormwater runoff.

FMFCD operates the Regional Stormwater Mitigation System, which consists of facilities to handle stormwater runoff and non-stormwater discharges in the FMFCD service area. However, river discharging drainage areas and drainage areas without basin service are subject to FMFCD Policy: Providing for Compliance with Post-Development and Industrial Storm Water Pollution Control Requirements (Policy).

Development and redevelopment projects can result in discharge of pollutants to receiving waters. Pollutants of concern for a project site depend on the following factors:

- Project location;
- Land use and activities that have occurred on the project site in the past;
- Land use and activities that are likely to occur in the future; and
- Receiving water impairments.

As land use activities and site design practices evolve, particularly with increased incorporation of stormwater quality BMPs, characteristic stormwater runoff concentrations and pollutants of concern from various land use types are also likely to change.

Typical Pollutants of Concern and Sources for Post-Development Areas

Pollutant	Potential Sources
Sediment (total suspended solids and turbidity), trash and debris (gross solids and floatables)	Streets, landscaped areas, driveways, roads, construction activities, atmospheric deposition, soil erosion (channels and slopes)

Pesticides and herbicides	Residential lawns and gardens, roadsides, utility right-of-ways, commercial and industrial landscaped areas, soil wash-off
Organic materials/oxygen demanding substances	Residential laws and gardens, commercial landscaping, animal waste
Metals	Automobiles, bridges, atmospheric deposition, industrial areas, soil erosion, metal surfaces, combustion processes
Oil and grease, organics associated with petroleum	Roads, driveways, parking lots, vehicle maintenance areas, gas stations, illicit dumping to storm drains, automobile emissions, and fats, oils, and grease from restaurants
Bacteria and viruses	Lawns, roads, leaking sanitary sewer lines, sanitary sewer cross-connections, animal waste (domestic and wild), septic systems, homeless encampments, sediments/biofilms in storm drain system
Nutrients	Landscape fertilizers, atmospheric deposition, automobile exhaust, soil erosion, animal waste, detergents

Source: Adapted from USEPA, 1999 (Preliminary Data Summary of Urban Storm Water BMPs)

FMFCD's Post-Development Standards Technical Manual provides guidance for implementing stormwater quality Best Management Practices (BMPs) for drainage areas subject to the Policy, with the intention of improving water quality and mitigating potential water quality impacts from stormwater and non-stormwater discharges. The Post-Development Standards Technical Manual addresses the following objectives and goals:

- Minimize impervious surfaces and directly connect impervious surfaces in areas of new development and redevelopment, and where feasible, to maximize on-site infiltration of stormwater runoff;
- Implement pollution prevention methods supplemented by pollutant source controls and treatment, and where practical, use strategies that control the sources of pollutants or constituents (i.e., where water initially meets the ground) to minimize the transport of runoff and pollutants offsite and into MS4s;
- Preserve, and where possible create or restore, areas that provide important water quality benefits, such as riparian corridors, wetlands, or buffer zones
- Limit disturbances of natural water bodies and natural drainage systems by development, including roads, highways, and bridges;
- Identify and avoid development in areas that are particularly susceptible to erosion and sediment loss or establish guidance that protects areas from erosion and sediment loss;
- Implement source and structural controls as necessary and appropriate to protect downstream receiving water quality from increased pollutant loadings and flows (hydromodification concepts) from new development and significant redevelopment;

- Control the post-development peak stormwater runoff discharge rates and velocities to maintain or reduce pre-development downstream erosion and to protect downstream habitat; and
- Consider integration of Low Impact Development (LID) principles into project design.

The Post-Development Standards Technical Manual describes the stormwater management requirements for Priority Projects, which are identified as meeting one or more of the following and discharge to the San Joaquin River or do not have basin service:

- Home subdivisions of 10 housing units or more;
- Commercial developments greater than 100,000 square feet;
- Automotive repair shops;
- Restaurants;
- Parking lots 5,000 square feet or greater with 25 or more parking spaces and potentially exposed to urban runoff;
- Streets and roads;
- Retail gasoline outlets (RGOs); and
- Significant redevelopment projects, which are developments that result in creation or addition of at least 5,000 square feet of impervious surface on an already developed site. Significant redevelopment includes, but is not limited to, expansion of a building footprint or addition or replacement of a structure, structural developing including an increase in gross floor area and/or exterior construction or remodeling, replacement of impervious surface that is not part of a routine maintenance activity, and land disturbing activities related with structural or impervious surfaces. Where significant redevelopment results in an increase of less than 50 percent of the impervious surfaces of a previously existing development and the existing development was not subject to Post-Construction Standards, only the proposed alteration must meet the requirements of the Post-Development Standards Technical Manual.

All Priority Projects must mitigate the Stormwater Quality Design Volume (SWQDV) or Stormwater Quality Design Flow (SWQDF) through LID- or treatment-based stormwater quality BMPs or a combination thereof.

For new development or significant redevelopment projects for restaurants with less than 5,000 square feet, the project applicant must meet all the requirements of the Post-Development Standards Technical Manual except for mitigating the SWQDV or SWQDF and implementing stormwater quality BMPs.

The Post-Development Standards Technical Manual can be found on FMFCD's website here:

http://www.fresnofloodcontrol.org/wp-content/uploads/2014/11/Post-Development-Standards-Technical-Manual.pdf

c. Potential for discharge of stormwater from areas from material storage, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas or loading docks, or other outdoor work areas.

Development projects may create potential impacts to stormwater from non-stormwater discharge from areas with material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas or loading docks, or other outdoor work area.

Some materials, such as those containing heavy metals or toxic compounds, are of more concern than other materials. Toxic and hazardous materials must be prevented from coming in contact with stormwater runoff. Non-toxic or non-hazardous materials, such as debris and sediment, can also have significant impacts on receiving waters. Contact between non-toxic or non-hazardous materials and stormwater runoff should be limited, and such materials prevented from being discharged with stormwater runoff. To help mitigate these potential impacts, BMPs should be included to prevent discharges from leaving the property.

Refer to FMFCD Post-Development Standards Technical Manual for more information or go to http://water.epa.gov/polwaste/nps/urban.cfm.

d. Potential for discharge of stormwater to impact the beneficial uses of the receiving waters or areas that provide water quality benefits.

Identify receiving waters and describe activities that may impact the beneficial uses of the receiving waters or that project water quality benefits. Project that can impact beneficial uses or receiving waters may be mitigated by implementation of the FMFCD Post-Development Standards Technical Manual.

e. Potential for the discharge of stormwater to cause significant harm on the biological integrity of the water ways and water bodies.

Conservation of natural areas, soils, and vegetation helps to retain numerous functions of pre-development hydrology, including rainfall interception, infiltration, and evapotranspiration. Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Sensitive areas, such as streams and their buffers, floodplains, wetlands, steep slopes, and highly-permeable soils, should be protected and/or restored. Slopes can be a major source of sediment and should be properly protected and stabilized. Locating development in less sensitive areas of a project site and conserving naturally vegetated areas can minimize environmental impacts from stormwater runoff.

The evaluation of a project's effect on sensitive natural communities should encompass aquatic and wetland habitats. Consider "aquatic and wetland habitat" as examples of sensitive habitat.

f. Potential for significant changes in the flow velocity or volume of stormwater runoff that can cause environmental harm.

The evaluation of a project's effect on drainage patterns should refer to the FMFCD's Storm Drainage and Flood Control Master Plan and have their project reviewed by FMFCD to assess the significance of altering existing drainage patterns and to develop any mitigation measures in addition to our stormwater mitigation system. The evaluation should also consider any potential for streambed or bank erosion downstream from the project.

g. Potential for significant increases in erosion of the project site or surrounding areas.

The evaluation of a project's effect on drainage patterns should refer to the FMFCD's Storm Drainage and Flood Control Master Plan and have their project reviewed by FMFCD to assess the significance of altering existing drainage patterns and to develop any mitigation measures in addition to our stormwater mitigation system. The evaluation should also consider any potential for streambed or bank erosion downstream from the project.

urban uses. This area is anticipated to have a programmatic-level analysis in the EIR. Future development of this area is at the discretion of the property owners and subject to project level analysis.

- **Non-Development Area** – Includes approximately 445 acres that have not requested nor will receive any entitlements other than to be included in the SOI expansion. The Non-Development Area is anticipated to have a programmatic-level analysis in the EIR.

PROJECT SETTING

EXISTING SITE CONDITIONS

The Project site is approximately 952 acres and includes 139 Assessor parcels. Figure 3 depicts the parcels within the Project site and the proposed new SOI boundary, with specific APNs identified for the Master Plan area. In addition, APNs 557-031-30, 32S, 34, 36, 38, 40, 43S, & 45 are located along the north side of Shepherd Avenue and are owned by the City of Clovis for future roadway rights-of-way.

SITE TOPOGRAPHY

Topographically, the site is characterized as flat to gently sloping southerly and westerly with elevations varying from approximately 385 to 400 feet above mean sea level. There is a knoll at the northeast corner of the Project Area that varies in elevation from 395 to 440 feet above mean sea level.

EXISTING SITE USES

Presently, the Project site consists of a combination of fallow and grazing land, several rural residences, offices and yard for Landscape Contractors and small tree nursery.

The proposed Master Plan portion of the Project site ~~is bifurcated by the Big Dry Creek Spillway.~~

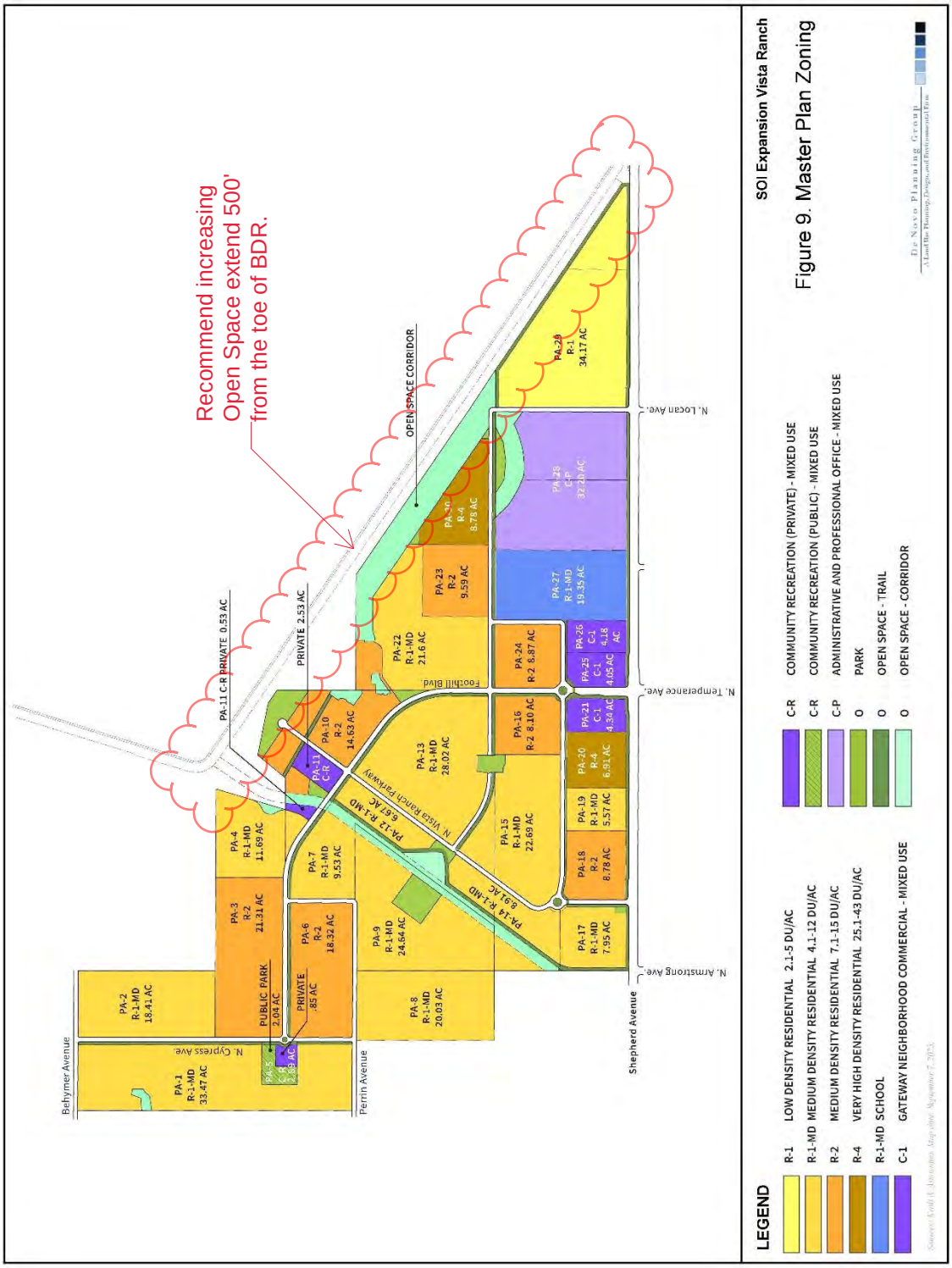
East Shepherd Avenue, along the southern boundary, is identified as an Expressway in the Clovis General Plan Circulation Plan and is partially improved to an urban level adjacent to the Project site. East Perrin Avenue and East Behymer Avenue are County roads ar within the Project area, both streets provide access to North East Behymer Avenue also extends to North Sunnyside Ave

Spillway is near Copper Avenue. Revise to read: by Big Dry Creek, a natural stream course, and the Big Dry Creek Reservoir Outlet Works Channel.

The Non-Development Area contains existing rural residential residences and agricultural fields. The Non-Development Area is located within the City of Clovis' Planning Area but is outside of the City's existing Sphere of Influence. Figure 4 shows aerial imagery of the existing site uses within the Project site.

EXISTING SURROUNDING USES

The Project site is surrounded by single-family residential, rural residential, a few agricultural orchards, grazing land and open space land uses. Uses immediately east of the Project site consist of the Big Dry Creek Reservoir, an existing earthen Dam owned and operated by the Fresno Metropolitan Flood Control District. Uses immediately south of the Project site are primarily single family residential. Uses


Recommend increasing Open Space extend 500' from the toe of BDR.
SOI Expansion Vista Ranch
Figure 9. Master Plan Zoning
LEGEND
R-1 LOW DENSITY RESIDENTIAL 2.1-5 DU/AC
R-1-MD MEDIUM DENSITY RESIDENTIAL 4.1-12 DU/AC
R-2 MEDIUM DENSITY RESIDENTIAL 7.1-15 DU/AC
R-4 VERY HIGH DENSITY RESIDENTIAL 25.1-43 DU/AC
R-1-MD SCHOOL
C-1 GATEWAY NEIGHBORHOOD COMMERCIAL - MIXED USE
C-R COMMUNITY RECREATION (PRIVATE) - MIXED USE
C-R COMMUNITY RECREATION (PUBLIC) - MIXED USE
C-P ADMINISTRATIVE AND PROFESSIONAL OFFICE - MIXED USE
O PARK
O OPEN SPACE - TRAIL
O OPEN SPACE - CORRIDOR
OPEN SPACE CORRIDOR
PA-11 C-R PRIVATE 0.53 AC
PRIVATE 2.53 AC
PA-1 R-1-MD 33.47 AC
PA-2 R-1-MD 18.41 AC
PA-3 R-2 21.31 AC
PA-4 R-1-MD 11.69 AC
PA-5 C-R 2.89 AC
PUBLIC PARK 2.04 AC
PRIVATE .85 AC
PA-6 R-2 18.32 AC
PA-7 R-1-MD 9.53 AC
PA-8 R-1-MD 20.03 AC
PA-9 R-1-MD 24.64 AC
PA-10 R-2 14.63 AC
PA-11 C-R
PA-12 R-1-MD 5.67 AC
PA-13 R-1-MD 28.02 AC
PA-14 R-1-MD 8.94 AC
PA-15 R-1-MD 22.69 AC
PA-16 R-2 8.10 AC
PA-17 R-1-MD 7.95 AC
PA-18 R-2 8.78 AC
PA-19 R-1-MD 5.57 AC
PA-20 R-4 6.91 AC
PA-21 C-1 4.34 AC
PA-22 R-1-MD 21.6 AC
PA-23 R-2 9.59 AC
PA-24 R-2 8.87 AC
PA-25 C-1 4.05 AC
PA-26 C-1 4.18 AC
PA-27 R-1-MD 19.35 AC
PA-28 R-1 34.17 AC
PA-29 R-4 8.78 AC
PA-30 C-P 32.26 AC
Behymer Avenue
Perrin Avenue
Shepherd Avenue
N. Cypress Ave.
N. Armstrong Ave.
N. Temperance Ave.
N. Locan Ave.
N. Vista Ranch Parkway
Foothill Blvd.
De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm

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State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Central Region
1234 East Shaw Avenue
Fresno, California 93710
(559) 243-4005
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GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

December 4, 2023

McKencie Perez, MPA, Senior Planner
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Clovis, California 93612
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mckenciep@cityofclovis.com

Subject: **Vista Ranch Project (Project)**
Notice or Preparation (NOP)
State Clearinghouse No. 2023100508

Dear McKencie Perez:

The California Department of Fish and Wildlife (CDFW) received a Notice of Preparation (NOP) for an Environmental Impact Report (EIR) from the City of Clovis (City) Planning Division for the Vista Ranch Project (Project) pursuant to the California Environmental Quality Act (CEQA) and CEQA Guidelines.[1]

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife. Likewise, CDFW appreciates the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code. While the comment period may have ended, CDFW respectfully requests that the City still consider our comments.

CDFW ROLE

CDFW is California's **Trustee Agency** for fish and wildlife resources and holds those resources in trust by statute for all the people of the State (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a)). CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for

[1] CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

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biologically sustainable populations of those species (*Id.*, § 1802). Similarly, for purposes of CEQA, CDFW is charged by law to provide, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

CDFW is also submitting comments as a **Responsible Agency** under CEQA (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381). CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, the Project may be subject to CDFW's lake and streambed alteration regulatory authority (Fish & G. Code, § 1600 et seq.). Likewise, to the extent implementation of the Project as proposed may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), related authorization as provided by the Fish and Game Code will be required.

Nesting Birds: CDFW has jurisdiction over actions with potential to result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Fish and Game Code sections that protect birds, their eggs, and nests include 3503 (regarding unlawful take, possession or needless destruction of the nest or eggs of any bird), 3503.5 (regarding the take, possession or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful take of any migratory nongame bird).

Unlisted Species: Species of plants and animals need not be officially listed as Endangered, Rare, or Threatened (E, R, or T) on any State or Federal list to be considered E, R, or T under CEQA. If a species can be shown to meet the criteria for E, R, or T, as specified in the CEQA Guidelines section 15380, CDFW recommends it be fully considered in the environmental analysis for the Project.

PROJECT DESCRIPTION SUMMARY

Proponent: City of Clovis

Objective: The Vista Ranch Project site is approximately 952 acres, includes 139 Assessor parcels, and a City Sphere of Influence (SOI) expansion for the entire 952-acre area. Within the Project site there is the Vista Ranch Master Plan area that is approximately 507 acres that would be annexed into the City of Clovis. The Master Plan contemplates the construction of up to 3,286 residential units, approximately 48 acres of commercial/mixed uses, and approximately 57 acres of parks, trails and open space.

The Vista Ranch Master Plan is divided into two areas (MPArea 1 and MPArea 2) based on entitlement requests and the level of design available. MPArea 1 is 368 acres proposed for full entitlements to develop immediately. Entitlements within MPArea 1

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include an annexation, general plan amendments, pre-zoning, master plan community overlay district and vesting tentative map. The remaining 139 acres in the Vista Ranch Master Plan (MPArea 2) does not include full entitlements and would require further environmental review to enable future development once more detailed design work is performed. This area has been planned for a mix of urban uses. Future development of this area is at the discretion of the property owners and subject to project level analysis.

There are also 445 acres of land outside of the Vista Ranch Master Plan, but within the Project site. This area is referred to as a Non-Development Area and is part of the SOI expansion but does not propose any other entitlements that would enable development.

Location: The Project site is located directly northeast of the City limit line. The Project site is bounded on the north by East Behymer Avenue, on the east by Big Dry Creek Reservoir, on the south by East Shepherd and East Perrin Avenues, and on the west by North Fowler and North Sunnyside Avenues. The Project site is located within portions of Sections 21, 22, and 23 of Township 12 South, Range 21 East, Mount Diablo Base and Meridian (MDBM). In addition, APNs 557-031-30, 32S, 34, 36, 38, 40, 43S, & 45 are located along the north side of Shepherd Avenue and are owned by the City of Clovis for future roadway rights-of-way.

Timeframe: Undetermined.

COMMENTS AND RECOMMENDATIONS

CDFW offers the following comments and recommendations below to assist the City in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct, and indirect impacts on fish and wildlife (biological) resources. Editorial comments or other suggestions have also been included to improve the Draft EIR.

Aerial imagery of the Project boundary and its surroundings shows that the area contains annual grassland, and Dry Creek, which runs east-west and is an ephemeral waterway per Google aerial imagery, with additional smaller ephemeral channels in the area. Project limits also contain fallow fields, single-family residences, rural residences, and agricultural land. There are orchards to the west of Project limits as well (CDFW 2023). The Project location and surrounding areas appear to have a high likelihood for suitable habitat for several special status species. Based on a review of the Project description, a review of California Natural Diversity Database (CNDDB) records, and the surrounding habitat, several special status species could potentially be impacted by Project activities.

The Project site is within the geographic range of several special status animal species including but not limited to the federally threatened (FT) and State threatened (ST)

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California tiger salamander (*Ambystoma californiense* pop. 1), the ST Swainson's hawk (*Buteo swainsoni*) and tricolored blackbird (*Agelaius tricolor*); the State candidate for listing as endangered (SCE) Crotch's bumble bee (*Bombus crotchii*); the State species of special concern (SSC) and federally proposed threatened (FPT) western pond turtle (*Actinemys marmorata*); and the SSC American badger (*Taxidea taxus*), burrowing owl (*Athene cunicularia*), and western spadefoot (*Spea hammondii*).

To evaluate Project-related impacts to listed species, SSC species, and unlisted biological species, CDFW recommends that a general habitat assessment be conducted as part of the biological technical studies conducted in support of the Draft EIR. CDFW recommends that this general habitat assessment be followed with specific protocol surveys for listed species including California tiger salamander and Swainson's hawk.

California Tiger Salamander

There was no mention of the California tiger salamander (CTS) in the NOP document. This species is protected under the California Endangered Species Act (CESA) and has been observed within the Project site, and in the adjacent area as recent as 2023 (CDFW 2023). CDFW has jurisdiction over this species under CESA. CTS have been determined to be physiologically capable of dispersing up to approximately 1.5 miles from seasonally flooded wetlands (Searcy and Shaffer 2011). Aerial photographs show that suitable upland refugia and potential aquatic habitat exists within the Project area and in the Project vicinity. There is a strong likelihood that CTS would be impacted by the proposed Project given documented presence as recently as 2023, and because a large amount of ground disturbance is anticipated from activities such as discing, ripping, and/or grading. As such, CDFW recommends the following:

CDFW recommends an Incidental Take Permit (ITP) be obtained for CTS by each project proponent engaging in project development since the species has been observed on-site, and that the Project proponents engage in early consultation with CDFW regarding acquiring adequate mitigation for this species. Take authorization would occur through the issuance of an ITP, pursuant to Fish and Game Code section 2081(b). In the absence of protocol surveys, the applicant can assume presence of CTS within the Project area and immediately focus on obtaining an ITP. For information regarding ITPs, please see the following link: https://www.wildlife.ca.gov/Conservation/CESA. Included in the ITP would be measures required to avoid and/or minimize direct take of CTS in the Project area, as well as measures to fully mitigate the impact of the take.

Swainson's Hawk

There was no mention of Swainson's hawk (SWHA) in the NOP document information. The Project is within the known geographic range of Swainson's hawk, (CDFW 2023).

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SWHA are known to breed within the Central Valley of California and prefer to nest and forage in alfalfa, fallow fields, field crops, and grassland habitats with a sufficient source of small mammals (CDFG 1994). Additionally, SWHA exhibit high nest-site fidelity year after year in the San Joaquin Valley (CDFW 2016). Based on aerial imagery and the information provided in the NOP, the Project location and adjacent areas contain suitable habitat for SWHA foraging. In addition, there are trees and structures located within the vicinity of the Project site that may provide suitable nesting habitat.

CDFW recommends that a qualified wildlife biologist conduct surveys for nesting SWHA following the entire survey methodology developed by the SWHA Technical Advisory Committee (SWHA TAC 2000) as part of the biological technical studies conducted in support of the Draft EIR.

In addition to conducting SWHA surveys, CDFW recommends the Project mitigate for loss of SWHA foraging habitat as described in Recommended Mitigation Measure 7 below. CDFW also recommends the Draft EIR include the following measures:

Recommended Mitigation Measure 1: SWHA Surveys Prior to Construction

Depending on the time between the initial survey efforts conducted in support of the Draft EIR and project construction, CDFW recommends that additional surveys, following the survey methodology developed by the SWHA Technical Advisory Committee (SWHA TAC 2000), be repeated the survey season immediately prior to construction. The survey protocol includes early season surveys to assist the project proponent in implementing necessary avoidance and minimization measures, and in identifying active nest sites prior to initiating ground-disturbing activities.

Recommended Mitigation Measure 2: SWHA Avoidance Buffer

If Project-specific activities will take place during the SWHA nesting season (i.e., March 1 through September 15), and active SWHA nests are present, CDFW recommends a minimum ½-mile no-disturbance buffer be delineated and maintained around each nest, regardless of whether it was detected by surveys or observed incidentally. These buffers would remain in place until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival, to prevent nest abandonment and other take of SWHA as a result of Project activities.

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Recommended Mitigation Measure 3: SWHA Take Authorization

CDFW also recommends that in the event an active SWHA nest is detected, and a ½-mile no-disturbance buffer is not feasible, consultation with CDFW is warranted to discuss how to implement the project and avoid take. If take cannot be avoided, take authorization through the acquisition of an ITP, pursuant to Fish and Game Code section 2081 subdivision (b) is necessary to comply with CESA.

Recommended Mitigation Measure 4: SWHA Foraging Habitat Mitigation

CDFW recommends compensation for the loss of SWHA foraging habitat as described in CDFW's "Staff Report Regarding Mitigation for Impacts to Swainson's Hawks" (California Department of Fish and Game 1994) to reduce impacts to foraging habitat to less than significant. The Staff Report recommends that mitigation for habitat loss occur within a minimum distance of 10 miles from known nest sites. CDFW has the following recommendations based on the Staff Report:

- For projects within 1 mile of an active nest tree, a minimum of 1 acre of habitat management (HM) land for each acre of development is advised.
- For projects within 5 miles of an active nest but greater than 1 mile, a minimum of ¾ acre of HM land for each acre of development is advised.
- For projects within 10 miles of an active nest tree but greater than 5 miles from an active nest tree, a minimum of ½ acre of HM land for each acre of development is advised.

Tricolored Blackbird

No Project information for tricolored blackbirds (TRBL) was included in the NOP. The Project site is within the known geographic range of tricolored blackbird and a historical occurrence has been recorded approximately 2.8 miles southwest of the Project site (CDFW 2023). Based on aerial imagery and the information provided in the NOP, the grassland habitats within the Project site could provide potential foraging habitat.

CDFW recommends that a qualified biologist conduct a habitat assessment as part of the biological technical studies conducted in support of the Draft EIR. If potentially suitable habitat is identified, consultation with CDFW is recommended for guidance on focused survey methods and mitigation measures such avoidance, take authorization, and mitigation.

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Recommended Mitigation Measure 5: TRBL Surveys

CDFW recommends that Project activities be timed to avoid the normal bird breeding season (February 1 through September 15). However, if Project activities must take place during that time, CDFW recommends that a qualified wildlife biologist conduct surveys for nesting TRBL no more than 10 days prior to the start of construction to evaluate presence/absence of TRBL nesting colonies in proximity to Project activities and to evaluate potential Project-related impacts.

Recommended Mitigation Measure 6: TRBL Avoidance

If an active TRBL nesting colony is found during preconstruction surveys, CDFW recommends implementation of a minimum 300-foot no-disturbance buffer in accordance with CDFW's "Staff Guidance Regarding Avoidance of Impacts to Tricolored Blackbird Breeding Colonies on Agriculture Fields in 2015" (CDFW 2015). CDFW advises that this buffer remain in place until the breeding season has ended or until a qualified biologist has determined that nesting has ceased, the birds have fledged, and are no longer reliant upon the colony or parental care for survival. It is important to note that TRBL colonies can expand over time and for this reason, the colony should be reassessed to determine the extent of the breeding colony within 10 days for Project initiation.

Recommended Mitigation Measure 7: TRBL Take Authorization

In the event that a TRBL nesting colony is detected during surveys, consultation with CDFW is warranted to discuss how to implement the Project and avoid take, or if avoidance is not feasible, to acquire an ITP, pursuant to Fish and Game Code § 2081(b), prior to any ground-disturbing activities.

Crotch's Bumble Bee

The Crotch's bumble bee (CBB) was not discussed in the NOP document. CBB are known to inhabit areas of grasslands and scrub that contain requisite habitat elements for nesting, such as small mammal burrows and bunch/thatched grasses. CBB was once common throughout most of central and southern California. However, it now appears to be absent from most of their range, especially in the central portion of its historic range within California's Central Valley (Hatfield et al. 2014). Analyses by the Xerces Society et al. (2018) suggest there have been sharp declines in relative abundance by 98% and persistence by 80% over the last ten years. As noted in the NOP, the Project site contains a mix of native and non-native grasses. As such, CBB could potentially use the habitats within the Project site for foraging or nesting.

CDFW recommends a qualified biologist conduct a habitat assessment to determine if the Project area and the immediate surrounding vicinity contain habitat suitable to

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support CBB. Potential nesting sites, which include all small mammal burrows, perennial bunch grasses, thatched annual grasses, brush piles, old bird nests, dead trees, and hollow logs would need to be documented as part of the assessment. If potentially suitable habitat is identified, CDFW recommends that a qualified biologist conduct focused surveys for CBB, and their requisite habitat features following the methodology outlined in the Survey Considerations for California Endangered Species Act Candidate Bumble Bee Species (CDFW 2023a).

If CBB is detected, then CDFW recommends that all small mammal burrows and thatched/bunch grasses be avoided by a minimum of 50 feet to avoid take and potentially significant impacts. If ground-disturbing activities will occur during the overwintering period (October through February), consultation with CDFW is warranted to discuss how to implement Project activities and avoid take. Any detection of CBB prior to or during Project implementation warrants consultation with CDFW to discuss how to avoid take.

If take cannot be avoided, CDFW recommends acquiring an ITP pursuant to Fish and Game Code Section 2081(b), prior to initiating ground-disturbing activities.

In addition to conducting protocol surveys for CBB, CDFW recommends the Draft EIR include the following measures:

Recommended Mitigation Measure 8: CBB Surveys Prior to Construction

Depending on the time between the initial survey efforts conducted in support of the Draft EIR and project construction, CDFW recommends that additional surveys, following the Survey Considerations for California Endangered Species Act Candidate Bumble Bee Species (CDFW 2023a), be repeated the blooming period immediately prior to construction.

Recommended Mitigation Measure 9: CBB Take Authorization

If CBB is identified during surveys, consultation with CDFW is warranted to determine if the Project can avoid take. If take cannot be avoided, take authorization prior to any ground disturbing activities may be warranted. Take authorization would occur through issuance of an ITP by CDFW, pursuant to Fish and Game Code section 2081(b).

American Badger

There was no information included in the NOP regarding the American badger (AMBA). The Project site is within the known geographic range of the AMBA (CDFW 2023). AMBA occupy sparsely vegetated land cover with dry, friable soils to excavate dens,

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which they use for cover, and that support fossorial rodent prey populations (i.e., ground squirrels, pocket gophers, etc.) (Zeiner et. al 1990). Based on aerial imagery and the information provided in the NOP, the Project site contains suitable habitat for AMBA denning and foraging.

As AMBA have the potential to den and/or forage within the Project site, CDFW recommends that a qualified biologist assess the presence/absence of AMBA by conducting a focused field survey in all areas of potentially suitable habitat as part of the biological studies conducted in support of the Draft EIR. If surveys indicate the presence or potential presence of AMBA, consultation with the CDFW is recommended for guidance on mitigation measures such as avoidance, minimization, and mitigation.

Recommended Mitigation Measure 10: AMBA Surveys

If suitable habitat is present, CDFW recommends that a qualified biologist conduct focused surveys for American badger and their requisite habitat features (dens) to evaluate potential impacts resulting from ground- and vegetation-disturbance.

Recommended Mitigation Measure 11: AMBA Avoidance
Avoidance whenever possible is encouraged via delineation and observation of a 50-foot no-disturbance buffer around dens until it is determined through non-invasive means that individuals occupying the den have dispersed.

Burrowing Owl

The NOP did not contain information pertaining to burrowing owl (BUOW). The Project site is within the known geographic range of BUOW and there was a sighting approximately 3-miles northwest of the Project site (CNDDB 2023). The Friant-Kern Canal, which is approximately 1.85-miles northeast of Project limits, may also provide potential habitat for this species. BUOW inhabit open grasslands containing small mammal burrows, a requisite habitat feature used by BUOW for nesting and cover. Based on aerial imagery, much of the Project site contains suitable habitat for BUOW nesting and foraging.

As BUOW have the potential to nest and/or forage within the Project site, CDFW recommends assessing presence/absence of BUOW by having a qualified biologist conduct surveys following the California Burrowing Owl Consortium's (CBOC) "Burrowing Owl Survey Protocol and Mitigation Guidelines" (California Burrowing Owl Consortium 1993) and CDFW's "Staff Report on Burrowing Owl Mitigation" (California Department of Fish and Wildlife 2012) as part of the biological studies conducted in support of the Draft EIR.

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In addition to conducting BUOW surveys, CDFW recommends the Draft EIR include the following measures:

Recommended Mitigation Measure 12: BUOW Surveys Prior to Construction

Depending on the time between the initial survey efforts conducted in support of the Draft EIR and project construction, CDFW recommends that additional surveys, following the "Burrowing Owl Survey Protocol and Mitigation Guidelines" (California Burrowing Owl Consortium 1993) and CDFW's "Staff Report on Burrowing Owl Mitigation" (CDFW 2012) be repeated the survey season immediately prior to construction.

Recommended Mitigation Measure 13: BUOW Avoidance Buffer

Should a BUOW be detected, CDFW recommends that no-disturbance buffers, as outlined in the "Staff Report on Burrowing Owl Mitigation" (CDFG 2012), be implemented prior to and during any ground-disturbing activities. Specifically, CDFW's Staff Report recommends that impacts to occupied burrows be avoided in accordance with the following table unless a qualified biologist approved by CDFW verifies through non-invasive methods that either: 1) the birds have not begun egg laying and incubation; or 2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting sites	April 1-Aug 15	200 m*	500 m	500 m
Nesting sites	Aug 16-Oct 15	200 m	200 m	500 m
Nesting sites	Oct 16-Mar 31	50 m	100 m	500 m

* meters (m)

Recommended Mitigation Measure 14: BUOW Passive Relocation and Mitigation

If BUOW are found within these recommended buffers and avoidance is not possible, it is important to note that according to the Staff Report (CDFG 2012), excluding birds from burrows is not a take avoidance, minimization, or mitigation method and is instead considered a potentially significant impact under CEQA. However, if it is necessary for Project implementation, CDFW recommends that burrow exclusion be conducted by qualified biologists and only during the non-breeding season, by a qualified biologist, before breeding behavior is exhibited and after the burrow is confirmed empty through non-invasive methods, such as surveillance. CDFW recommends replacement of occupied burrows with artificial

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burrows at a ratio of one (1) burrow collapsed to one (1) artificial burrow constructed (1:1) to mitigate for evicting BUOW and the loss of burrows. BUOW may attempt to colonize or re-colonize an area that will be impacted; thus, CDFW recommends ongoing surveillance at a rate that is sufficient to detect BUOW if they return.

Western Pond Turtle

The western pond turtle (WPT) was not included in the information within the NOP document. A WPT was previously observed approximately 0.65-mile south of the Project site (CDFW 2023). Per aerial photography, there are additional ponds in the vicinity of the proposed Project site including a feature named Gates Lake which is approximately 0.81-mile northwest. WPT are known to nest in the spring or early summer within 100 meters (approximately 0.06-mile) of a water body, although nest sites as far away as 500 meter (approximately 0.31-mile) have also been reported (Thomson et al. 2016). Noise, vegetation removal, movement of workers, and ground disturbance as a result of Project activities have the potential to significantly impact WPT populations. Without appropriate avoidance and minimization measures for WPT, potentially significant impacts associated with Project activities could include nest reduction, inadvertent entrapment, reduced reproductive success, reduction in health or vigor of eggs and/or young, and direct mortality.

As WPT have the potential to be present within the Project site, CDFW recommends that a qualified biologist conduct focused surveys for WPT as part of the biological technical studies conducted in support of the CEQA document, perform an analysis of the Project's direct, indirect, and cumulative impacts to WPT in this area, and that the DEIR include the following avoidance and minimization measures for this species: CDFW recommends that a qualified biologist conduct focused surveys for nests during the egg-laying season (March through August) and that any nests discovered remain undisturbed until the eggs have hatched.

In addition to the focused WPT surveys, CDFW recommends the Draft EIR include the following measures:

Recommended Mitigation Measure 15: Pre-construction WPT Surveys

CDFW recommends that a qualified biologist conduct focused surveys for WPT 10 days prior to Project implementation. In addition, CDFW recommends that focused surveys for nests occur during the egg-laying season (March through August) and that any nests discovered remain undisturbed until the eggs have hatched.

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Recommended Mitigation Measure 16: WPT Relocation

CDFW recommends that if any WPT are discovered at the site immediately prior to or during Project activities, they be allowed to move out of the area on their own.

Western Spadefoot

There was no mention of the western spadefoot (WESP) in the NOP information. WESP inhabit grassland habitats, breed in seasonal wetlands, and seek refuge in upland habitat where they occupy burrows outside of the breeding season. Review of aerial imagery indicates that the Project contains these requisite habitat elements. Habitat loss and fragmentation resulting from agricultural and urban development is the primary threat to WESP (Thomson et al. 2016). The Project area is within the range of WESP, contains suitable upland habitat (i.e., grasslands interspersed with burrows) and breeding habitat (i.e., vernal pools and swales). As a result, ground disturbing activities associated with development of the Project site have the potential to significantly impact local populations of this species.

Without appropriate avoidance and minimization measures for WESP, potentially significant impacts associated with ground disturbance from construction activities have a high likelihood of the collapse of small mammal burrows, inadvertent entrapment, loss of upland refugia, water quality impacts to breeding sites, reduced reproductive success, reduction in health and vigor of eggs and/or young, and direct mortality of individuals.

Habitat loss and fragmentation resulting from agricultural and urban development is the primary threat to WESP (Thomson et al., 2016). The Project site and greater Project area is within the range of WESP, contains suitable upland habitat (i.e., grasslands interspersed with burrows) and adjacent breeding habitat (i.e., vernal pools/ponds). As a result, ground- disturbing activities associated with the proposed Project have the potential to significantly impact local populations of this species.

CDFW recommends that a qualified biologist conduct focused surveys for WESP as part of the biological technical studies conducted in support of the CEQA document. In addition, CDFW recommends the following measures be included in the DEIR for the Project:

Recommended Mitigation Measure 17: Pre-construction WESP Surveys

CDFW recommends that a qualified biologist conduct focused surveys for WESP and their requisite habitat features to evaluate potential impacts resulting from ground- and vegetation-disturbance and that compensatory mitigation for WESP be included as part

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of the larger compensatory mitigation that will likely be required for biological resources impacted by the proposed Project.

Recommended Mitigation Measure 18: WESP Avoidance

Avoidance whenever possible is encouraged via delineation and observance of a 50-foot no-disturbance buffer around burrows. If WESP are observed on the Project site, CDFW recommends that Project activities in their immediate vicinity cease and individuals be allowed to leave the Project site on their own accord. Alternatively, a qualified biologist with appropriate take authorization can move them out of harm's way and to a suitable location.

Special Status Plant Species

The Project site is within the known geographic range of several special status plant species including the California Rare Plant Rank (CRPR) 1B.1 San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*), 1B.1 Greene's tuctoria (*Tuctoria greenei*), 1B.1 San Joaquin adobe sunburst (*Pseudobahia perisonii*), 1B.2 succulent owl's clover (*Castilleja campestris* var. *succulenta*), and 2B.2 dwarf downingia (*Downingia pusilla*). These species have been historically documented within the Project vicinity (CDFW 2023).

CDFW recommends that the Project site(s) be surveyed for special status plants by a qualified botanist following the "Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities" (CDFW 2018) as part of the biological technical studies conducted in support of the Draft EIR. This protocol, which is intended to maximize detectability, includes the identification of reference populations to facilitate the likelihood of field investigations occurring during the appropriate floristic period. CDFW recommends that floristic plant surveys be conducted across two seasons in order to maximize detectability and to offset climatic variations from year to year that could influence results. If surveys indicate the presence or potential presence of special status plants, consultation with CDFW is recommended for guidance on mitigation measures such as avoidance, minimization, and mitigation.

Nesting Birds

The Project site may contain suitable habitat for an abundance of nesting migratory and non-migratory bird species and likely provides suitable foraging habitat. To evaluate Project-related impacts on nesting birds and foraging special status bird species, CDFW recommends that a general habitat assessment for nesting and foraging birds be conducted as part of the biological technical studies conducted in support of the Draft EIR.

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Editorial Comments and/or Suggestions

Federally Listed Species: CDFW recommends consulting with the United States Fish and Wildlife Service (USFWS) regarding potential impacts to federally listed species including but not limited to the FT vernal pool fairy shrimp (*Branchinecta lynchi*). This species has been observed approximately 2-miles northeast at the Friant-Kern Canal in addition to the WPT, currently a federal proposed threatened (FPT) species.

Take under the Federal Endangered Species Act (FESA) is more broadly defined than CESA; take under FESA also includes significant habitat modification or degradation that could result in death or injury to a listed species by interfering with essential behavioral patterns such as breeding, foraging, or nesting. Consultation with the USFWS in order to comply with FESA is advised well in advance of any Project activities.

Lake and Streambed Alteration: Based on aerial imagery, the Project site contains Dry Creek, which runs east to west through the Project site. Dry Creek Reservoir is to the north/northeast of the proposed Project site and functions as a flood control facility. There are additional ponded areas within the Project site as well. Since features including multiple streams and drainages appear to be present onsite and within the adjacent areas, Project activities will be subject to CDFW's regulatory authority pursuant to Fish and Game Code section 1600 et seq. Fish and Game Code section 1602 requires an entity to notify CDFW prior to commencing any activity that may
(a) substantially divert or obstruct the natural flow of any river, stream, or lake;
(b) substantially change or use any material from the bed, bank, or channel of any river, stream, or lake (including the removal of riparian vegetation): (c) deposit debris, waste or other materials that could pass into any river, stream, or lake. "Any river, stream, or lake" includes those that are ephemeral, intermittent, or episodic, as well as those that are perennial. CDFW is required to comply with CEQA in the issuance of a Lake or Streambed Alteration Agreement; therefore, if the Draft EIR approved for the Project does not adequately describe the Project and its impacts to lakes or streams, a subsequent CEQA analysis may be necessary for LSA Agreement issuance. For information on notification requirements, please refer to CDFW's website (https://wildlife.ca.gov/Conservation/LSA) or contact CDFW staff in the Central Region Lake and Streambed Alteration Program at (559) 243-4593 or R4LSA@wildlife.ca.gov.

Artificial Lighting: This Project will cover a large area once completed. Installation of outdoor artificial night lighting can disrupt the circadian rhythms of many wildlife species. Many species use photoperiod cues for communication, determining when to begin foraging, thermoregulation behavior, and migration (Longcore and Rich 2004, Miller 2006, Nightingale et al. 2006, Perry et al. 2008, Stone et al. 2009). Phototaxis, a phenomenon which results in attraction and movement towards light, can disorient, entrap, and temporarily blind wildlife species that experience it (Longcore and Rich

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2004). Project activities could result in disruption of wildlife behavior, inadvertent injury, or mortality.

CDFW recommends that the Draft EIR for the Project include an analysis of the impacts of artificial lighting on biological resources and incorporate enforceable mitigation measures to decrease the impacts of artificial outdoor lighting on wildlife species. Potentially feasible mitigation measures include motion sensitive lighting; mounting light fixtures as low as possible to minimize light trespass; use of light fittings that direct and confine the spread of light downward; and use of long-wavelength light sources. In addition, CDFW recommends that lighting is not installed in ecologically sensitive areas (e.g., streams, wetlands, and habitat used by special status species, such as nesting/roosting sites and riparian corridors) and the use of the white/blue wavelengths of the light spectrum be avoided.

Wildlife Movement and Connectivity: The Project site and greater Project area appears to support significant biological resources and contains habitat connections and supports movement across the broader landscape, sustaining both transitory and permanent wildlife populations. CDFW recommends that on-site features that contribute to habitat connectivity should be evaluated and maintained. Aspects of the Project that could create physical barriers to wildlife movement, including direct or indirect Project-related activities, should be identified, and addressed in the Draft EIR.

Project Alternatives Analysis: CDFW recommends that the information and results obtained from the biological technical surveys, studies, and analysis conducted in support of the Project's Draft EIR be used to develop and modify the Project's alternatives to avoid and minimize impacts to biological resources to the maximum extent possible. When efforts to avoid and minimize have been exhausted, CDFW advises that remaining impacts to sensitive biological resources be mitigated to reduce impacts to a less than significant level, if feasible.

Cumulative Impacts: CDFW recommends that a cumulative impact analysis be conducted for all biological resources that will either be significantly or potentially significantly impacted by implementation of the Project, including those whose impacts are determined to be less than significant with mitigation incorporated or for those resources that are rare or in poor or declining health and will be impacted by the Project, even if those impacts are relatively small (i.e., less than significant). Cumulative impacts are recommended to be analyzed using an acceptable methodology to evaluate the impacts of past, present, and reasonably foreseeable future projects on resources and be focused specifically on the resource, not the Project. An appropriate resource study area should also be identified and mapped for each resource being analyzed and utilized for this analysis. CDFW recommends closely evaluating the need for a cumulative impacts analysis for the following species as part of the Draft EIR: CTS, SWHA, TRBL, CBB, AMBA, BUOW, WPT, WESP, San Joaquin Valley Orcutt grass,

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Greene's tuctoria, San Joaquin adobe sunburst, succulent owl's clover, and dwarf downingia.

CDFW staff is available for consultation in support of cumulative impacts analyses as a trustee and responsible agency under CEQA.

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database, which may be used to make subsequent or supplemental environmental determinations (Pub. Resources Code, § 21003, subd. (e)). Accordingly, please report any special status species and natural communities detected during Project surveys to the CNDDB. The CNDDB field survey form can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data. The completed form can be mailed electronically to CNDDB at the following email address: CNDDB@wildlife.ca.gov. The types of information reported to CNDDB can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

FILING FEES

The Project, as proposed, would have an impact on fish and/or wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code, § 711.4; Pub. Resources Code, § 21089).

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CONCLUSION

CDFW appreciates the opportunity to comment on the NOP to assist the City of Clovis in identifying and mitigating Project impacts on biological resources.

If you have any questions, please contact Kelley Nelson, Environmental Scientist, at the address provided on this letterhead, by telephone at (559) 580-3194 or by electronic mail at Kelley.Nelson@wildlife.ca.gov.

Sincerely,

DocuSigned by:
FA83F09FE08945A...

Julie A. Vance
Regional Manager

ec: State Clearinghouse
Office of Planning and Research
State.clearinghouse@opr.ca.gov

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Attachment 1

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE RECOMMENDED MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)

PROJECT: Vista Ranch Project

SCH No.: 2023100508

RECOMMENDED MITIGATION MEASURE	STATUS/DATE/INITIALS
Before Disturbing Soil or Vegetation	
SWHA	
Recommended Mitigation Measure 1: SWHA surveys prior to construction	
Recommended Mitigation Measure 3: SWHA take authorization	
Recommended Mitigation Measure 4: SWHA foraging habitat mitigation	
TRBL	
Recommended Mitigation Measure 5: TRBL surveys	
CBB	
Recommended Mitigation Measure 8: CBB surveys prior to construction	
Recommended Mitigation Measure 9: CBB take authorization	
AMBA	
Recommended Mitigation Measure 10: AMBA surveys	
BUOW	
Recommended Mitigation Measure 12: BUOW surveys prior to construction	
Recommended Mitigation Measure 14: BUOW passive relocation and mitigation	
WPT	
Recommended Mitigation Measure 15: WPT surveys	
WESP	
Recommended Mitigation Measure 17: Pre-construction WESP surveys	
During Construction	
SWHA	
Recommended Mitigation Measure 2: SWHA avoidance buffer	
TRBL	
Recommended Mitigation Measure 6: TRBL avoidance	
Recommended Mitigation Measure 7: TRBL take authorization	

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AMBA	
Recommended Mitigation Measure 11: AMBA avoidance	
BUOW	
Recommended Mitigation Measure 13: BUOW avoidance buffer	
WPT	
Recommended Mitigation Measure 16: WPT relocation	
WESP	
Recommended Mitigation Measure 18: WESP avoidance	

December 15, 2023

Sent via email

McKencie Perez, MPA
Senior Planner
City of Clovis Planning Division
1033 Fifth Street
Clovis, CA 93612
mckenciep@cityofclovis.com

Re: Comments on Notice of Preparation of an Environmental Impact Report for the Vista Ranch Project

Dear Ms. Perez,

These comments are submitted on behalf of the Center for Biological Diversity (Center) regarding the Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the Vista Ranch Project. The Center has reviewed the NOP and provides these comments for consideration by the City of Clovis (City) as they prepare the EIR.

The Center is a non-profit, public interest environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center has over 1.7 million members and online activists throughout California and the United States. The Center has worked for many years to protect imperiled plants and wildlife, open space, air and water quality, and overall quality of life for people in Riverside County.

I. The EIR must thoroughly disclose, analyze, and mitigate the Project's anticipated greenhouse gas emissions.

The California Environmental Quality Act (CEQA) requires an EIR o provide decision-making bodies and the public with detailed information about the effect a proposed project is likely to have on the environment, to list ways in which the significant effects of a project might be minimized, and to indicate alternatives to the project. (Pub. Res. Code § 21061.) In particular, CEQA requires a lead agency to mitigate to the extent feasible significant impacts, including a significant cumulative climate change impact. (CEQA Guidelines § 15064.4.)

A strong, international scientific consensus has established that human-caused climate change is causing widespread harms to human society and natural systems, and climate change threats are becoming increasingly dangerous. In a 2018 *Special Report on Global Warming of1.5°C* from the Intergovernmental Panel on Climate Change (IPCC), the leading international scientific body for the assessment of climate change describes the devastating harms that would

occur at 2°C warming, highlighting the necessity of limiting warming to 1.5°C to avoid catastrophic impacts to people and life on Earth. The report provides overwhelming evidence that climate hazards are more urgent and more severe than previously thought, and that aggressive reductions in emissions within the next decade are essential to avoid the most devastating climate change harms.

The impacts of climate change will be felt by humans and wildlife. In California, climate change will transform our climate, resulting in such impacts as increased temperatures and wildfires, and a reduction in snowpack and precipitation levels and water availability. In light of inadequate action on the national level, California has taken steps through legislation and regulation to fight climate change and reduce statewide GHG emissions. (Health & Saf. Code § 38550; *see also* Executive Order B-30-15 (2015); Executive Order S-3-05 (2005); Executive Order B-55-18 (2018).) The Legislature has also passed S.B. 100 which requires renewables to account for 60 percent of electricity sales in 2030. Enforcement and compliance with these state-level actions are essential to help stabilize the climate and avoid catastrophic impacts to our environment. However, regional and municipal agencies also have a vital role in reducing our GHG emissions and fighting the climate crisis. Fundamental changes and hard choices in land use planning for the future by local land use agencies will be necessary to fully address and meet the state GHG emissions reduction goals.

Therefore, if the City concludes the Project will have significant GHG impacts, the Center urges the adoption of mitigation measures to reduce GHG emissions to net zero, with a priority given to direct emission reduction measures and on-site mitigation measures, including conserving carbon-storing and carbon-sequestering diverse habitats (Yap et al., 2023). Carbon calculations should include lost carbon storage and sequestering potential of diverse habitats, including grasslands, shrublands, and riparian areas, in addition to trees. If offsets are used as GHG mitigation, they should only be used when all direct emission reduction measures and on-site mitigation options are exhausted. Any offsets should be tied to local projects and allow for local direct investments that help the surrounding community through the creation of local jobs, reduction in nearby air pollution, and improve impacted infrastructure.

In a 2022 report, the California Air Resources Board concluded that California is currently not on track to meet its greenhouse gas reduction targets, primarily due to GHG emissions from the transportation sector (CARB, 2022). Projects such as the one proposed in the NOP have the potential to widen the gap between where California needs to be to tackle the climate crisis and where it is headed. Therefore, the Center urges the City to take a hard and thorough look at the Project's anticipated GHG emissions, as well as associated air quality, traffic, and transportation impacts, when preparing the EIR.

II. The EIR must disclose, analyze, and mitigate impacts to wildlife movement and habitat connectivity.

The California Department of Fish and Wildlife (CDFW) identifies the Project area as "ACE Rank 3": "Connections with implementation flexibility" (see Exhibit 1), which are defined as "areas that have been identified as having connectivity importance, but have not been identified as channelized areas, species corridors, or habitat linkages at this time. This may

change with future changes in surrounding land use or regional specific information" (CDFW, 2019). Importantly, CDFW also defines the area as having the highest ecoregion biodiversity ranking (see Exhibit 1), which makes wildlife movement and habitat connectivity critical to protect the area's existing biodiversity. The EIR must adequately assess and mitigate the Project's impacts to local, regional, and global wildlife movement and habitat connectivity.

Roads and development like that proposed by the Project create barriers that lead to habitat loss and fragmentation, which harms native wildlife, plants, and people. As barriers to wildlife movement, poorly-planned development and roads can affect animal behavior, movement patterns, reproductive success, and physiological states, which can lead to significant impacts on individual wildlife, populations, communities, landscapes, and ecosystem function (Brehme et al., 2013; Ceia-Hasse et al., 2018; Haddad et al., 2015; Marsh & Jaeger, 2015; Mitsch & Wilson, 1996; Trombulak & Frissell, 2000; van der Ree et al., 2011). For example, habitat fragmentation from roads and development has been shown to cause mortalities and harmful genetic isolation in mountain lions in southern California (Ernest et al., 2014; Riley et al., 2014; Vickers et al., 2015), increase local extinction risk in amphibians and reptiles (Brehme et al., 2018, p. 20; Cushman, 2006), cause high levels of avoidance behavior and mortality in birds and insects (Benítez-López et al., 2010; Kantola et al., 2019; Loss et al., 2014), and alter pollinator behavior and degrade habitats (Aguilar et al., 2008; Goverde et al., 2002). Habitat fragmentation also severely impacts plant communities. An 18-year study found that reconnected landscapes had nearly 14% more plant species compared to fragmented habitats, and that number is likely to continue to rise as time passes (Damschen et al., 2019). The authors conclude that efforts to preserve and enhance connectivity will pay off over the long-term (Damschen et al., 2019). In addition, connectivity between high quality habitat areas in heterogeneous landscapes is important to allow for range shifts and species migrations as climate changes (Cushman et al., 2013; Heller & Zavaleta, 2009; Krosby et al., 2018). Loss of wildlife connectivity decreases biodiversity and degrades ecosystems.

Edge effects of development in and adjacent to open space will likely impact key, wide-ranging predators, such as mountain lions and bobcats (Crooks, 2002; Delaney et al., 2010; Lee et al., 2012; Riley et al., 2006; Smith et al., 2015, 2017; Wang et al., 2017), as well as smaller species with poor dispersal abilities, such as song birds, small mammals, and herpetofauna (Benítez-López et al., 2010; Cushman, 2006; Kociolek et al., 2011; Slabbekoorn & Ripmeester, 2008). Development that limits movement and dispersal can affect species' ability to find food, shelter, mates, and refugia after disturbances like fires or floods. Individuals can die off, populations can become isolated, sensitive species can become locally extinct, and important ecological processes like plant pollination and nutrient cycling can be lost. Negative edge effects from human activity, such as traffic, lighting, noise, domestic pets, pollutants, invasive weeds, and increased fire frequency, have been found to be biologically significant up to 300 meters (~1000 feet) away from anthropogenic features in terrestrial systems (Environmental Law Institute, 2003)

It is important that the EIR consider corridor redundancy (*i.e*. the availability of alternative pathways for movement) because it allows for improved functional connectivity and resilience. Compared to a single pathway, multiple connections between habitat patches increase the probability of movement across landscapes by a wider variety of species, and they provide

more habitat for low-mobility species while still allowing for their dispersal (Mcrae et al., 2012; Olson & Burnett, 2013; Pinto & Keitt, 2008). In addition, corridor redundancy provides resilience to uncertainty, impacts of climate change, and extreme events, like flooding or wildfires, by providing alternate escape routes or refugia for animals seeking safety (Cushman et al., 2013; Mcrae et al., 2008, 2012; Olson & Burnett, 2013; Pinto & Keitt, 2008).

Corridor redundancy is critical when considering the impacts of climate change on wildlife movement and habitat connectivity. Climate change is increasing stress on species and ecosystems, causing changes in distribution, phenology, physiology, vital rates, genetics, ecosystem structure and processes, and increasing species extinction risk (Warren et al., 2011). A 2016 analysis found that climate-related local extinctions are already widespread and have occurred in hundreds of species, including almost half of the 976 species surveyed (Wiens, 2016). A separate study estimated that nearly half of terrestrial non-flying threatened mammals and nearly one-quarter of threatened birds may have already been negatively impacted by climate change in at least part of their distribution (Pacifici et al., 2017). A 2016 meta-analysis reported that climate change is already impacting 82 percent of key ecological processes that form the foundation of healthy ecosystems and on which humans depend for basic needs (Scheffers et al., 2016). Genes are changing, species' physiology and physical features such as body size are changing, species are moving to try to keep pace with suitable climate space, species are shifting their timing of breeding and migration, and entire ecosystems are under stress (Cahill et al., 2012; Chen et al., 2011; Maclean & Wilson, 2011; Parmesan, 2006; Parmesan & Yohe, 2003; Root et al., 2003; Warren et al., 2011).

When assessing impacts to wildlife movement and habitat connectivity, the City must analyze the Project's potential impacts to riparian corridors. Riparian ecosystems have long been recognized as biodiversity hotspots performing important ecological functions in a transition zone between freshwater systems and upland habitats. Many species that rely on these aquatic habitats also rely on the adjacent upland habitats (*e.g.*, riparian areas along streams, and grassland habitat adjacent to wetlands). And many species, including mountain lions and bobcats, often use riparian areas and natural ridgelines as migration corridors or foraging habitat (Dickson et al., 2005; Hilty & Merenlender, 2004; Jennings & Lewison, 2013; Jennings & Zeller, 2017). Additionally, fish rely on healthy upland areas to influence suitable spawning habitat (Lohse et al., 2008), and agricultural encroachment on these habitats and over-aggressive removal of riparian areas have been identified as a major driver of declines in freshwater and anadromous fish (Lohse et al., 2008; Moyle et al., 2011; Stillwater Sciences, 2002). Therefore, buffers that allow for connectivity between the aquatic resource and upland habitat is vital for many species to persist.

It is estimated that 90-95% of historic riparian habitat in the state has been lost (Bowler, 1989; Riparian Habitat Joint Venture, 2009). Using 2002 land cover data from CalFire, the Riparian Habitat Joint Venture estimated that riparian vegetation makes up less than 0.5% of California's total land area at about 360,000 acres (Riparian Habitat Joint Venture, 2004). This is alarming because riparian habitats perform a number of biological and physical functions that benefit wildlife, plants, and humans, and loss of what little is left will have severe, harmful impacts on special-status species, overall biodiversity, and ecosystem function. California cannot afford to lose more riparian corridors.

A literature review found that recommended buffers for wildlife often far exceeded 100 meters (~325 feet), well beyond the largest buffers implemented in practice (Robins, 2002). For example, Kilgo et al. (Kilgo et al., 1998) recommend more than 1,600 feet of riparian buffer to sustain bird diversity. In addition, amphibians, which are considered environmental health indicators, have been found to migrate over 1,000 feet between aquatic and terrestrial habitats through multiple life stages (Cushman, 2006; Fellers & Kleeman, 2007; Semlitsch & Bodie, 2003; Trenham & Shaffer, 2005). Accommodating the more long-range dispersers is vital for continued survival of species populations and/or recolonization following a local extinction (Cushman, 2006; Semlitsch & Bodie, 2003). In addition, more extensive buffers provide resiliency in the face of climate change-driven alterations to these habitats, which will cause shifts in species ranges and distributions (Cushman et al., 2013; Heller & Zavaleta, 2009; Warren et al., 2011). This emphasizes the need for sizeable riparian and upland buffers around streams and wetlands in and adjacent to the Project area, as well as connectivity corridors between heterogeneous habitats. To protect the Project area's highly diverse ecosystems and the services they provide, the EIR should require a minimum buffer of 300 feet or more (depending on the needs of the species present or potentially present) from all perennial and intermittent streams and wetlands (including vernal pools) throughout and adjacent to the Project area. Again, the EIR must adequately assess and mitigate impacts to local, regional, and global wildlife movement and habitat connectivity.

It is widely recognized that the continuing fragmentation of habitat by humans threatens biodiversity and diminishes our (humans, plants, and animals) ability to adapt to climate change. In a report for the International Union for Conservation of Nature (IUCN), world-renown scientists from around the world stated that "[s]cience overwhelmingly shows that interconnected protected areas and other areas for biological diversity conservation are much more effective than disconnected areas in human-dominated systems, especially in the face of climate change" and "[i]t is imperative that the world moves toward a coherent global approach for ecological connectivity conservation, and begins to measure and monitor the effectiveness of efforts to protect connectivity and thereby achieve functional ecological networks" (Hilty et al., 2020).

Therefore, the Center urges the adoption of effective mitigation measures that address the needs of the target species. It is important to consider that different species have different behaviors and needs that affect how they move. For example, smaller species with poor dispersal abilities, like rodents and herpetofauna, would require more frequent intervals of crossings compared to larger wide-ranging species, like mountain lions or coyotes, to increase their chances of finding a crossing. Gunson et al. (Gunson et al., 2016) recommend that crossing structures generally be spaced about 300m (~0.19mi) apart for small animals when transportation infrastructure bisects large expanses of continuous habitat, though they recognize that some amphibians may need more frequent crossings no more than 50m (~0.03mi) apart. And for many amphibian and reptile species, undercrossings should have grated tops so that the light and moisture inside the crossings are similar to that of the ambient environment. Therefore, multiple crossings designed for different target species may be required. In-depth analyses that include on-the-ground movement studies of which species are moving in the area and their home range area, habitat use, and patterns of movement are needed to determine how to best implement such

crossings. In addition, associated crossing infrastructure (*e.g.*, exclusionary fencing appropriate for target species, berms to buffer crossings from sound and light) should be included to improve chances of wildlife using crossings, and such crossings and associated infrastructure should be designed and built in consultation with local and regional experts, including agency biologists. And to improve the effectiveness of any wildlife crossings, there should be protected habitat on both sides of the crossing; therefore, mitigation should also include acquiring unprotected lands on both sides of the roads where a wildlife crossing would be implemented, again, in consultation with local conservation organizations and stakeholders, and preserving and managing those lands in perpetuity to ensure that the wildlife crossings and associated infrastructure remain functional over time. Given that impacts of noise, light, and vibration can affect the use of wildlife crossings, even if crossings are designed with adequate parameters and fencing, the crossings should be built with wildlife responsive design; crossings should have sound and light berms to minimize light and sound at the entrance/exit as well as on/in/under the crossings structures, and they should be well-maintained on both sides of the crossing for animals to use them (Shilling, 2020; Vickers, 2020).

III. The EIR must disclose, analyze, and mitigate impacts to special-status species.

As mentioned previously, the Project area is located within an area that CDFW defines as having the highest ecoregion biodiversity ranking (see Exhibit 1). The EIR must fully disclose and analyze impacts to any listed, candidate, or sensitive species, as well as sensitive habitats, that occur, have the potential to occur, or historically occurred in and near the Project area. This includes but is not limited to the California tiger salamander, tricolored blackbird, Crotch bumblebee, giant garter snake, San Joaquin kit fox, and many more. Exhibit 2 provides a list of the species recorded in the California Natural Diversity Database (CNDDB) from a 9-quad query centered around the quad "Friant." Although this is informative, it must be acknowledged that CNDDB is not a comprehensive list. Other databases, like iNaturalist and eBird as well as on-the-ground surveys following the appropriate protocols are required to adequately assess the presence or potential presence of special-status species in or near the Project area. The EIR must adequately disclose, assess, and mitigate the Project's impacts to special-status species.

IV. The EIR must thoroughly disclose, analyze, and mitigate the Project's impacts to public resources and existing communities.

This project is sprawl development. Rather than densifying the existing communities that have water systems, streets, schools, transit systems, powerlines and other hard infrastructure already in place, this project would require new infrastructure to be constructed. This is acknowledged in the Project Description that states "the installation of new public and private roadways … and other improvements, including water supply, storm drainage, sewer facilities" are necessary for the project (Project Description, page 4). It is important that the EIR fully analyze, disclose, and mitigate the Project's impacts to public resources and existing communities.

Investment in exurban development creates a negative feedback loop of divestment from existing cities. Building out infrastructure ensures there is less resources to maintain and improve existing infrastructure in city centers. This reduces the quality and availability of those services

creating more incentives for people to move away from the urban core (McElfish, James M, 2007). Additionally, building out infrastructure is more expensive; such costs get handed down to residents. A recent analysis indicated that sprawl development in the U.S. increases annualized infrastructure costs by 50% percent (Litman, 2015).

A. The Project Would Result In A Divestment in Infill Affordable Housing

While this Project does provide additional housing, it does not address the root cause of the housing crisis: affordability. Affordable housing is only equitable if low-income residents are provided housing opportunities with access to public resources. Yet this project proposes building market rate housing outside the city center that does nothing to address the affordability crisis that so many Californians are struggling with.

The City should instead be working to densify and redevelop its urban areas, rather than approving sprawl development that destroys open space. Densifying the City would help reduce rental prices and ensure residents have access to the public infrastructure already in place, such as parks, schools and public transit. If instead, the City chooses to invest in sprawl development, it could face the same challenges that residents of Los Angeles face with around 74% of the housing zoned single-family residential creating some of the highest rents in the nation (Menendian et al., 2022).

Shifting to more compact housing types not only reduces rents, but it significantly reduces residential land consumption. A mix of 80% single-family, 10% attached and 10% multi-family housing requires about twice as much land as an equal mix of housing types, and more than three times as much land as 10% single-family, 40% attached and 50% multi-family housing (Camagni et al., 2002). This leaves more open space for wildlife to flourish and for people to enjoy. Native landscapes help us regulate our climate, purify our air and water, pollinate our crops and create healthy soil. In addition to the direct benefits from access, preservation of our native habitats and the species that rely on them is critical to our long-term health and wellbeing (Sandifer et al., 2015). Therefore, the City should be doing everything to preserve the remaining open space.

B. The Project Would Result In A Divestment in Public Transit

Sprawl development causes the deterioration of public transport, which leads to complete reliance on private vehicles (Camagni et al., 2002). High vehicle ownership rates directly limit urban population densities, eventually changing the types of residential development that are built. For example, one parcel might accommodate 50 townhouses if there are only 10 on-site parking spaces, but if each unit has two surface parking spaces, as many zoning codes require, the number of potential units declines to 30 (Camagni et al., 2002).

Reduction in public transit isn’t just bad planning, it also undermines community health. In 2019, the duration of the average daily commute in the United States increased to a new high of 55.2 minutes, and a record 9.8 percent of commuters reported daily commutes of at least 2 hours (Burd et al., 2021).

These long commutes reduce time available to spend with family, friends, and community, and reduce opportunities for healthy recreation. The increase in inactivity and isolation can also lead to long-term health complications such as pre-diabetes, diabetes, obesity, asthma, isolation, stress and depression (Ewing et al., 2003; Leyden, 2003).

Another serious and more direct impact is automobile crashes, which are the leading cause of death among young people (15 to 19 years old) in the United States.[1] An estimated 42,915 people died in car crashes in 2021 alone and 3.4 million people are injured each year, which costs an estimated $473.2 billion annually as measured by wage and productivity losses, medical expenses, motor-vehicle damage, and employers' uninsured costs (Frumkin et al., 2004; U.S. Department of Transportation, 2022). [2]

Providing alternatives to single occupancy vehicle travel is essential to building an efficient, sustainable and equitable transportation system. Unfortunately, we have a long way to go if we are going to achieve this vision in the U.S. In 2013, it was reported that of all the U.S. daily commutes to work, 76.4% are of people driving alone (McKenzie, 2015). According to the Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2015, our collective daily transportation in the U.S. constitutes about 27% of the total greenhouse gasses released (U.S. Environmental Protection Agency, 2017).

To change these trends, government agencies, including local governments like the City of Clovis, need to invest in alternative modes of transportation to not only make them cheaper to use, but more efficient than driving. Best practices for transportation policy should include providing free public transit services for future residents and workers; implementing bus only lanes; optimizing bus routes to minimize overlap and ensure coverage across the city in line with demand; providing high-frequency, reliable services with regular bus stops for easy access.

Studies indicate that free public transit services typically result in ridership increase from 20% to 60% in a matter of just a few months.[3] Similarly, bus lanes that reduce total transit door-to-door travel times by 5%-15% will increase urban peak ridership 2%-9% (UCLA Institute of Transportation Studies, 2019).

Lastly, ensuring accessibility and convenience is essential to increasing ridership. Providing more bus stops decreases the distance residents have to travel to access such services.

This Project would appear to steer the region in the opposite direction, eroding community and environmental health to build more sprawl. The EIR must fully analyze, disclose, and mitigate the Project's impacts to public resources and existing communities.

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[1] Center for Disease Control and Prevention. "Underlying Cause of Death, 2018-2021." https://wonder.cdc.gov

[2] NSC Injury Facts. "Costs of Motor-Vehicle Injuries." 2021. https://injuryfacts.nsc.org/all-injuries/costs/guide-to-calculating-costs/data-details/

[3] Studenmund, A. H., and David Connor. "The free-fare transit experiments." *Transportation Research Part A: General* 16.4 (1982): 261-269.

V. Conclusion

Thank you for the opportunity to submit comments on the NOP for the Vista Ranch Project. Please include the Center on your notice list for all future updates to the Project and do not hesitate to contact the Center with any questions at the email listed below.

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(*Provided via OneDrive*)

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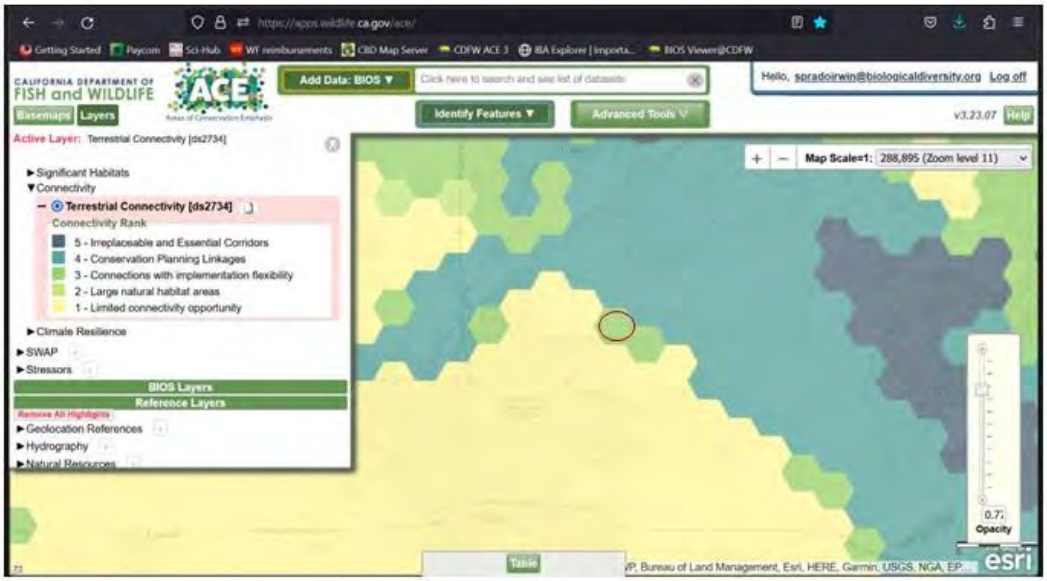
Exhibit 1



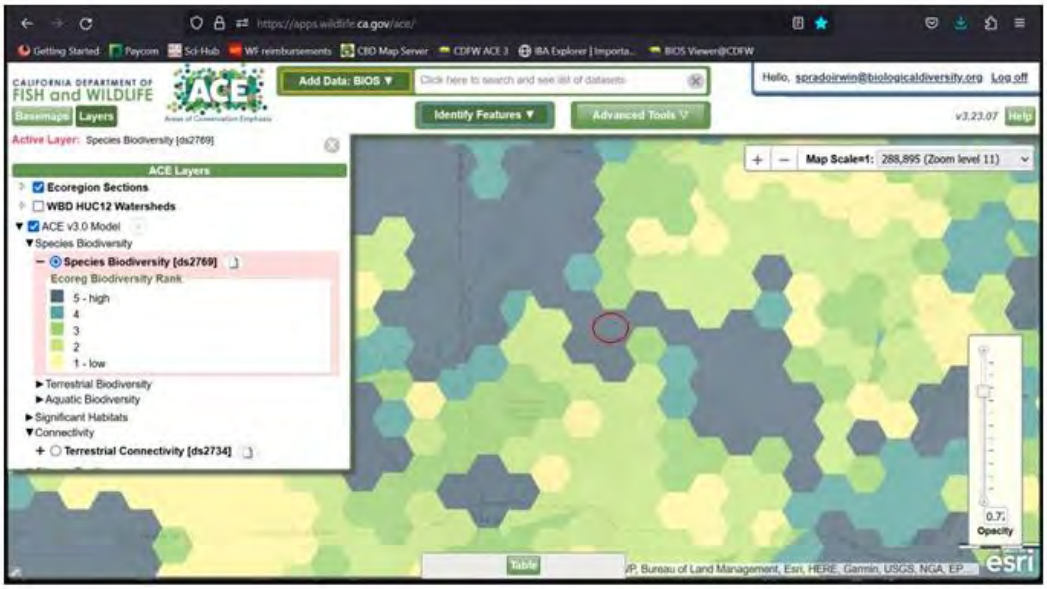


Exhibit 1. The California Department of Fish and Wildlife (CDFW) Areas of Conservation Emphasis (ACE) connectivity (top) and biodiversity (bottom) rankings. The red circle indicates the approximate Project location. Source: CDFW ACE website: https://wildlife.ca.gov/Data/Analysis/ACE (accessed December 6, 2023).

Exhibit 2

List of California Natural Diversity Database (CNDDB) records of sensitive plant and animal species in and near the Project area. This is not a comprehensive list of sensitive species that occur, potentially occur, or historically occurred in and/or near the Project area.

Type	Scientific Name	Common_Name
Animals - Amphibians	*Ambystoma californiense*	California tiger salamander - central California DPS
Animals - Amphibians	*Rana boylii*	foothill yellow-legged frog - south Sierra DPS
Animals - Amphibians	*Rana draytonii*	California red-legged frog
Animals - Amphibians	*Spea hammondii*	western spadefoot
Animals - Arachnids	*Calicina mesaensis*	Table Mountain harvestman
Animals - Birds	*Accipiter cooperii*	Coopers hawk
Animals - Birds	*Aquila chrysaetos*	golden eagle
Animals - Birds	*Buteo swainsoni*	Swainsons hawk
Animals - Birds	*Haliaeetus leucocephalus*	bald eagle
Animals - Birds	*Eremophila alpestris actia*	California horned lark
Animals - Birds	*Ardea alba*	great egret
Animals - Birds	*Ardea herodias*	great blue heron
Animals - Birds	*Egretta thula*	snowy egret
Animals - Birds	*Nycticorax nycticorax*	black-crowned night heron
Animals - Birds	*Coccyzus americanus occidentalis*	western yellow-billed cuckoo
Animals - Birds	*Falco mexicanus*	prairie falcon
Animals - Birds	*Agelaius tricolor*	tricolored blackbird
Animals - Birds	*Xanthocephalus xanthocephalus*	yellow-headed blackbird
Animals - Birds	*Lanius ludovicianus*	loggerhead shrike
Animals - Birds	*Pandion haliaetus*	osprey
Animals - Birds	*Setophaga petechia*	yellow warbler
Animals - Birds	*Nannopterum auritum*	double-crested cormorant
Animals - Birds	*Athene cunicularia*	burrowing owl
Animals - Birds	*Vireo bellii pusillus*	least Bells vireo
Animals - Crustaceans	*Branchinecta lynchi*	vernal pool fairy shrimp
Animals - Crustaceans	*Branchinecta mesovallensis*	midvalley fairy shrimp
Animals - Crustaceans	*Linderiella occidentalis*	California linderiella
Animals - Crustaceans	*Lepidurus packardi*	vernal pool tadpole shrimp
Animals - Fish	*Lavinia exilicauda exilicauda*	Sacramento hitch
Animals - Fish	*Mylopharodon conocephalus*	hardhead
Animals - Insects	*Bombus crotchii*	Crotch bumble bee
Animals - Insects	*Bombus pensylvanicus*	American bumble bee
Animals - Insects	*Efferia antiochi*	Antioch efferian robberfly
Animals - Insects	*Metapogon hurdi*	Hurds metapogon robberfly

Animals - Insects	*Desmocerus californicus dimorphus*	valley elderberry longhorn beetle
Animals - Insects	*Lytta moesta*	moestan blister beetle
Animals - Mammals	*Vulpes macrotis mutica*	San Joaquin kit fox
Animals - Mammals	*Erethizon dorsatum*	North American porcupine
Animals - Mammals	*Dipodomys nitratoides exilis*	Fresno kangaroo rat
Animals - Mammals	*Perognathus inornatus*	San Joaquin pocket mouse
Animals - Mammals	*Eumops perotis californicus*	western mastiff bat
Animals - Mammals	*Mustela frenata xanthogenys*	San Joaquin long-tailed weasel
Animals - Mammals	*Taxidea taxus*	American badger
Animals - Mammals	*Antrozous pallidus*	pallid bat
Animals - Mammals	*Corynorhinus townsendii*	Townsends big-eared bat
Animals - Mammals	*Euderma maculatum*	spotted bat
Animals - Mammals	*Lasiurus cinereus*	hoary bat
Animals - Mammals	*Lasiurus frantzii*	western red bat
Animals - Mammals	*Myotis yumanensis*	Yuma myotis
Animals - Mollusks	*Margaritifera falcata*	western pearlshell
Animals - Mollusks	*Gonidea angulata*	western ridged mussel
Animals - Reptiles	*Anniella pulchra*	Northern California legless lizard
Animals - Reptiles	*Arizona elegans occidentalis*	California glossy snake
Animals - Reptiles	*Gambelia sila*	blunt-nosed leopard lizard
Animals - Reptiles	*Emys marmorata*	western pond turtle
Animals - Reptiles	*Thamnophis gigas*	giant gartersnake
Animals - Reptiles	*Phrynosoma blainvillii*	coast horned lizard
Community - Terrestrial	*Great Valley Mixed Riparian Forest*	Great Valley Mixed Riparian Forest
Community - Terrestrial	*Northern Basalt Flow Vernal Pool*	Northern Basalt Flow Vernal Pool
Community - Terrestrial	*Northern Claypan Vernal Pool*	Northern Claypan Vernal Pool
Community - Terrestrial	*Northern Hardpan Vernal Pool*	Northern Hardpan Vernal Pool
Community - Terrestrial	*Sycamore Alluvial Woodland*	Sycamore Alluvial Woodland
Plants - Bryophytes	*Bryum chryseum*	brassy bryum
Plants - Bryophytes	*Plagiobryoides vinosula*	wine-colored tufa moss
Plants - Vascular	*Sagittaria sanfordii*	Sanfords arrowhead
Plants - Vascular	*Eryngium spinosepalum*	spiny-sepaled button-celery
Plants - Vascular	*Calycadenia hooveri*	Hoovers calycadenia
Plants - Vascular	*Lagophylla dichotoma*	forked hare-leaf
Plants - Vascular	*Pseudobahia bahiifolia*	Hartwegs golden sunburst
Plants - Vascular	*Pseudobahia peirsonii*	San Joaquin adobe sunburst
Plants - Vascular	*Wyethia elata*	Halls wyethia
Plants - Vascular	*Cryptantha hooveri*	Hoovers cryptantha

Plants - Vascular	*Caulanthus californicus*	California jewelflower
Plants - Vascular	*Downingia pusilla*	dwarf downingia
Plants - Vascular	*Lupinus citrinus var. citrinus*	orange lupine
Plants - Vascular	*Carpenteria californica*	tree-anemone
Plants - Vascular	*Pholistoma auritum var. arizonicum*	Arizona pholistoma
Plants - Vascular	*Claytonia parviflora ssp. grandiflora*	streambank spring beauty
Plants - Vascular	*Castilleja campestris var. succulenta*	succulent owls-clover
Plants - Vascular	*Erythranthe acutidens*	Kings River monkeyflower
Plants - Vascular	*Erythranthe inconspicua*	small-flowered monkeyflower
Plants - Vascular	*Erythranthe sierrae*	Sierra Nevada monkeyflower
Plants - Vascular	*Gratiola heterosepala*	Boggs Lake hedge-hyssop
Plants - Vascular	*Imperata brevifolia*	California satintail
Plants - Vascular	*Orcuttia inaequalis*	San Joaquin Valley Orcutt grass
Plants - Vascular	*Orcuttia pilosa*	hairy Orcutt grass
Plants - Vascular	*Tuctoria greenei*	Greenes tuctoria
Plants - Vascular	*Leptosiphon serrulatus*	Madera leptosiphon
Plants - Vascular	*Navarretia eriocephala*	hoary navarretia
Plants - Vascular	*Navarretia myersii ssp. myersii*	pincushion navarretia
Plants - Vascular	*Delphinium hansenii ssp. ewanianum*	Ewans larkspur

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State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Central Region
1234 East Shaw Avenue
Fresno, California 93710
(559) 243-4005
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

February 28, 2024

McKencie Perez, MPA, Senior Planner
City of Clovis, Department of Planning and Development Services
1033 Fifth Street
Clovis, California 93612
(559) 324-2310
McKencieP@cityofclovis.com

Subject: Vista Ranch Project, General Plan Amendment (GPA) 2023-004, 005, 006
Early Consultation (CON)
State Clearinghouse No. 2023100508

Dear McKencie Perez:

The California Department of Fish and Wildlife (CDFW) received an Early Consultation (CON) from the City of Clovis for the above-referenced Project, pursuant to the California Environmental Quality Act (CEQA) and CEQA Guidelines.[1]

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife. Likewise, CDFW appreciates the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under Fish and Game Code.

After reviewing the CON notice, CDFW has determined that the previous Notice of Preparation (NOP) letter dated November 16, 2023 (November 2023 NOP), which was prepared for the entirety of the Vista Ranch Project and includes the GPA areas being considered within this CON, adequately identifies the species that could potentially be impacted by Project activities. The species identified within the November 2023 NOP letter include, but are not limited to, the federally threatened (FT) and State threatened (ST) California tiger salamander (*Ambystoma californiense* pop. 1); the ST Swainson's hawk (*Buteo swainsoni*) and tricolored blackbird (*Agelaius tricolor*); the State candidate for listing as endangered (SCE) Crotch's bumble bee (*Bombus crotchii*); the State species of special concern (SSC) American badger (*Taxidea taxus*), and burrowing owl (*Athene cunicularia*); the SSC and Federally proposed threatened (FPT) western pond turtle (*Actinemys marmorata*); and the SSC western spadefoot (*Spea hammondii*).

[1] CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

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CDFW recommends that all measures identified in the November 2023 NOP be included within the CEQA document for this Project.

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database which may be used to make subsequent or supplemental environmental determinations (Pub. Resources Code, § 21003, subd. (e)). Accordingly, please report any special-status species and natural communities detected during Project surveys to CNDDB. The CNDDB field survey form can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data. The completed form can be mailed electronically to CNDDB at the following email address: CNDDB@wildlife.ca.gov. The types of information reported to CNDDB can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

FILING FEES

If it is determined that the Project has the potential to impact biological resources, an assessment of filing fees will be necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code, § 711.4; Pub. Resources Code, § 21089).

CDFW appreciates the opportunity to comment on the Project to assist the City of Clovis in identifying and mitigating the Project's impacts on biological resources.

More information on survey and monitoring protocols for sensitive species can be found at CDFW's website (https://www.wildlife.ca.gov/Conservation/Survey-Protocols). If you have any questions, please contact Kelley Nelson, Environmental Scientist, at the address provided on this letterhead, by telephone at (559) 580-3194, or by electronic mail at Kelley.Nelson@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Julie Vance
FA83F09FE08945A...

Julie A. Vance
Regional Manager

ec: State Clearinghouse
Governor's Office of Planning and Research
State.Clearinghouse@opr.ca.gov

Appendix B

LESA Model

	A	B	C	D	E	F	G
Soil Map Unit	**Project Acres**	**Proportion of Project Area**	**LCC**	**LCC Rating**	**LCC Score**	**Storie Index**	**Storie Index Score**
AoA	8.63	1.70%	4s	40	0.68	70	1.19
AoB	19.58	3.86%	4e	50	1.93	65	2.51
ArA	107.95	21.31%	4s	40	8.52	88	18.75
ArB	12.09	2.39%	4e	50	1.19	81	1.93
AtA	32.64	6.44%	4s	40	2.58	65	4.19
BcC	34.87	6.88%	3e	70	4.82	51	3.51
CzcB	0.67	0.13%	4e	50	0.07	30	0.04
DhB	2.62	0.52%	4e	50	0.26	68	0.35
Dn	3.70	0.73%	4w	40	0.29	65	0.47
Fn	34.57	6.82%	4s	40	2.73	90	6.14
Gf	25.47	5.03%	4w	40	2.01	80	4.02
Gn	7.20	1.42%	4s	40	0.57	63	0.89
GtA	5.90	1.17%	4c	20	0.23	90	1.05
Hu	3.04	0.60%	3w	60	0.36	36	0.22
MoD	2.81	0.55%	7e	10	0.06	16	0.09
Ra	35.86	7.08%	4c	20	1.42	77	5.45
Rb	0.75	0.15%	4s	40	0.06	62	0.09
Rc	1.03	0.20%	4c	20	0.04	85	0.17
Re	2.90	0.57%	4s	40	0.23	65	0.37
Rh	18.57	3.67%	N/A	0	0.00	5	0.18
ScA	14.60	2.88%	4s	40	1.15	24	0.69
SeA	113.00	22.30%	4s	40	8.92	33	7.36
SgA	1.40	0.28%	4s	40	0.11	24	0.07
TzbA	16.86	3.33%	4s	40	1.33	76	2.53
TOTALS	506.69	100.00%	**LCC TOTAL SCORE**		39.55	**STORIE INDEX TOTAL SCORE**	62.27

		I	J	K
	Unclassified	**LCC Class I-II**	**LCC Class III**	**LCC Class IV-VIII**
				8.63
				19.58
				107.95
				12.09
				32.64
			34.87	
				0.67
				2.62
				3.70
				34.57
				25.47
				7.20
				5.90
			3.04	
				2.81
				35.86
				0.75
				1.03
				2.90
	18.57			
				14.60
				113.00
				1.40
				16.86
TOTAL	18.57	0	37.91	450.21
PROJECT SIZE SCORES	0	0	30	100
HIGHEST PROJECT SIZE SCORE				100

A	B	C	D	E
Project Portion	Water Source	Proportion of Project Area	Water Availability Score	Weighted Availability Score (C x D)
1	Not Irrigated	100%	0	0
2				
3				
4				

Note: Water Resource Availability Scoring Option 14, irrigation is not feasible and is not implemented. Land is grazing land.

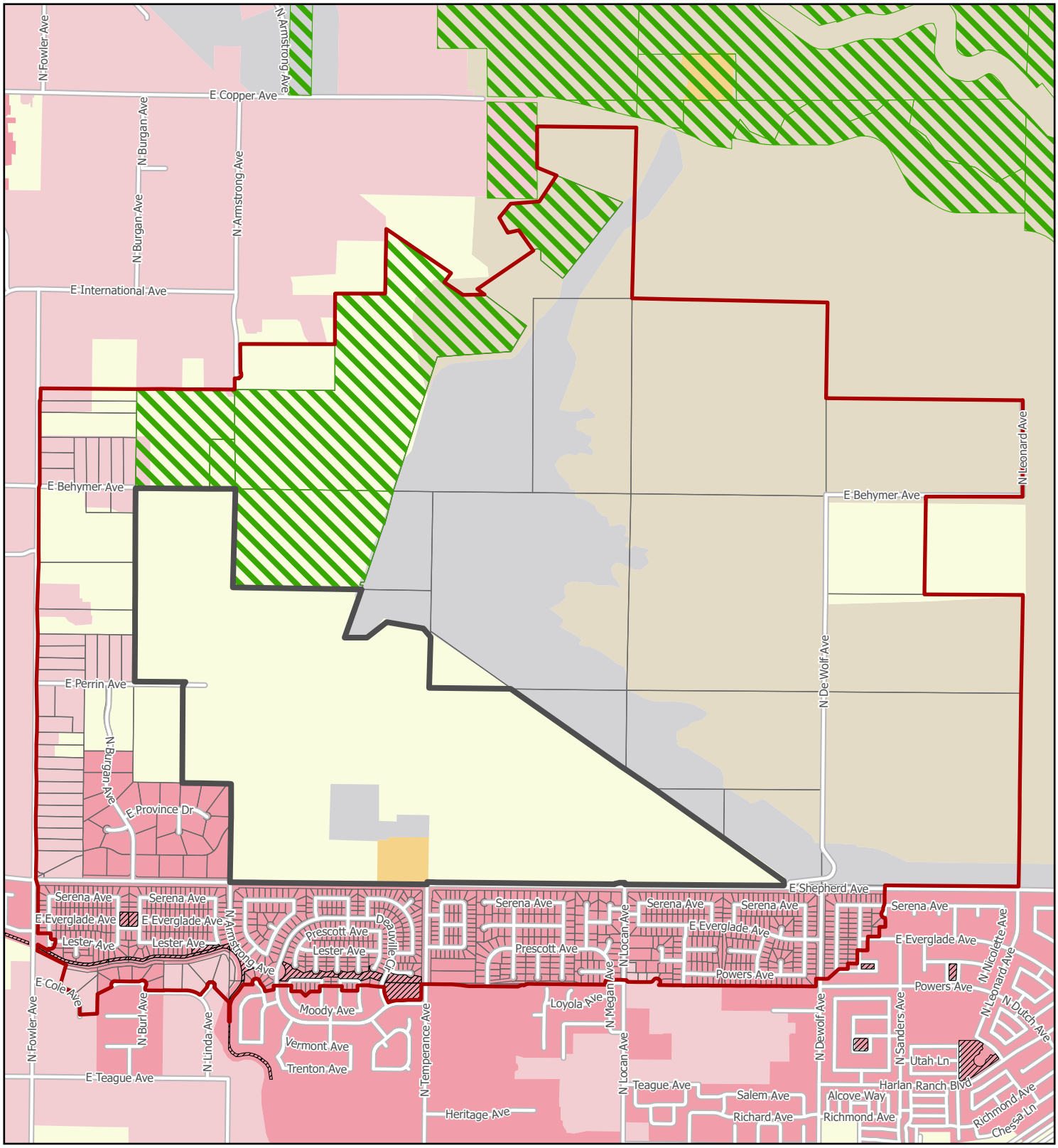
Total Acres	Acres in Agriculture	Acres of Protected Resource Land	Percent in Agriculture (B/A)	Percent Protected Resource Land (C/A)	Surrounding Agricultural Land Score	Surrounding Protected Resources Land Score
2110.68	382.04	279.60	18.10%	13.25%	0	0

Agriculture Source

Farmland of local Importance	382.04

Protected Lands Sources

Williamson Act Lands	267.96
CPAD	11.64
TOTAL	279.60



Legend

- Project Area
- Zone of Influence
- Parcels within the Zone of Influence

Protected Resource Lands

- California Protected Areas Database (CPAD)
- Williamson Act Lands - Nonprime

Farmland Classification

- Grazing Land
- Farmland of Local Importance
- Vacant or Disturbed Land
- Rural Residential Land
- Semi-agricultural and Rural Commercial Land
- Urban and Built-Up Land

CITY OF CLOVIS - VISTA RANCH

LESA Zone of Influence

0 1,000 2,000
Feet

Sources: Fresno County GIS; CDOC, Farmland Mapping and Monitoring Program, Fresno County 2020; CDOC Williamson Act Lands 2022; California Protected Areas Database, 2023a. Map date: February 14, 2024.

De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm

	Factor Scores	Factor Weight	Weighted Factor Scores
LE Factors			
Land Capability	*39.5*	0.25	9.88
Storie Index	*62.27*	0.25	15.57
LE		***0.50***	**25.44**
SA Factors			
Project	*100*	0.15	15.00
Water Resource	*0*	0.15	0.00
Surrounding Agricultural Land	*0*	0.15	0.00
Protected Resource Land	*0*	0.05	0.00
SA		***0.50***	**15.00**
Final LESA			**40.44**

Appendix C

Air Quality, GHG, and Energy

Clovis Vista Ranch - 7.2.2024 Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

1.2. Land Use Types

1.3. User-Selected Emission Reduction Measures by Emissions Sector

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

2.2. Construction Emissions by Year, Unmitigated

2.3. Construction Emissions by Year, Mitigated

2.4. Operations Emissions Compared Against Thresholds

2.5. Operations Emissions by Sector, Unmitigated

2.6. Operations Emissions by Sector, Mitigated

3. Construction Emissions Details

3.1. Demolition (2024) - Unmitigated

3.2. Demolition (2024) - Mitigated

3.3. Site Preparation (2024) - Unmitigated

3.4. Site Preparation (2024) - Mitigated

3.5. Site Preparation (2025) - Unmitigated

3.6. Site Preparation (2025) - Mitigated

3.7. Grading (2025) - Unmitigated

3.8. Grading (2025) - Mitigated

3.9. Grading (2026) - Unmitigated

3.10. Grading (2026) - Mitigated

3.11. Building Construction (2026) - Unmitigated

3.12. Building Construction (2026) - Mitigated

3.13. Building Construction (2027) - Unmitigated

3.14. Building Construction (2027) - Mitigated

3.15. Building Construction (2028) - Unmitigated

3.16. Building Construction (2028) - Mitigated

3.17. Building Construction (2029) - Unmitigated

3.18. Building Construction (2029) - Mitigated

3.19. Paving (2026) - Unmitigated

3.20. Paving (2026) - Mitigated

3.21. Architectural Coating (2027) - Unmitigated

3.22. Architectural Coating (2027) - Mitigated

3.23. Architectural Coating (2028) - Unmitigated

3.24. Architectural Coating (2028) - Mitigated

3.25. Architectural Coating (2029) - Unmitigated

3.26. Architectural Coating (2029) - Mitigated

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

4.1.2. Mitigated

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

4.2.2. Electricity Emissions By Land Use - Mitigated

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

4.2.4. Natural Gas Emissions By Land Use - Mitigated

4.3. Area Emissions by Source

4.3.1. Unmitigated

4.3.2. Mitigated

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

4.4.2. Mitigated

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

4.5.2. Mitigated

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

4.6.2. Mitigated

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

4.7.2. Mitigated

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

4.8.2. Mitigated

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

4.9.2. Mitigated

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

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	Clovis Vista Ranch - 7.2.2024
Construction Start Date	10/1/2024
Operational Year	2030
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	10.2
Location	36.872231744863655, -119.67249539741651
County	Fresno
City	Unincorporated
Air District	San Joaquin Valley APCD
Air Basin	San Joaquin Valley
TAZ	2416
EDFZ	5
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.25

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	1,268	Dwelling Unit	412	2,472,600	14,851,903	0.00	4,058	MPArea 1 - Medium Density Residences
Condo/Townhouse	1,039	Dwelling Unit	64.9	1,101,340	0.00	0.00	3,325	MPArea 1 - Medium/High Density Residential
Apartments Mid Rise	500	Dwelling Unit	13.2	480,000	0.00	0.00	1,600	MPArea1 - Very High Density Residential
Strip Mall	85.0	1000sqft	1.95	85,000	0.00	0.00	—	MPArea1 - Gateway Commercial
City Park	59.0	Acre	59.0	0.00	0.00	0.00	—	Parks/Trails/Open Space
Single Family Housing	137	Dwelling Unit	44.5	267,150	1,604,661	0.00	438	MPArea2 - Low Density Residential
Single Family Housing	224	Dwelling Unit	72.7	436,800	2,623,680	0.00	717	MPArea2 - Medium Density Residential
Strip Mall	115	1000sqft	2.64	115,000	0.00	0.00	—	MPArea2 - Gateway Commercial
Office Park	421	1000sqft	9.67	421,356	0.00	0.00	—	MPArea2 - Mini-self Storage
Elementary School	750	Student	1.44	62,703	0.00	0.00	—	MPArea2 - Elementary School

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Energy	E-10-B	Establish Onsite Renewable Energy Systems: Solar Power
Area Sources	LL-1	Replace Gas Powered Landscape Equipment with Zero-Emission Landscape Equipment
Area Sources	AS-2	Use Low-VOC Paints

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.	52.9	52.3	31.7	93.3	0.08	1.37	19.8	21.1	1.26	10.1	11.4	—	21,615	21,615	0.64	1.41	54.8	22,101
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	51.9	50.9	36.0	80.8	0.08	1.60	19.8	21.4	1.47	10.1	11.6	—	20,127	20,127	0.75	1.45	1.42	20,580
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	37.1	36.6	22.1	58.2	0.06	0.92	9.99	10.8	0.85	4.62	5.47	—	14,670	14,670	0.49	1.04	16.9	15,007
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.76	6.69	4.03	10.6	0.01	0.17	1.82	1.97	0.15	0.84	1.00	—	2,429	2,429	0.08	0.17	2.80	2,485

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	4.02	3.39	31.7	30.8	0.06	1.37	19.8	21.1	1.26	10.1	11.4	—	6,720	6,720	0.27	0.06	0.45	6,745
2026	10.9	9.84	30.2	93.3	0.08	0.78	12.0	12.8	0.72	2.88	3.61	—	21,211	21,211	0.64	1.41	53.5	21,699
2027	52.9	52.3	23.4	91.0	0.06	0.44	14.0	14.5	0.41	3.36	3.76	—	21,615	21,615	0.60	1.40	54.8	22,101
2028	52.4	51.5	22.2	85.9	0.06	0.40	14.0	14.4	0.37	3.36	3.73	—	21,217	21,217	0.60	1.40	49.1	21,698
2029	51.8	50.9	21.1	81.2	0.06	0.37	14.0	14.4	0.34	3.36	3.70	—	20,826	20,826	0.55	1.36	43.7	21,288

Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	4.41	3.72	36.0	33.5	0.05	1.60	19.8	21.4	1.47	10.1	11.6	—	5,392	5,392	0.22	0.12	0.04	5,412
2025	4.01	3.38	31.7	30.7	0.06	1.37	19.8	21.1	1.26	10.1	11.4	—	6,706	6,706	0.27	0.06	0.01	6,731
2026	9.69	8.96	31.7	80.8	0.08	1.12	12.0	12.8	1.03	3.68	4.71	—	19,934	19,934	0.72	1.41	1.39	20,372
2027	51.9	50.9	25.0	77.4	0.06	0.44	14.0	14.5	0.41	3.36	3.76	—	20,127	20,127	0.75	1.45	1.42	20,580
2028	51.4	50.5	23.7	72.9	0.06	0.40	14.0	14.4	0.37	3.36	3.73	—	19,761	19,761	0.70	1.45	1.27	20,212
2029	51.0	50.0	22.6	69.2	0.06	0.37	14.0	14.4	0.34	3.36	3.70	—	19,400	19,400	0.70	1.41	1.13	19,839
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.65	0.54	5.20	4.67	0.01	0.22	1.27	1.49	0.21	0.61	0.82	—	807	807	0.03	0.02	0.10	813
2025	2.81	2.37	21.8	21.2	0.04	0.92	9.88	10.8	0.85	4.62	5.47	—	4,386	4,386	0.18	0.04	0.13	4,402
2026	7.21	6.49	22.1	58.2	0.06	0.56	8.54	9.09	0.52	2.05	2.56	—	14,467	14,467	0.49	1.00	16.4	14,794
2027	37.1	36.6	17.3	55.8	0.05	0.31	9.96	10.3	0.29	2.38	2.67	—	14,670	14,670	0.46	1.04	16.9	15,007
2028	36.9	36.3	16.5	52.9	0.05	0.28	9.99	10.3	0.26	2.39	2.65	—	14,447	14,447	0.46	1.00	15.2	14,772
2029	36.5	35.8	15.6	49.8	0.05	0.26	9.97	10.2	0.25	2.38	2.63	—	14,143	14,143	0.43	0.97	13.5	14,457
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.12	0.10	0.95	0.85	< 0.005	0.04	0.23	0.27	0.04	0.11	0.15	—	134	134	0.01	< 0.005	0.02	135
2025	0.51	0.43	3.99	3.87	0.01	0.17	1.80	1.97	0.15	0.84	1.00	—	726	726	0.03	0.01	0.02	729
2026	1.32	1.18	4.03	10.6	0.01	0.10	1.56	1.66	0.09	0.37	0.47	—	2,395	2,395	0.08	0.17	2.72	2,449
2027	6.76	6.69	3.16	10.2	0.01	0.06	1.82	1.88	0.05	0.43	0.49	—	2,429	2,429	0.08	0.17	2.80	2,485
2028	6.74	6.62	3.00	9.66	0.01	0.05	1.82	1.88	0.05	0.44	0.48	—	2,392	2,392	0.08	0.17	2.51	2,446
2029	6.66	6.53	2.85	9.09	0.01	0.05	1.82	1.87	0.04	0.43	0.48	—	2,342	2,342	0.07	0.16	2.23	2,393

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	4.02	3.39	31.7	30.8	0.06	1.37	19.8	21.1	1.26	10.1	11.4	—	6,720	6,720	0.27	0.06	0.45	6,745
2026	10.9	9.84	30.2	93.3	0.08	0.78	12.0	12.8	0.72	2.88	3.61	—	21,211	21,211	0.64	1.41	53.5	21,699
2027	52.9	52.3	23.4	91.0	0.06	0.44	14.0	14.5	0.41	3.36	3.76	—	21,615	21,615	0.60	1.40	54.8	22,101
2028	52.4	51.5	22.2	85.9	0.06	0.40	14.0	14.4	0.37	3.36	3.73	—	21,217	21,217	0.60	1.40	49.1	21,698
2029	51.8	50.9	21.1	81.2	0.06	0.37	14.0	14.4	0.34	3.36	3.70	—	20,826	20,826	0.55	1.36	43.7	21,288
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	4.41	3.72	36.0	33.5	0.05	1.60	19.8	21.4	1.47	10.1	11.6	—	5,392	5,392	0.22	0.12	0.04	5,412
2025	4.01	3.38	31.7	30.7	0.06	1.37	19.8	21.1	1.26	10.1	11.4	—	6,706	6,706	0.27	0.06	0.01	6,731
2026	9.69	8.96	31.7	80.8	0.08	1.12	12.0	12.8	1.03	3.68	4.71	—	19,934	19,934	0.72	1.41	1.39	20,372
2027	51.9	50.9	25.0	77.4	0.06	0.44	14.0	14.5	0.41	3.36	3.76	—	20,127	20,127	0.75	1.45	1.42	20,580
2028	51.4	50.5	23.7	72.9	0.06	0.40	14.0	14.4	0.37	3.36	3.73	—	19,761	19,761	0.70	1.45	1.27	20,212
2029	51.0	50.0	22.6	69.2	0.06	0.37	14.0	14.4	0.34	3.36	3.70	—	19,400	19,400	0.70	1.41	1.13	19,839
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.65	0.54	5.20	4.67	0.01	0.22	1.27	1.49	0.21	0.61	0.82	—	807	807	0.03	0.02	0.10	813
2025	2.81	2.37	21.8	21.2	0.04	0.92	9.88	10.8	0.85	4.62	5.47	—	4,386	4,386	0.18	0.04	0.13	4,402
2026	7.21	6.49	22.1	58.2	0.06	0.56	8.54	9.09	0.52	2.05	2.56	—	14,467	14,467	0.49	1.00	16.4	14,794
2027	37.1	36.6	17.3	55.8	0.05	0.31	9.96	10.3	0.29	2.38	2.67	—	14,670	14,670	0.46	1.04	16.9	15,007
2028	36.9	36.3	16.5	52.9	0.05	0.28	9.99	10.3	0.26	2.39	2.65	—	14,447	14,447	0.46	1.00	15.2	14,772
2029	36.5	35.8	15.6	49.8	0.05	0.26	9.97	10.2	0.25	2.38	2.63	—	14,143	14,143	0.43	0.97	13.5	14,457
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.12	0.10	0.95	0.85	< 0.005	0.04	0.23	0.27	0.04	0.11	0.15	—	134	134	0.01	< 0.005	0.02	135
2025	0.51	0.43	3.99	3.87	0.01	0.17	1.80	1.97	0.15	0.84	1.00	—	726	726	0.03	0.01	0.02	729
2026	1.32	1.18	4.03	10.6	0.01	0.10	1.56	1.66	0.09	0.37	0.47	—	2,395	2,395	0.08	0.17	2.72	2,449

2027	6.76	6.69	3.16	10.2	0.01	0.06	1.82	1.88	0.05	0.43	0.49	—	2,429	2,429	0.08	0.17	2.80	2,485
2028	6.74	6.62	3.00	9.66	0.01	0.05	1.82	1.88	0.05	0.44	0.48	—	2,392	2,392	0.08	0.17	2.51	2,446
2029	6.66	6.53	2.85	9.09	0.01	0.05	1.82	1.87	0.04	0.43	0.48	—	2,342	2,342	0.07	0.16	2.23	2,393

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.	295	283	148	1,208	2.79	4.59	228	233	4.45	57.9	62.3	2,214	326,416	328,630	239	13.9	642	339,399
Mit.	266	256	146	998	2.78	4.46	228	233	4.35	57.9	62.2	2,214	317,363	319,577	238	13.8	642	330,261
% Reduced	10%	10%	1%	17%	< 0.5%	3%	—	< 0.5%	2%	—	< 0.5%	—	3%	3%	1%	1%	—	3%
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	260	249	161	866	2.57	4.46	228	233	4.35	57.9	62.2	2,214	304,016	306,230	241	14.8	52.3	316,696
Mit.	253	241	161	866	2.57	4.46	228	233	4.35	57.9	62.2	2,214	295,507	297,721	239	14.6	52.3	308,103
% Reduced	3%	3%	—	—	—	—	—	—	—	—	—	—	3%	3%	1%	1%	—	3%
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	272	260	155	970	2.63	4.52	227	231	4.40	57.5	61.9	2,214	310,478	312,692	240	14.3	298	323,253
Mit.	254	243	154	867	2.63	4.46	227	231	4.35	57.5	61.8	2,214	301,701	303,915	238	14.2	298	314,391
% Reduced	7%	7%	1%	11%	< 0.5%	1%	—	< 0.5%	1%	—	< 0.5%	—	3%	3%	1%	1%	—	3%
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	49.6	47.5	28.2	177	0.48	0.83	41.4	42.2	0.80	10.5	11.3	367	51,403	51,770	39.7	2.37	49.3	53,518

Mit.	46.4	44.4	28.1	158	0.48	0.81	41.4	42.2	0.79	10.5	11.3	367	49,950	50,317	39.5	2.34	49.3	52,051
% Reduced	7%	7%	1%	11%	< 0.5%	1%	—	< 0.5%	1%	—	< 0.5%	—	3%	3%	1%	1%	—	3%

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	144	135	112	981	2.57	1.76	228	230	1.65	57.9	59.5	—	262,638	262,638	9.57	12.4	605	267,181
Area	147	146	1.93	210	0.01	0.13	—	0.13	0.10	—	0.10	—	603	603	0.03	0.01	—	605
Energy	3.91	1.95	33.8	16.8	0.21	2.70	—	2.70	2.70	—	2.70	—	62,260	62,260	6.96	0.47	—	62,574
Water	—	—	—	—	—	—	—	—	—	—	—	420	915	1,335	43.2	1.04	—	2,726
Waste	—	—	—	—	—	—	—	—	—	—	—	1,794	0.00	1,794	179	0.00	—	6,277
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	36.6	36.6
Total	295	283	148	1,208	2.79	4.59	228	233	4.45	57.9	62.3	2,214	326,416	328,630	239	13.9	642	339,399
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	131	121	127	849	2.36	1.76	228	230	1.65	57.9	59.5	—	240,841	240,841	11.0	13.3	15.7	245,083
Area	125	125	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	3.91	1.95	33.8	16.8	0.21	2.70	—	2.70	2.70	—	2.70	—	62,260	62,260	6.96	0.47	—	62,574
Water	—	—	—	—	—	—	—	—	—	—	—	420	915	1,335	43.2	1.04	—	2,726
Waste	—	—	—	—	—	—	—	—	—	—	—	1,794	0.00	1,794	179	0.00	—	6,277
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	36.6	36.6
Total	260	249	161	866	2.57	4.46	228	233	4.35	57.9	62.2	2,214	304,016	306,230	241	14.8	52.3	316,696
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	132	123	120	850	2.42	1.76	227	229	1.65	57.5	59.1	—	247,006	247,006	10.3	12.8	261	251,341
Area	136	136	0.95	104	< 0.005	0.07	—	0.07	0.05	—	0.05	—	297	297	0.01	< 0.005	—	298
Energy	3.91	1.95	33.8	16.8	0.21	2.70	—	2.70	2.70	—	2.70	—	62,260	62,260	6.96	0.47	—	62,574
Water	—	—	—	—	—	—	—	—	—	—	—	420	915	1,335	43.2	1.04	—	2,726
Waste	—	—	—	—	—	—	—	—	—	—	—	1,794	0.00	1,794	179	0.00	—	6,277
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	36.6	36.6
Total	272	260	155	970	2.63	4.52	227	231	4.40	57.5	61.9	2,214	310,478	312,692	240	14.3	298	323,253
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	24.1	22.4	21.9	155	0.44	0.32	41.4	41.7	0.30	10.5	10.8	—	40,895	40,895	1.70	2.12	43.3	41,612
Area	24.9	24.7	0.17	18.9	< 0.005	0.01	—	0.01	0.01	—	0.01	—	49.2	49.2	< 0.005	< 0.005	—	49.4
Energy	0.71	0.36	6.16	3.06	0.04	0.49	—	0.49	0.49	—	0.49	—	10,308	10,308	1.15	0.08	—	10,360
Water	—	—	—	—	—	—	—	—	—	—	—	69.5	152	221	7.15	0.17	—	451
Waste	—	—	—	—	—	—	—	—	—	—	—	297	0.00	297	29.7	0.00	—	1,039
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.06	6.06
Total	49.6	47.5	28.2	177	0.48	0.83	41.4	42.2	0.80	10.5	11.3	367	51,403	51,770	39.7	2.37	49.3	53,518

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	144	135	112	981	2.57	1.76	228	230	1.65	57.9	59.5	—	262,638	262,638	9.57	12.4	605	267,181
Area	118	118	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	3.91	1.95	33.8	16.8	0.21	2.70	—	2.70	2.70	—	2.70	—	53,810	53,810	5.60	0.30	—	54,040
Water	—	—	—	—	—	—	—	—	—	—	—	420	915	1,335	43.2	1.04	—	2,726
Waste	—	—	—	—	—	—	—	—	—	—	—	1,794	0.00	1,794	179	0.00	—	6,277
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	36.6	36.6

Total	266	256	146	998	2.78	4.46	228	233	4.35	57.9	62.2	2,214	317,363	319,577	238	13.8	642	330,261
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	131	121	127	849	2.36	1.76	228	230	1.65	57.9	59.5	—	240,841	240,841	11.0	13.3	15.7	245,083
Area	118	118	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	3.91	1.95	33.8	16.8	0.21	2.70	—	2.70	2.70	—	2.70	—	53,751	53,751	5.59	0.30	—	53,981
Water	—	—	—	—	—	—	—	—	—	—	—	420	915	1,335	43.2	1.04	—	2,726
Waste	—	—	—	—	—	—	—	—	—	—	—	1,794	0.00	1,794	179	0.00	—	6,277
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	36.6	36.6
Total	253	241	161	866	2.57	4.46	228	233	4.35	57.9	62.2	2,214	295,507	297,721	239	14.6	52.3	308,103
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	132	123	120	850	2.42	1.76	227	229	1.65	57.5	59.1	—	247,006	247,006	10.3	12.8	261	251,341
Area	118	118	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	3.91	1.95	33.8	16.8	0.21	2.70	—	2.70	2.70	—	2.70	—	53,780	53,780	5.59	0.30	—	54,010
Water	—	—	—	—	—	—	—	—	—	—	—	420	915	1,335	43.2	1.04	—	2,726
Waste	—	—	—	—	—	—	—	—	—	—	—	1,794	0.00	1,794	179	0.00	—	6,277
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	36.6	36.6
Total	254	243	154	867	2.63	4.46	227	231	4.35	57.5	61.8	2,214	301,701	303,915	238	14.2	298	314,391
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	24.1	22.4	21.9	155	0.44	0.32	41.4	41.7	0.30	10.5	10.8	—	40,895	40,895	1.70	2.12	43.3	41,612
Area	21.6	21.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.71	0.36	6.16	3.06	0.04	0.49	—	0.49	0.49	—	0.49	—	8,904	8,904	0.93	0.05	—	8,942
Water	—	—	—	—	—	—	—	—	—	—	—	69.5	152	221	7.15	0.17	—	451
Waste	—	—	—	—	—	—	—	—	—	—	—	297	0.00	297	29.7	0.00	—	1,039
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.06	6.06
Total	46.4	44.4	28.1	158	0.48	0.81	41.4	42.2	0.79	10.5	11.3	367	49,950	50,317	39.5	2.34	49.3	52,051

3. Construction Emissions Details

3.1. Demolition (2024) - 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	3.12	2.62	24.9	21.7	0.03	1.06	—	1.06	0.98	—	0.98	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	0.68	0.68	—	0.10	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.38	0.32	3.00	2.62	< 0.005	0.13	—	0.13	0.12	—	0.12	—	413	413	0.02	< 0.005	—	414
Demolition	—	—	—	—	—	—	0.08	0.08	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.06	0.55	0.48	< 0.005	0.02	—	0.02	0.02	—	0.02	—	68.4	68.4	< 0.005	< 0.005	—	68.6
Demolition	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.05	0.49	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	82.4	82.4	< 0.005	< 0.005	0.01	83.7
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	0.03	0.01	0.72	0.16	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	560	560	0.01	0.09	0.03	586
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.3	10.3	< 0.005	< 0.005	0.02	10.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.09	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	67.4	67.4	< 0.005	0.01	0.07	70.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.70	1.70	< 0.005	< 0.005	< 0.005	1.73
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	11.2	11.2	< 0.005	< 0.005	0.01	11.7

3.2. Demolition (2024) - 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	3.12	2.62	24.9	21.7	0.03	1.06	—	1.06	0.98	—	0.98	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	0.68	0.68	—	0.10	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.38	0.32	3.00	2.62	< 0.005	0.13	—	0.13	0.12	—	0.12	—	413	413	0.02	< 0.005	—	414
Demolition	—	—	—	—	—	—	0.08	0.08	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.06	0.55	0.48	< 0.005	0.02	—	0.02	0.02	—	0.02	—	68.4	68.4	< 0.005	< 0.005	—	68.6
Demolition	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.05	0.49	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	82.4	82.4	< 0.005	< 0.005	0.01	83.7
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	0.03	0.01	0.72	0.16	< 0.005	0.01	0.15	0.16	0.01	0.04	0.05	—	560	560	0.01	0.09	0.03	586
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.3	10.3	< 0.005	< 0.005	0.02	10.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.09	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	67.4	67.4	< 0.005	0.01	0.07	70.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.70	1.70	< 0.005	< 0.005	< 0.005	1.73
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	11.2	11.2	< 0.005	< 0.005	0.01	11.7

3.3. Site Preparation (2024) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.34	3.65	36.0	32.9	0.05	1.60	—	1.60	1.47	—	1.47	—	5,296	5,296	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	0.25	0.21	2.11	1.93	< 0.005	0.09	—	0.09	0.09	—	0.09	—	311	311	0.01	< 0.005	—	312
Dust From Material Movement	—	—	—	—	—	—	1.15	1.15	—	0.59	0.59	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.39	0.35	< 0.005	0.02	—	0.02	0.02	—	0.02	—	51.5	51.5	< 0.005	< 0.005	—	51.7
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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.06	0.57	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	96.2	96.2	< 0.005	< 0.005	0.01	97.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	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	—	5.85	5.85	< 0.005	< 0.005	0.01	5.95
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.97	0.97	< 0.005	< 0.005	< 0.005	0.98
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 (2024) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.34	3.65	36.0	32.9	0.05	1.60	—	1.60	1.47	—	1.47	—	5,296	5,296	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	0.25	0.21	2.11	1.93	< 0.005	0.09	—	0.09	0.09	—	0.09	—	311	311	0.01	< 0.005	—	312
Dust From Material Movement	—	—	—	—	—	—	1.15	1.15	—	0.59	0.59	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.05	0.04	0.39	0.35	< 0.005	0.02	—	0.02	0.02	—	0.02	—	51.5	51.5	< 0.005	< 0.005	—	51.7
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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.06	0.57	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	96.2	96.2	< 0.005	< 0.005	0.01	97.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	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	—	5.85	5.85	< 0.005	< 0.005	0.01	5.95
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.97	0.97	< 0.005	< 0.005	< 0.005	0.98
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. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
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	1.22	1.02	9.78	9.33	0.02	0.42	—	0.42	0.39	—	0.39	—	1,637	1,637	0.07	0.01	—	1,643
Dust From Material Movement	—	—	—	—	—	—	6.08	6.08	—	3.12	3.12	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.22	0.19	1.79	1.70	< 0.005	0.08	—	0.08	0.07	—	0.07	—	271	271	0.01	< 0.005	—	272
Dust From Material Movement	—	—	—	—	—	—	1.11	1.11	—	0.57	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	0.04	0.65	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	106	106	< 0.005	< 0.005	0.40	108
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.05	0.53	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	94.2	94.2	< 0.005	< 0.005	0.01	95.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	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	0.02	0.02	0.01	0.17	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	30.2	30.2	< 0.005	< 0.005	0.05	30.7
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	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.99	4.99	< 0.005	< 0.005	0.01	5.08
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. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
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	1.22	1.02	9.78	9.33	0.02	0.42	—	0.42	0.39	—	0.39	—	1,637	1,637	0.07	0.01	—	1,643
Dust From Material Movement	—	—	—	—	—	—	6.08	6.08	—	3.12	3.12	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.22	0.19	1.79	1.70	< 0.005	0.08	—	0.08	0.07	—	0.07	—	271	271	0.01	< 0.005	—	272
Dust From Material Movement	—	—	—	—	—	—	1.11	1.11	—	0.57	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	0.04	0.65	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	106	106	< 0.005	< 0.005	0.40	108
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.05	0.53	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	94.2	94.2	< 0.005	< 0.005	0.01	95.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	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	0.02	0.02	0.01	0.17	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	30.2	30.2	< 0.005	< 0.005	0.05	30.7
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	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	4.99	4.99	< 0.005	< 0.005	0.01	5.08
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. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.80	3.20	29.7	28.3	0.06	1.23	—	1.23	1.14	—	1.14	—	6,599	6,599	0.27	0.05	—	6,622
Dust From Material Movement	—	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
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	3.80	3.20	29.7	28.3	0.06	1.23	—	1.23	1.14	—	1.14	—	6,599	6,599	0.27	0.05	—	6,622
Dust From Material Movement	—	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
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	1.54	1.29	12.0	11.5	0.02	0.50	—	0.50	0.46	—	0.46	—	2,673	2,673	0.11	0.02	—	2,682

Dust From Material Movement	—	—	—	—	—	—	3.73	3.73	—	1.48	1.48	—	—	—	—	—	—	—
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	0.28	0.24	2.19	2.09	< 0.005	0.09	—	0.09	0.08	—	0.08	—	443	443	0.02	< 0.005	—	444
Dust From Material Movement	—	—	—	—	—	—	0.68	0.68	—	0.27	0.27	—	—	—	—	—	—	—
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	0.09	0.09	0.05	0.74	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	121	121	< 0.005	0.01	0.45	123
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	0.05	0.60	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	108	108	< 0.005	0.01	0.01	109
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	0.03	0.03	0.02	0.25	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	45.2	45.2	< 0.005	< 0.005	0.08	45.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.48	7.48	< 0.005	< 0.005	0.01	7.60
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.8. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.80	3.20	29.7	28.3	0.06	1.23	—	1.23	1.14	—	1.14	—	6,599	6,599	0.27	0.05	—	6,622
Dust From Material Movement	—	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
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	3.80	3.20	29.7	28.3	0.06	1.23	—	1.23	1.14	—	1.14	—	6,599	6,599	0.27	0.05	—	6,622
Dust From Material Movement	—	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
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	1.54	1.29	12.0	11.5	0.02	0.50	—	0.50	0.46	—	0.46	—	2,673	2,673	0.11	0.02	—	2,682
Dust From Material Movement	—	—	—	—	—	—	3.73	3.73	—	1.48	1.48	—	—	—	—	—	—	—
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	0.28	0.24	2.19	2.09	< 0.005	0.09	—	0.09	0.08	—	0.08	—	443	443	0.02	< 0.005	—	444
Dust From Material Movement	—	—	—	—	—	—	0.68	0.68	—	0.27	0.27	—	—	—	—	—	—	—
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	0.09	0.09	0.05	0.74	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	121	121	< 0.005	0.01	0.45	123
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	0.05	0.60	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	108	108	< 0.005	0.01	0.01	109
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	0.03	0.03	0.02	0.25	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	45.2	45.2	< 0.005	< 0.005	0.08	45.9

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.48	7.48	< 0.005	< 0.005	0.01	7.60
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Grading (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	3.62	3.04	27.2	27.6	0.06	1.12	—	1.12	1.03	—	1.03	—	6,599	6,599	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
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	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.9	12.9	< 0.005	< 0.005	—	13.0

Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.14	2.14	< 0.005	< 0.005	—	2.15
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.05	0.55	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	105	105	< 0.005	0.01	0.01	107
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	—	0.21	0.21	< 0.005	< 0.005	< 0.005	0.22
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	—	0.04	0.04	< 0.005	< 0.005	< 0.005	0.04
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.10. Grading (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	3.62	3.04	27.2	27.6	0.06	1.12	—	1.12	1.03	—	1.03	—	6,599	6,599	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
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	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.9	12.9	< 0.005	< 0.005	—	13.0
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.14	2.14	< 0.005	< 0.005	—	2.15

Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.05	0.55	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	105	105	< 0.005	0.01	0.01	107
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	—	0.21	0.21	< 0.005	< 0.005	< 0.005	0.22
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	—	0.04	0.04	< 0.005	< 0.005	< 0.005	0.04
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
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	0.91	0.76	7.02	9.24	0.02	0.27	—	0.27	0.25	—	0.25	—	1,708	1,708	0.07	0.01	—	1,713
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	0.17	0.14	1.28	1.69	< 0.005	0.05	—	0.05	0.05	—	0.05	—	283	283	0.01	< 0.005	—	284
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	8.13	7.63	3.96	65.7	0.00	0.00	10.4	10.4	0.00	2.45	2.45	—	11,396	11,396	0.34	0.50	39.6	11,592
Vendor	0.48	0.32	9.23	4.12	0.04	0.08	1.51	1.59	0.08	0.42	0.50	—	5,818	5,818	0.14	0.87	13.6	6,096
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	7.00	6.79	4.87	53.2	0.00	0.00	10.4	10.4	0.00	2.45	2.45	—	10,118	10,118	0.42	0.50	1.03	10,277
Vendor	0.45	0.29	9.85	4.31	0.04	0.08	1.51	1.59	0.08	0.42	0.50	—	5,829	5,829	0.14	0.87	0.35	6,094
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	5.28	4.93	3.11	38.6	0.00	0.00	7.39	7.39	0.00	1.73	1.73	—	7,464	7,464	0.27	0.35	12.1	7,588
Vendor	0.33	0.21	6.82	2.99	0.03	0.06	1.07	1.13	0.06	0.30	0.35	—	4,148	4,148	0.10	0.62	4.17	4,340
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	0.96	0.90	0.57	7.04	0.00	0.00	1.35	1.35	0.00	0.32	0.32	—	1,236	1,236	0.04	0.06	2.01	1,256
Vendor	0.06	0.04	1.24	0.55	0.01	0.01	0.20	0.21	0.01	0.05	0.06	—	687	687	0.02	0.10	0.69	719
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. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
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	0.91	0.76	7.02	9.24	0.02	0.27	—	0.27	0.25	—	0.25	—	1,708	1,708	0.07	0.01	—	1,713
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	0.17	0.14	1.28	1.69	< 0.005	0.05	—	0.05	0.05	—	0.05	—	283	283	0.01	< 0.005	—	284
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	8.13	7.63	3.96	65.7	0.00	0.00	10.4	10.4	0.00	2.45	2.45	—	11,396	11,396	0.34	0.50	39.6	11,592
Vendor	0.48	0.32	9.23	4.12	0.04	0.08	1.51	1.59	0.08	0.42	0.50	—	5,818	5,818	0.14	0.87	13.6	6,096
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	7.00	6.79	4.87	53.2	0.00	0.00	10.4	10.4	0.00	2.45	2.45	—	10,118	10,118	0.42	0.50	1.03	10,277
Vendor	0.45	0.29	9.85	4.31	0.04	0.08	1.51	1.59	0.08	0.42	0.50	—	5,829	5,829	0.14	0.87	0.35	6,094
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	5.28	4.93	3.11	38.6	0.00	0.00	7.39	7.39	0.00	1.73	1.73	—	7,464	7,464	0.27	0.35	12.1	7,588
Vendor	0.33	0.21	6.82	2.99	0.03	0.06	1.07	1.13	0.06	0.30	0.35	—	4,148	4,148	0.10	0.62	4.17	4,340

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	0.96	0.90	0.57	7.04	0.00	0.00	1.35	1.35	0.00	0.32	0.32	—	1,236	1,236	0.04	0.06	2.01	1,256
Vendor	0.06	0.04	1.24	0.55	0.01	0.01	0.20	0.21	0.01	0.05	0.06	—	687	687	0.02	0.10	0.69	719
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. Building Construction (2027) - 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	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	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	0.88	0.74	6.71	9.24	0.02	0.24	—	0.24	0.22	—	0.22	—	1,712	1,712	0.07	0.01	—	1,718
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	0.16	0.13	1.22	1.69	< 0.005	0.04	—	0.04	0.04	—	0.04	—	283	283	0.01	< 0.005	—	284
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	7.38	7.21	3.55	60.8	0.00	0.00	10.4	10.4	0.00	2.45	2.45	—	11,159	11,159	0.30	0.45	35.7	11,337
Vendor	0.48	0.32	8.93	4.01	0.04	0.08	1.51	1.59	0.08	0.42	0.50	—	5,694	5,694	0.14	0.83	11.9	5,958
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	6.58	6.08	4.41	49.3	0.00	0.00	10.4	10.4	0.00	2.45	2.45	—	9,910	9,910	0.42	0.50	0.93	10,069
Vendor	0.45	0.29	9.51	4.18	0.04	0.08	1.51	1.59	0.08	0.42	0.50	—	5,705	5,705	0.14	0.83	0.31	5,958
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	4.76	4.64	2.83	35.7	0.00	0.00	7.41	7.41	0.00	1.74	1.74	—	7,330	7,330	0.24	0.35	11.0	7,453
Vendor	0.33	0.21	6.64	2.92	0.03	0.06	1.07	1.13	0.06	0.30	0.35	—	4,071	4,071	0.10	0.60	3.68	4,254
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	0.87	0.85	0.52	6.51	0.00	0.00	1.35	1.35	0.00	0.32	0.32	—	1,214	1,214	0.04	0.06	1.82	1,234
Vendor	0.06	0.04	1.21	0.53	0.01	0.01	0.20	0.21	0.01	0.05	0.06	—	674	674	0.02	0.10	0.61	704
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. Building Construction (2027) - 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	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	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	0.88	0.74	6.71	9.24	0.02	0.24	—	0.24	0.22	—	0.22	—	1,712	1,712	0.07	0.01	—	1,718
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	0.16	0.13	1.22	1.69	< 0.005	0.04	—	0.04	0.04	—	0.04	—	283	283	0.01	< 0.005	—	284
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	7.38	7.21	3.55	60.8	0.00	0.00	10.4	10.4	0.00	2.45	2.45	—	11,159	11,159	0.30	0.45	35.7	11,337
Vendor	0.48	0.32	8.93	4.01	0.04	0.08	1.51	1.59	0.08	0.42	0.50	—	5,694	5,694	0.14	0.83	11.9	5,958
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	6.58	6.08	4.41	49.3	0.00	0.00	10.4	10.4	0.00	2.45	2.45	—	9,910	9,910	0.42	0.50	0.93	10,069
Vendor	0.45	0.29	9.51	4.18	0.04	0.08	1.51	1.59	0.08	0.42	0.50	—	5,705	5,705	0.14	0.83	0.31	5,958
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	4.76	4.64	2.83	35.7	0.00	0.00	7.41	7.41	0.00	1.74	1.74	—	7,330	7,330	0.24	0.35	11.0	7,453
Vendor	0.33	0.21	6.64	2.92	0.03	0.06	1.07	1.13	0.06	0.30	0.35	—	4,071	4,071	0.10	0.60	3.68	4,254
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	0.87	0.85	0.52	6.51	0.00	0.00	1.35	1.35	0.00	0.32	0.32	—	1,214	1,214	0.04	0.06	1.82	1,234
Vendor	0.06	0.04	1.21	0.53	0.01	0.01	0.20	0.21	0.01	0.05	0.06	—	674	674	0.02	0.10	0.61	704
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

3.15. Building Construction (2028) - 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	1.18	0.99	8.92	12.9	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	1.18	0.99	8.92	12.9	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.85	0.71	6.39	9.26	0.02	0.22	—	0.22	0.20	—	0.20	—	1,717	1,717	0.07	0.01	—	1,723
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	0.15	0.13	1.17	1.69	< 0.005	0.04	—	0.04	0.04	—	0.04	—	284	284	0.01	< 0.005	—	285
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	7.04	6.59	3.14	56.6	0.00	0.00	10.4	10.4	0.00	2.45	2.45	—	10,943	10,943	0.30	0.45	32.2	11,118
Vendor	0.43	0.30	8.68	3.91	0.04	0.08	1.51	1.59	0.08	0.42	0.50	—	5,555	5,555	0.14	0.83	10.5	5,817
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	6.28	5.79	4.00	45.6	0.00	0.00	10.4	10.4	0.00	2.45	2.45	—	9,720	9,720	0.38	0.50	0.83	9,878
Vendor	0.40	0.29	9.21	4.07	0.04	0.08	1.51	1.59	0.08	0.42	0.50	—	5,566	5,566	0.14	0.83	0.27	5,819
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	4.56	4.20	2.54	33.3	0.00	0.00	7.43	7.43	0.00	1.74	1.74	—	7,210	7,210	0.24	0.32	9.95	7,322
Vendor	0.30	0.21	6.43	2.85	0.03	0.06	1.08	1.13	0.06	0.30	0.35	—	3,982	3,982	0.10	0.60	3.25	4,166

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	0.83	0.77	0.46	6.08	0.00	0.00	1.36	1.36	0.00	0.32	0.32	—	1,194	1,194	0.04	0.05	1.65	1,212
Vendor	0.05	0.04	1.17	0.52	0.01	0.01	0.20	0.21	0.01	0.05	0.06	—	659	659	0.02	0.10	0.54	690
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

3.16. Building Construction (2028) - 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	1.18	0.99	8.92	12.9	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.18	0.99	8.92	12.9	0.02	0.30	—	0.30	0.28	—	0.28	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.85	0.71	6.39	9.26	0.02	0.22	—	0.22	0.20	—	0.20	—	1,717	1,717	0.07	0.01	—	1,723
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	0.15	0.13	1.17	1.69	< 0.005	0.04	—	0.04	0.04	—	0.04	—	284	284	0.01	< 0.005	—	285
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	7.04	6.59	3.14	56.6	0.00	0.00	10.4	10.4	0.00	2.45	2.45	—	10,943	10,943	0.30	0.45	32.2	11,118
Vendor	0.43	0.30	8.68	3.91	0.04	0.08	1.51	1.59	0.08	0.42	0.50	—	5,555	5,555	0.14	0.83	10.5	5,817
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	6.28	5.79	4.00	45.6	0.00	0.00	10.4	10.4	0.00	2.45	2.45	—	9,720	9,720	0.38	0.50	0.83	9,878
Vendor	0.40	0.29	9.21	4.07	0.04	0.08	1.51	1.59	0.08	0.42	0.50	—	5,566	5,566	0.14	0.83	0.27	5,819
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	4.56	4.20	2.54	33.3	0.00	0.00	7.43	7.43	0.00	1.74	1.74	—	7,210	7,210	0.24	0.32	9.95	7,322
Vendor	0.30	0.21	6.43	2.85	0.03	0.06	1.08	1.13	0.06	0.30	0.35	—	3,982	3,982	0.10	0.60	3.25	4,166
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	0.83	0.77	0.46	6.08	0.00	0.00	1.36	1.36	0.00	0.32	0.32	—	1,194	1,194	0.04	0.05	1.65	1,212
Vendor	0.05	0.04	1.17	0.52	0.01	0.01	0.20	0.21	0.01	0.05	0.06	—	659	659	0.02	0.10	0.54	690
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

3.17. Building Construction (2029) - 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	1.15	0.97	8.58	12.9	0.02	0.28	—	0.28	0.25	—	0.25	—	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.15	0.97	8.58	12.9	0.02	0.28	—	0.28	0.25	—	0.25	—	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	0.82	0.69	6.13	9.22	0.02	0.20	—	0.20	0.18	—	0.18	—	1,712	1,712	0.07	0.01	—	1,718
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	0.15	0.13	1.12	1.68	< 0.005	0.04	—	0.04	0.03	—	0.03	—	283	283	0.01	< 0.005	—	284
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	6.62	6.17	2.77	52.8	0.00	0.00	10.4	10.4	0.00	2.45	2.45	—	10,741	10,741	0.25	0.45	28.7	10,911
Vendor	0.42	0.26	8.36	3.84	0.04	0.08	1.51	1.59	0.08	0.42	0.50	—	5,407	5,407	0.14	0.80	9.27	5,656
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	5.94	5.45	3.64	42.7	0.00	0.00	10.4	10.4	0.00	2.45	2.45	—	9,543	9,543	0.38	0.50	0.75	9,700
Vendor	0.40	0.24	8.89	4.00	0.04	0.08	1.51	1.59	0.08	0.42	0.50	—	5,418	5,418	0.14	0.80	0.24	5,659
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	4.27	3.92	2.27	30.9	0.00	0.00	7.41	7.41	0.00	1.74	1.74	—	7,059	7,059	0.21	0.32	8.85	7,169
Vendor	0.30	0.18	6.19	2.79	0.03	0.06	1.07	1.13	0.06	0.30	0.35	—	3,865	3,865	0.10	0.57	2.85	4,040
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	0.78	0.72	0.41	5.63	0.00	0.00	1.35	1.35	0.00	0.32	0.32	—	1,169	1,169	0.04	0.05	1.47	1,187
Vendor	0.05	0.03	1.13	0.51	0.01	0.01	0.20	0.21	0.01	0.05	0.06	—	640	640	0.02	0.09	0.47	669
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

3.18. Building Construction (2029) - 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	1.15	0.97	8.58	12.9	0.02	0.28	—	0.28	0.25	—	0.25	—	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	1.15	0.97	8.58	12.9	0.02	0.28	—	0.28	0.25	—	0.25	—	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	0.82	0.69	6.13	9.22	0.02	0.20	—	0.20	0.18	—	0.18	—	1,712	1,712	0.07	0.01	—	1,718
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	0.15	0.13	1.12	1.68	< 0.005	0.04	—	0.04	0.03	—	0.03	—	283	283	0.01	< 0.005	—	284
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	6.62	6.17	2.77	52.8	0.00	0.00	10.4	10.4	0.00	2.45	2.45	—	10,741	10,741	0.25	0.45	28.7	10,911
Vendor	0.42	0.26	8.36	3.84	0.04	0.08	1.51	1.59	0.08	0.42	0.50	—	5,407	5,407	0.14	0.80	9.27	5,656
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	5.94	5.45	3.64	42.7	0.00	0.00	10.4	10.4	0.00	2.45	2.45	—	9,543	9,543	0.38	0.50	0.75	9,700
Vendor	0.40	0.24	8.89	4.00	0.04	0.08	1.51	1.59	0.08	0.42	0.50	—	5,418	5,418	0.14	0.80	0.24	5,659
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	4.27	3.92	2.27	30.9	0.00	0.00	7.41	7.41	0.00	1.74	1.74	—	7,059	7,059	0.21	0.32	8.85	7,169
Vendor	0.30	0.18	6.19	2.79	0.03	0.06	1.07	1.13	0.06	0.30	0.35	—	3,865	3,865	0.10	0.57	2.85	4,040

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	0.78	0.72	0.41	5.63	0.00	0.00	1.35	1.35	0.00	0.32	0.32	—	1,169	1,169	0.04	0.05	1.47	1,187
Vendor	0.05	0.03	1.13	0.51	0.01	0.01	0.20	0.21	0.01	0.05	0.06	—	640	640	0.02	0.09	0.47	669
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

3.19. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	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
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	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	0.64	0.54	5.07	7.08	0.01	0.23	—	0.23	0.21	—	0.21	—	1,076	1,076	0.04	0.01	—	1,080
Paving	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	0.12	0.10	0.93	1.29	< 0.005	0.04	—	0.04	0.04	—	0.04	—	178	178	0.01	< 0.005	—	179
Paving	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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.03	0.51	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	89.0	89.0	< 0.005	< 0.005	0.31	90.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.04	0.42	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	79.1	79.1	< 0.005	< 0.005	0.01	80.3
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	0.04	0.04	0.02	0.30	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	58.3	58.3	< 0.005	< 0.005	0.09	59.3
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.66	9.66	< 0.005	< 0.005	0.02	9.82
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

3.20. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	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
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	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	0.64	0.54	5.07	7.08	0.01	0.23	—	0.23	0.21	—	0.21	—	1,076	1,076	0.04	0.01	—	1,080
Paving	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	0.12	0.10	0.93	1.29	< 0.005	0.04	—	0.04	0.04	—	0.04	—	178	178	0.01	< 0.005	—	179
Paving	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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.03	0.51	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	89.0	89.0	< 0.005	< 0.005	0.31	90.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.04	0.42	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	79.1	79.1	< 0.005	< 0.005	0.01	80.3
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	0.04	0.04	0.02	0.30	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	58.3	58.3	< 0.005	< 0.005	0.09	59.3
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.66	9.66	< 0.005	< 0.005	0.02	9.82
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

3.21. Architectural Coating (2027) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	42.2	42.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	42.2	42.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.59	0.80	< 0.005	0.01	—	0.01	0.01	—	0.01	—	95.1	95.1	< 0.005	< 0.005	—	95.4
Architectural Coatings	30.1	30.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.11	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.7	15.7	< 0.005	< 0.005	—	15.8
Architectural Coatings	5.48	5.48	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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	1.48	1.44	0.71	12.2	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,232	2,232	0.06	0.09	7.15	2,267
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.32	1.22	0.88	9.86	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	1,982	1,982	0.08	0.10	0.19	2,014
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	0.95	0.92	0.56	7.12	0.00	0.00	1.48	1.48	0.00	0.35	0.35	—	1,462	1,462	0.05	0.07	2.20	1,487
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	0.17	0.17	0.10	1.30	0.00	0.00	0.27	0.27	0.00	0.06	0.06	—	242	242	0.01	0.01	0.36	246
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

3.22. Architectural Coating (2027) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	42.2	42.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	42.2	42.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.59	0.80	< 0.005	0.01	—	0.01	0.01	—	0.01	—	95.1	95.1	< 0.005	< 0.005	—	95.4
Architectural Coatings	30.1	30.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.11	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.7	15.7	< 0.005	< 0.005	—	15.8
Architectural Coatings	5.48	5.48	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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	1.48	1.44	0.71	12.2	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,232	2,232	0.06	0.09	7.15	2,267
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.32	1.22	0.88	9.86	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	1,982	1,982	0.08	0.10	0.19	2,014
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	0.95	0.92	0.56	7.12	0.00	0.00	1.48	1.48	0.00	0.35	0.35	—	1,462	1,462	0.05	0.07	2.20	1,487
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	0.17	0.17	0.10	1.30	0.00	0.00	0.27	0.27	0.00	0.06	0.06	—	242	242	0.01	0.01	0.36	246
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

3.23. Architectural Coating (2028) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.81	1.12	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	42.2	42.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.81	1.12	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	42.2	42.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.08	0.58	0.80	< 0.005	0.01	—	0.01	0.01	—	0.01	—	95.6	95.6	< 0.005	< 0.005	—	96.0
Architectural Coatings	30.2	30.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.11	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.8	15.8	< 0.005	< 0.005	—	15.9
Architectural Coatings	5.52	5.52	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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	1.41	1.32	0.63	11.3	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,189	2,189	0.06	0.09	6.43	2,224
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.26	1.16	0.80	9.12	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	1,944	1,944	0.08	0.10	0.17	1,976
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	0.91	0.84	0.51	6.67	0.00	0.00	1.49	1.49	0.00	0.35	0.35	—	1,442	1,442	0.05	0.06	1.99	1,464
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	0.17	0.15	0.09	1.22	0.00	0.00	0.27	0.27	0.00	0.06	0.06	—	239	239	0.01	0.01	0.33	242
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

3.24. Architectural Coating (2028) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.81	1.12	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	42.2	42.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.81	1.12	< 0.005	0.02	—	0.02	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	42.2	42.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.08	0.58	0.80	< 0.005	0.01	—	0.01	0.01	—	0.01	—	95.6	95.6	< 0.005	< 0.005	—	96.0
Architectural Coatings	30.2	30.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.11	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.8	15.8	< 0.005	< 0.005	—	15.9
Architectural Coatings	5.52	5.52	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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	1.41	1.32	0.63	11.3	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,189	2,189	0.06	0.09	6.43	2,224
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.26	1.16	0.80	9.12	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	1,944	1,944	0.08	0.10	0.17	1,976
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	0.91	0.84	0.51	6.67	0.00	0.00	1.49	1.49	0.00	0.35	0.35	—	1,442	1,442	0.05	0.06	1.99	1,464
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	0.17	0.15	0.09	1.22	0.00	0.00	0.27	0.27	0.00	0.06	0.06	—	239	239	0.01	0.01	0.33	242
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

3.25. Architectural Coating (2029) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.79	1.11	< 0.005	0.01	—	0.01	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	42.2	42.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.79	1.11	< 0.005	0.01	—	0.01	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	42.2	42.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.07	0.57	0.79	< 0.005	0.01	—	0.01	0.01	—	0.01	—	95.4	95.4	< 0.005	< 0.005	—	95.7
Architectural Coatings	30.1	30.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.10	0.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.8	15.8	< 0.005	< 0.005	—	15.8
Architectural Coatings	5.50	5.50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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	1.32	1.23	0.55	10.6	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,148	2,148	0.05	0.09	5.74	2,182
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.19	1.09	0.73	8.54	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	1,909	1,909	0.08	0.10	0.15	1,940
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	0.85	0.78	0.45	6.17	0.00	0.00	1.48	1.48	0.00	0.35	0.35	—	1,412	1,412	0.04	0.06	1.77	1,434
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	0.16	0.14	0.08	1.13	0.00	0.00	0.27	0.27	0.00	0.06	0.06	—	234	234	0.01	0.01	0.29	237
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

3.26. Architectural Coating (2029) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.79	1.11	< 0.005	0.01	—	0.01	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	42.2	42.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.79	1.11	< 0.005	0.01	—	0.01	0.01	—	0.01	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	42.2	42.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.07	0.57	0.79	< 0.005	0.01	—	0.01	0.01	—	0.01	—	95.4	95.4	< 0.005	< 0.005	—	95.7
Architectural Coatings	30.1	30.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.10	0.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.8	15.8	< 0.005	< 0.005	—	15.8
Architectural Coatings	5.50	5.50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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	1.32	1.23	0.55	10.6	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	2,148	2,148	0.05	0.09	5.74	2,182
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.19	1.09	0.73	8.54	0.00	0.00	2.09	2.09	0.00	0.49	0.49	—	1,909	1,909	0.08	0.10	0.15	1,940
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	0.85	0.78	0.45	6.17	0.00	0.00	1.48	1.48	0.00	0.35	0.35	—	1,412	1,412	0.04	0.06	1.77	1,434
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	0.16	0.14	0.08	1.13	0.00	0.00	0.27	0.27	0.00	0.06	0.06	—	234	234	0.01	0.01	0.29	237
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

Mobile source emissions results are presented in Sections 2.6. No further detailed breakdown of emissions is available.

4.1.2. Mitigated

Mobile source emissions results are presented in Sections 2.5. No further detailed breakdown of emissions is available.

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	—	—	—	—	—	—	—	—	—	—	—	—	8,509	8,509	1.38	0.17	—	8,593
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	3,103	3,103	0.50	0.06	—	3,134
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	1,374	1,374	0.22	0.03	—	1,388
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	1,180	1,180	0.19	0.02	—	1,192
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Office Park	—	—	—	—	—	—	—	—	—	—	—	—	5,521	5,521	0.89	0.11	—	5,576
Elementary School	—	—	—	—	—	—	—	—	—	—	—	—	168	168	0.03	< 0.005	—	170
Total	—	—	—	—	—	—	—	—	—	—	—	—	19,856	19,856	3.21	0.39	—	20,052
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	8,509	8,509	1.38	0.17	—	8,593
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	3,103	3,103	0.50	0.06	—	3,134
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	1,374	1,374	0.22	0.03	—	1,388
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	1,180	1,180	0.19	0.02	—	1,192
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Office Park	—	—	—	—	—	—	—	—	—	—	—	—	5,521	5,521	0.89	0.11	—	5,576
Elementary School	—	—	—	—	—	—	—	—	—	—	—	—	168	168	0.03	< 0.005	—	170
Total	—	—	—	—	—	—	—	—	—	—	—	—	19,856	19,856	3.21	0.39	—	20,052
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	1,409	1,409	0.23	0.03	—	1,423
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	514	514	0.08	0.01	—	519
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	228	228	0.04	< 0.005	—	230
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	195	195	0.03	< 0.005	—	197
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Office Park	—	—	—	—	—	—	—	—	—	—	—	—	914	914	0.15	0.02	—	923
Elementary School	—	—	—	—	—	—	—	—	—	—	—	—	27.8	27.8	< 0.005	< 0.005	—	28.1

Total	—	—	—	—	—	—	—	—	—	—	—	—	3,287	3,287	0.53	0.06	—	3,320

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	—	—	—	—	—	—	—	—	—	—	—	—	24.8	24.8	< 0.005	< 0.005	—	25.1
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	3,119	3,119	0.50	0.06	—	3,150
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	1,382	1,382	0.22	0.03	—	1,396
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	1,183	1,183	0.19	0.02	—	1,195
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Office Park	—	—	—	—	—	—	—	—	—	—	—	—	5,528	5,528	0.89	0.11	—	5,582
Elementary School	—	—	—	—	—	—	—	—	—	—	—	—	169	169	0.03	< 0.005	—	171
Total	—	—	—	—	—	—	—	—	—	—	—	—	11,406	11,406	1.85	0.22	—	11,519
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	3,103	3,103	0.50	0.06	—	3,134
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	1,374	1,374	0.22	0.03	—	1,388
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	1,180	1,180	0.19	0.02	—	1,192
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Office Park	—	—	—	—	—	—	—	—	—	—	—	—	5,521	5,521	0.89	0.11	—	5,576
Elementary School	—	—	—	—	—	—	—	—	—	—	—	—	168	168	0.03	< 0.005	—	170
Total	—	—	—	—	—	—	—	—	—	—	—	—	11,347	11,347	1.84	0.22	—	11,459
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	2.03	2.03	< 0.005	< 0.005	—	2.05
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	515	515	0.08	0.01	—	520
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	228	228	0.04	< 0.005	—	230
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	196	196	0.03	< 0.005	—	198
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Office Park	—	—	—	—	—	—	—	—	—	—	—	—	915	915	0.15	0.02	—	924
Elementary School	—	—	—	—	—	—	—	—	—	—	—	—	27.9	27.9	< 0.005	< 0.005	—	28.2
Total	—	—	—	—	—	—	—	—	—	—	—	—	1,883	1,883	0.30	0.04	—	1,902

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	1.87	0.94	16.0	6.81	0.10	1.29	—	1.29	1.29	—	1.29	—	20,315	20,315	1.80	0.04	—	20,371
Condo/Townhouse	1.03	0.51	8.77	3.73	0.06	0.71	—	0.71	0.71	—	0.71	—	11,130	11,130	0.98	0.02	—	11,160
Apartments Mid Rise	0.37	0.19	3.18	1.35	0.02	0.26	—	0.26	0.26	—	0.26	—	4,031	4,031	0.36	0.01	—	4,042
Strip Mall	0.06	0.03	0.53	0.44	< 0.005	0.04	—	0.04	0.04	—	0.04	—	628	628	0.06	< 0.005	—	629
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Office Park	0.50	0.25	4.52	3.80	0.03	0.34	—	0.34	0.34	—	0.34	—	5,393	5,393	0.48	0.01	—	5,408
Elementary School	0.08	0.04	0.76	0.64	< 0.005	0.06	—	0.06	0.06	—	0.06	—	907	907	0.08	< 0.005	—	910
Total	3.91	1.95	33.8	16.8	0.21	2.70	—	2.70	2.70	—	2.70	—	42,404	42,404	3.75	0.08	—	42,522
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	1.87	0.94	16.0	6.81	0.10	1.29	—	1.29	1.29	—	1.29	—	20,315	20,315	1.80	0.04	—	20,371
Condo/Townhouse	1.03	0.51	8.77	3.73	0.06	0.71	—	0.71	0.71	—	0.71	—	11,130	11,130	0.98	0.02	—	11,160

Apartments	0.37	0.19	3.18	1.35	0.02	0.26	—	0.26	0.26	—	0.26	—	4,031	4,031	0.36	0.01	—	4,042
Strip Mall	0.06	0.03	0.53	0.44	< 0.005	0.04	—	0.04	0.04	—	0.04	—	628	628	0.06	< 0.005	—	629
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Office Park	0.50	0.25	4.52	3.80	0.03	0.34	—	0.34	0.34	—	0.34	—	5,393	5,393	0.48	0.01	—	5,408
Elementary School	0.08	0.04	0.76	0.64	< 0.005	0.06	—	0.06	0.06	—	0.06	—	907	907	0.08	< 0.005	—	910
Total	3.91	1.95	33.8	16.8	0.21	2.70	—	2.70	2.70	—	2.70	—	42,404	42,404	3.75	0.08	—	42,522
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.34	0.17	2.92	1.24	0.02	0.24	—	0.24	0.24	—	0.24	—	3,363	3,363	0.30	0.01	—	3,373
Condo/Townhouse	0.19	0.09	1.60	0.68	0.01	0.13	—	0.13	0.13	—	0.13	—	1,843	1,843	0.16	< 0.005	—	1,848
Apartments Mid Rise	0.07	0.03	0.58	0.25	< 0.005	0.05	—	0.05	0.05	—	0.05	—	667	667	0.06	< 0.005	—	669
Strip Mall	0.01	0.01	0.10	0.08	< 0.005	0.01	—	0.01	0.01	—	0.01	—	104	104	0.01	< 0.005	—	104
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Office Park	0.09	0.05	0.82	0.69	< 0.005	0.06	—	0.06	0.06	—	0.06	—	893	893	0.08	< 0.005	—	895
Elementary School	0.02	0.01	0.14	0.12	< 0.005	0.01	—	0.01	0.01	—	0.01	—	150	150	0.01	< 0.005	—	151
Total	0.71	0.36	6.16	3.06	0.04	0.49	—	0.49	0.49	—	0.49	—	7,020	7,020	0.62	0.01	—	7,040

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	1.87	0.94	16.0	6.81	0.10	1.29	—	1.29	1.29	—	1.29	—	20,315	20,315	1.80	0.04	—	20,371
Condo/Townhouse	1.03	0.51	8.77	3.73	0.06	0.71	—	0.71	0.71	—	0.71	—	11,130	11,130	0.98	0.02	—	11,160
Apartments Mid Rise	0.37	0.19	3.18	1.35	0.02	0.26	—	0.26	0.26	—	0.26	—	4,031	4,031	0.36	0.01	—	4,042
Strip Mall	0.06	0.03	0.53	0.44	< 0.005	0.04	—	0.04	0.04	—	0.04	—	628	628	0.06	< 0.005	—	629
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Office Park	0.50	0.25	4.52	3.80	0.03	0.34	—	0.34	0.34	—	0.34	—	5,393	5,393	0.48	0.01	—	5,408
Elementary School	0.08	0.04	0.76	0.64	< 0.005	0.06	—	0.06	0.06	—	0.06	—	907	907	0.08	< 0.005	—	910
Total	3.91	1.95	33.8	16.8	0.21	2.70	—	2.70	2.70	—	2.70	—	42,404	42,404	3.75	0.08	—	42,522
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	1.87	0.94	16.0	6.81	0.10	1.29	—	1.29	1.29	—	1.29	—	20,315	20,315	1.80	0.04	—	20,371
Condo/Townhouse	1.03	0.51	8.77	3.73	0.06	0.71	—	0.71	0.71	—	0.71	—	11,130	11,130	0.98	0.02	—	11,160
Apartments Mid Rise	0.37	0.19	3.18	1.35	0.02	0.26	—	0.26	0.26	—	0.26	—	4,031	4,031	0.36	0.01	—	4,042
Strip Mall	0.06	0.03	0.53	0.44	< 0.005	0.04	—	0.04	0.04	—	0.04	—	628	628	0.06	< 0.005	—	629

City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Office Park	0.50	0.25	4.52	3.80	0.03	0.34	—	0.34	0.34	—	0.34	—	5,393	5,393	0.48	0.01	—	5,408
Elementary School	0.08	0.04	0.76	0.64	< 0.005	0.06	—	0.06	0.06	—	0.06	—	907	907	0.08	< 0.005	—	910
Total	3.91	1.95	33.8	16.8	0.21	2.70	—	2.70	2.70	—	2.70	—	42,404	42,404	3.75	0.08	—	42,522
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.34	0.17	2.92	1.24	0.02	0.24	—	0.24	0.24	—	0.24	—	3,363	3,363	0.30	0.01	—	3,373
Condo/Townhouse	0.19	0.09	1.60	0.68	0.01	0.13	—	0.13	0.13	—	0.13	—	1,843	1,843	0.16	< 0.005	—	1,848
Apartments Mid Rise	0.07	0.03	0.58	0.25	< 0.005	0.05	—	0.05	0.05	—	0.05	—	667	667	0.06	< 0.005	—	669
Strip Mall	0.01	0.01	0.10	0.08	< 0.005	0.01	—	0.01	0.01	—	0.01	—	104	104	0.01	< 0.005	—	104
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Office Park	0.09	0.05	0.82	0.69	< 0.005	0.06	—	0.06	0.06	—	0.06	—	893	893	0.08	< 0.005	—	895
Elementary School	0.02	0.01	0.14	0.12	< 0.005	0.01	—	0.01	0.01	—	0.01	—	150	150	0.01	< 0.005	—	151
Total	0.71	0.36	6.16	3.06	0.04	0.49	—	0.49	0.49	—	0.49	—	7,020	7,020	0.62	0.01	—	7,040

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	116	116	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	9.03	9.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	21.7	20.4	1.93	210	0.01	0.13	—	0.13	0.10	—	0.10	—	603	603	0.03	0.01	—	605
Total	147	146	1.93	210	0.01	0.13	—	0.13	0.10	—	0.10	—	603	603	0.03	0.01	—	605
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	116	116	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	9.03	9.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	125	125	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	21.3	21.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.65	1.65	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	1.96	1.84	0.17	18.9	< 0.005	0.01	—	0.01	0.01	—	0.01	—	49.2	49.2	< 0.005	< 0.005	—	49.4
Total	24.9	24.7	0.17	18.9	< 0.005	0.01	—	0.01	0.01	—	0.01	—	49.2	49.2	< 0.005	< 0.005	—	49.4

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	116	116	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.81	1.81	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	118	118	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	116	116	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.81	1.81	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	118	118	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	21.3	21.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.33	0.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	21.6	21.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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	—	—	—	—	—	—	—	—	—	—	—	126	577	703	13.0	0.32	—	1,123
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	80.2	92.2	172	8.24	0.20	—	437
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	38.6	44.4	83.0	3.97	0.09	—	210
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	28.4	32.6	61.0	2.92	0.07	—	155
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Office Park	—	—	—	—	—	—	—	—	—	—	—	144	165	308	14.7	0.35	—	782
Elementary School	—	—	—	—	—	—	—	—	—	—	—	3.48	4.00	7.49	0.36	0.01	—	19.0
Total	—	—	—	—	—	—	—	—	—	—	—	420	915	1,335	43.2	1.04	—	2,726
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	126	577	703	13.0	0.32	—	1,123

Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	80.2	92.2	172	8.24	0.20	—	437
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	38.6	44.4	83.0	3.97	0.09	—	210
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	28.4	32.6	61.0	2.92	0.07	—	155
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Office Park	—	—	—	—	—	—	—	—	—	—	—	144	165	308	14.7	0.35	—	782
Elementary School	—	—	—	—	—	—	—	—	—	—	—	3.48	4.00	7.49	0.36	0.01	—	19.0
Total	—	—	—	—	—	—	—	—	—	—	—	420	915	1,335	43.2	1.04	—	2,726
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	20.8	95.6	116	2.15	0.05	—	186
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	13.3	15.3	28.5	1.36	0.03	—	72.4
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	6.39	7.34	13.7	0.66	0.02	—	34.8
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	4.70	5.40	10.1	0.48	0.01	—	25.6
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Office Park	—	—	—	—	—	—	—	—	—	—	—	23.8	27.3	51.1	2.44	0.06	—	129
Elementary School	—	—	—	—	—	—	—	—	—	—	—	0.58	0.66	1.24	0.06	< 0.005	—	3.14
Total	—	—	—	—	—	—	—	—	—	—	—	69.5	152	221	7.15	0.17	—	451

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	—	—	—	—	—	—	—	—	—	—	—	126	577	703	13.0	0.32	—	1,123
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	80.2	92.2	172	8.24	0.20	—	437
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	38.6	44.4	83.0	3.97	0.09	—	210
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	28.4	32.6	61.0	2.92	0.07	—	155
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Office Park	—	—	—	—	—	—	—	—	—	—	—	144	165	308	14.7	0.35	—	782
Elementary School	—	—	—	—	—	—	—	—	—	—	—	3.48	4.00	7.49	0.36	0.01	—	19.0
Total	—	—	—	—	—	—	—	—	—	—	—	420	915	1,335	43.2	1.04	—	2,726
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	126	577	703	13.0	0.32	—	1,123
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	80.2	92.2	172	8.24	0.20	—	437

Apartments	—	—	—	—	—	—	—	—	—	—	—	38.6	44.4	83.0	3.97	0.09	—	210
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	28.4	32.6	61.0	2.92	0.07	—	155
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Office Park	—	—	—	—	—	—	—	—	—	—	—	144	165	308	14.7	0.35	—	782
Elementary School	—	—	—	—	—	—	—	—	—	—	—	3.48	4.00	7.49	0.36	0.01	—	19.0
Total	—	—	—	—	—	—	—	—	—	—	—	420	915	1,335	43.2	1.04	—	2,726
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	20.8	95.6	116	2.15	0.05	—	186
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	13.3	15.3	28.5	1.36	0.03	—	72.4
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	6.39	7.34	13.7	0.66	0.02	—	34.8
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	4.70	5.40	10.1	0.48	0.01	—	25.6
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Office Park	—	—	—	—	—	—	—	—	—	—	—	23.8	27.3	51.1	2.44	0.06	—	129
Elementary School	—	—	—	—	—	—	—	—	—	—	—	0.58	0.66	1.24	0.06	< 0.005	—	3.14
Total	—	—	—	—	—	—	—	—	—	—	—	69.5	152	221	7.15	0.17	—	451

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	—	—	—	—	—	—	—	—	—	—	—	780	0.00	780	78.0	0.00	—	2,729
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	414	0.00	414	41.4	0.00	—	1,449
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	199	0.00	199	19.9	0.00	—	697
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	113	0.00	113	11.3	0.00	—	396
City Park	—	—	—	—	—	—	—	—	—	—	—	2.73	0.00	2.73	0.27	0.00	—	9.57
Office Park	—	—	—	—	—	—	—	—	—	—	—	211	0.00	211	21.1	0.00	—	739
Elementary School	—	—	—	—	—	—	—	—	—	—	—	73.8	0.00	73.8	7.37	0.00	—	258
Total	—	—	—	—	—	—	—	—	—	—	—	1,794	0.00	1,794	179	0.00	—	6,277
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	780	0.00	780	78.0	0.00	—	2,729
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	414	0.00	414	41.4	0.00	—	1,449
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	199	0.00	199	19.9	0.00	—	697

Strip Mall	—	—	—	—	—	—	—	—	—	—	—	113	0.00	113	11.3	0.00	—	396
City Park	—	—	—	—	—	—	—	—	—	—	—	2.73	0.00	2.73	0.27	0.00	—	9.57
Office Park	—	—	—	—	—	—	—	—	—	—	—	211	0.00	211	21.1	0.00	—	739
Elementary School	—	—	—	—	—	—	—	—	—	—	—	73.8	0.00	73.8	7.37	0.00	—	258
Total	—	—	—	—	—	—	—	—	—	—	—	1,794	0.00	1,794	179	0.00	—	6,277
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	129	0.00	129	12.9	0.00	—	452
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	68.6	0.00	68.6	6.85	0.00	—	240
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	33.0	0.00	33.0	3.30	0.00	—	115
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	18.7	0.00	18.7	1.87	0.00	—	65.6
City Park	—	—	—	—	—	—	—	—	—	—	—	0.45	0.00	0.45	0.05	0.00	—	1.58
Office Park	—	—	—	—	—	—	—	—	—	—	—	35.0	0.00	35.0	3.49	0.00	—	122
Elementary School	—	—	—	—	—	—	—	—	—	—	—	12.2	0.00	12.2	1.22	0.00	—	42.7
Total	—	—	—	—	—	—	—	—	—	—	—	297	0.00	297	29.7	0.00	—	1,039

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	—	—	—	—	—	—	—	—	—	—	—	780	0.00	780	78.0	0.00	—	2,729
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	414	0.00	414	41.4	0.00	—	1,449
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	199	0.00	199	19.9	0.00	—	697
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	113	0.00	113	11.3	0.00	—	396
City Park	—	—	—	—	—	—	—	—	—	—	—	2.73	0.00	2.73	0.27	0.00	—	9.57
Office Park	—	—	—	—	—	—	—	—	—	—	—	211	0.00	211	21.1	0.00	—	739
Elementary School	—	—	—	—	—	—	—	—	—	—	—	73.8	0.00	73.8	7.37	0.00	—	258
Total	—	—	—	—	—	—	—	—	—	—	—	1,794	0.00	1,794	179	0.00	—	6,277
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	780	0.00	780	78.0	0.00	—	2,729
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	414	0.00	414	41.4	0.00	—	1,449
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	199	0.00	199	19.9	0.00	—	697
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	113	0.00	113	11.3	0.00	—	396
City Park	—	—	—	—	—	—	—	—	—	—	—	2.73	0.00	2.73	0.27	0.00	—	9.57

Office Park	—	—	—	—	—	—	—	—	—	—	—	211	0.00	211	21.1	0.00	—	739
Elementary School	—	—	—	—	—	—	—	—	—	—	—	73.8	0.00	73.8	7.37	0.00	—	258
Total	—	—	—	—	—	—	—	—	—	—	—	1,794	0.00	1,794	179	0.00	—	6,277
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	129	0.00	129	12.9	0.00	—	452
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	68.6	0.00	68.6	6.85	0.00	—	240
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	33.0	0.00	33.0	3.30	0.00	—	115
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	18.7	0.00	18.7	1.87	0.00	—	65.6
City Park	—	—	—	—	—	—	—	—	—	—	—	0.45	0.00	0.45	0.05	0.00	—	1.58
Office Park	—	—	—	—	—	—	—	—	—	—	—	35.0	0.00	35.0	3.49	0.00	—	122
Elementary School	—	—	—	—	—	—	—	—	—	—	—	12.2	0.00	12.2	1.22	0.00	—	42.7
Total	—	—	—	—	—	—	—	—	—	—	—	297	0.00	297	29.7	0.00	—	1,039

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	22.8	22.8
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.89	7.89
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.44	3.44
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.25	1.25
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Office Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.02	1.02
Elementary School	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	36.6	36.6
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	22.8	22.8
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.89	7.89
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.44	3.44
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.25	1.25
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00

Office Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.02	1.02
Elementary School	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	36.6	36.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.77	3.77
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.31	1.31
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.57	0.57
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.21	0.21
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Office Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.17	0.17
Elementary School	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.04
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.06	6.06

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	22.8	22.8
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.89	7.89
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.44	3.44
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.25	1.25
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Office Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.02	1.02
Elementary School	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	36.6	36.6
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	22.8	22.8
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.89	7.89
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.44	3.44
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.25	1.25
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Office Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.02	1.02

Elementary School	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.24	0.24
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	36.6	36.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.77	3.77
Condo/Townhouse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.31	1.31
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.57	0.57
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.21	0.21
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Office Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.17	0.17
Elementary School	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.04
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.06	6.06

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)

Equipme 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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequest	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	10/1/2024	12/1/2024	5.00	44.0	—
Site Preparation	Site Preparation	12/2/2024	6/7/2025	5.00	135	—
Grading	Grading	6/8/2025	1/1/2026	5.00	149	—
Building Construction	Building Construction	1/2/2026	12/31/2029	5.00	1,042	—
Paving	Paving	1/2/2026	12/31/2026	5.00	260	—
Architectural Coating	Architectural Coating	1/2/2027	12/31/2029	5.00	781	—

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	2.00	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	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	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	2.00	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	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	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	7.70	LDA,LDT1,LDT2
Demolition	Vendor	—	4.00	HHDT,MHDT
Demolition	Hauling	7.84	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	7.70	LDA,LDT1,LDT2
Site Preparation	Vendor	—	4.00	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	7.70	LDA,LDT1,LDT2
Grading	Vendor	—	4.00	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	1,920	7.70	LDA,LDT1,LDT2
Building Construction	Vendor	451	4.00	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	7.70	LDA,LDT1,LDT2
Paving	Vendor	—	4.00	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	384	7.70	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	4.00	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	7.70	LDA,LDT1,LDT2
Demolition	Vendor	—	4.00	HHDT,MHDT
Demolition	Hauling	7.84	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	7.70	LDA,LDT1,LDT2
Site Preparation	Vendor	—	4.00	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	7.70	LDA,LDT1,LDT2
Grading	Vendor	—	4.00	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	1,920	7.70	LDA,LDT1,LDT2
Building Construction	Vendor	451	4.00	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	7.70	LDA,LDT1,LDT2

Paving	Vendor	—	4.00	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	384	7.70	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	4.00	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	9,634,727	3,211,576	1,026,089	342,030	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Ton of Debris)	Material Exported (Ton of Debris)	Acres Graded (acres)	Material Demolished (Building Square Footage)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	30,000	—
Site Preparation	0.00	0.00	203	0.00	—
Grading	0.00	0.00	447	0.00	—
Paving	0.00	0.00	0.00	0.00	18.0

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	14.0	0%
Condo/Townhouse	—	0%
Apartments Mid Rise	—	0%
Strip Mall	0.00	0%
City Park	0.00	0%
Single Family Housing	1.51	0%
Single Family Housing	2.47	0%
Strip Mall	0.00	0%
Office Park	0.00	0%
Elementary School	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	204	0.03	< 0.005
2025	0.00	204	0.03	< 0.005
2026	0.00	204	0.03	< 0.005
2027	0.00	204	0.03	< 0.005
2028	0.00	204	0.03	< 0.005
2029	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Total all Land Uses	44,441	44,441	44,441	16,220,965	322,993	322,993	322,993	117,892,353

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Total all Land Uses	44,441	44,441	44,441	16,220,965	322,993	322,993	322,993	117,892,353

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)
9634727.25	3,211,576	1,026,089	342,030	—

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	11,851,465	204	0.0330	0.0040	49,340,821
Condo/Townhouse	5,552,246	204	0.0330	0.0040	34,727,289
Apartments Mid Rise	2,459,398	204	0.0330	0.0040	12,578,361
Strip Mall	897,607	204	0.0330	0.0040	832,349
City Park	0.00	204	0.0330	0.0040	0.00
Single Family Housing	1,280,482	204	0.0330	0.0040	5,330,988
Single Family Housing	2,093,634	204	0.0330	0.0040	8,716,360
Strip Mall	1,214,409	204	0.0330	0.0040	1,126,119
Office Park	9,879,272	204	0.0330	0.0040	16,828,575
Elementary School	300,581	204	0.0330	0.0040	2,830,805

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	0.00	204	0.0330	0.0040	49,340,821
Condo/Townhouse	5,552,246	204	0.0330	0.0040	34,727,289
Apartments Mid Rise	2,459,398	204	0.0330	0.0040	12,578,361
Strip Mall	897,607	204	0.0330	0.0040	832,349

City Park	0.00	204	0.0330	0.0040	0.00
Single Family Housing	0.00	204	0.0330	0.0040	5,330,988
Single Family Housing	0.00	204	0.0330	0.0040	8,716,360
Strip Mall	1,214,409	204	0.0330	0.0040	1,126,119
Office Park	9,879,272	204	0.0330	0.0040	16,828,575
Elementary School	300,581	204	0.0330	0.0040	2,830,805

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	51,095,328	249,180,808
Condo/Townhouse	41,867,544	0.00
Apartments Mid Rise	20,148,000	0.00
Strip Mall	6,296,164	0.00
City Park	0.00	0.00
Single Family Housing	5,520,552	26,922,525
Single Family Housing	9,026,304	44,019,322
Strip Mall	8,518,340	0.00
Office Park	74,889,181	0.00
Elementary School	1,818,180	0.00

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	51,095,328	249,180,808
Condo/Townhouse	41,867,544	0.00
Apartments Mid Rise	20,148,000	0.00

Strip Mall	6,296,164	0.00
City Park	0.00	0.00
Single Family Housing	5,520,552	26,922,525
Single Family Housing	9,026,304	44,019,322
Strip Mall	8,518,340	0.00
Office Park	74,889,181	0.00
Elementary School	1,818,180	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	1,127	—
Condo/Townhouse	768	—
Apartments Mid Rise	370	—
Strip Mall	89.3	—
City Park	5.07	—
Single Family Housing	122	—
Single Family Housing	199	—
Strip Mall	121	—
Office Park	392	—
Elementary School	137	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	1,127	—
Condo/Townhouse	768	—

Apartments Mid Rise	370	—
Strip Mall	89.3	—
City Park	5.07	—
Single Family Housing	122	—
Single Family Housing	199	—
Strip Mall	121	—
Office Park	392	—
Elementary School	137	—

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
Condo/Townhouse	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Condo/Townhouse	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Apartments Mid Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Mid Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Strip Mall	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0

Strip Mall	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
Strip Mall	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
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
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
Strip Mall	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Strip Mall	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
Strip Mall	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Office Park	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
Office Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Elementary School	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
Elementary School	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0

Elementary School	Stand-alone retail refrigerators and freezers	R-134a	1,430	< 0.005	1.00	0.00	1.00
Elementary School	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0

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
Condo/Townhouse	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Condo/Townhouse	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Apartments Mid Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Mid Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Strip Mall	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Strip Mall	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
Strip Mall	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0

City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
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
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
Strip Mall	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Strip Mall	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
Strip Mall	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Office Park	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
Office Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Elementary School	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
Elementary School	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Elementary School	Stand-alone retail refrigerators and freezers	R-134a	1,430	< 0.005	1.00	0.00	1.00
Elementary School	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0

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	33.7	annual days of extreme heat

Extreme Precipitation	1.40	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	5	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	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	5	1	1	4
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	1	1	1	2
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	88.7
AQ-PM	94.1
AQ-DPM	12.7
Drinking Water	77.7
Lead Risk Housing	8.44
Pesticides	63.3

Toxic Releases	62.8
Traffic	6.47
Effect Indicators	—
CleanUp Sites	0.00
Groundwater	0.00
Haz Waste Facilities/Generators	4.94
Impaired Water Bodies	0.00
Solid Waste	9.67
Sensitive Population	—
Asthma	20.8
Cardio-vascular	25.5
Low Birth Weights	91.3
Socioeconomic Factor Indicators	—
Education	14.8
Housing	—
Linguistic	9.46
Poverty	5.35
Unemployment	17.1

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	—
Employed	—
Median HI	—
Education	—

Bachelor's or higher	—
High school enrollment	—
Preschool enrollment	—
Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—
Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—
Health Outcomes	—
Insured adults	—
Arthritis	0.0
Asthma ER Admissions	83.9
High Blood Pressure	0.0
Cancer (excluding skin)	0.0

Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	18.3
Physically Disabled	23.7
Heart Attack ER Admissions	76.6
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	0.0
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	61.0
Elderly	15.4
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	77.7
Climate Change Adaptive Capacity	—

Impervious Surface Cover	98.6
Traffic Density	0.0
Traffic Access	0.0
Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	20.0
Healthy Places Index Score for Project Location (b)	—
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

Land Use	Land uses selected on a best fit basis, consistent with the land uses utilized by Kittelson in their Traffic Study (2024). Lot acreage for residences estimated based on difference between total Master Plan Area lot acreage and the other land uses modeled.
Construction: Construction Phases	Phases shortened from CalEEMod default, to reflect estimated op. year of 2030.
Operations: Hearths	No hearths or woodstoves.

Source: EMFAC2021 (v1.0.2) Emissions Inventory
Region Type: County
Region: Fresno
Calendar Year: 2023, 2028
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	Total VMT	Trips	Fuel Consumption	**MPG**	
Fresno	2023	All Other Buses	Aggregate	Aggregate	Diesel	97.33107228	5335.205795	866.2465	0.61263544	**8.708614**	
Fresno	2023	LDA	Aggregate	Aggregate	Gasoline	314421.2385	12057531.62	1459129	415.8844778	**28.9925**	
Fresno	2023	LDA	Aggregate	Aggregate	Diesel	761.2682117	22675.00114	3207.267	0.51632231	**43.91637**	
Fresno	2023	LDT1	Aggregate	Aggregate	Gasoline	31473.612	1013826.307	135564.6	42.23037315	**24.00704**	
Fresno	2023	LDT1	Aggregate	Aggregate	Diesel	21.08494293	249.9674255	61.92644	0.009862018	**25.34648**	
Fresno	2023	LDT2	Aggregate	Aggregate	Gasoline	141913.3288	5488158.651	657945.6	236.0127343	**23.25365**	
Fresno	2023	LDT2	Aggregate	Aggregate	Diesel	349.573366	14594.70501	1660.845	0.436268757	**33.45347**	
Fresno	2023	LHD1	Aggregate	Aggregate	Gasoline	12566.31522	445086.6745	187219.4	47.83578625	**9.304471**	
Fresno	2023	LHD1	Aggregate	Aggregate	Diesel	11243.70377	407164.2471	141431.6	25.85688336	**15.74684**	
Fresno	2023	LHD2	Aggregate	Aggregate	Gasoline	2111.361872	72373.23862	31456.15	8.811076943	**8.213892**	
Fresno	2023	LHD2	Aggregate	Aggregate	Diesel	4095.907509	150992.8589	51521.36	11.5781819	**13.04115**	
Fresno	2023	MCY	Aggregate	Aggregate	Gasoline	15903.01283	86993.68262	31806.03	2.125895075	**40.92097**	
Fresno	2023	MDV	Aggregate	Aggregate	Gasoline	132252.2782	4629685.697	598810.4	245.507228	**18.85764**	
Fresno	2023	MDV	Aggregate	Aggregate	Diesel	1848.345695	71606.39703	8639.655	2.893296095	**24.74907**	
Fresno	2023	MH	Aggregate	Aggregate	Gasoline	1560.882105	13702.70094	156.1506	3.107379328	**4.409729**	
Fresno	2023	MH	Aggregate	Aggregate	Diesel	717.895033	6406.390801	71.7895	0.681090941	**9.406073**	
Fresno	2023	Motor Coach	Aggregate	Aggregate	Diesel	51.24387417	7300.970769	1177.584	1.333292201	**5.475897**	
Fresno	2023	OBUS	Aggregate	Aggregate	Gasoline	317.3490099	15754.24911	6349.519	3.354301579	**4.69673**	
Fresno	2023	PTO	Aggregate	Aggregate	Diesel	0	18373.23084	0	3.711730192	**4.950045**	
Fresno	2023	SBUS	Aggregate	Aggregate	Gasoline	315.5557087	18801.19459	1262.223	1.88547565	**9.971592**	
Fresno	2023	SBUS	Aggregate	Aggregate	Diesel	853.7116821	19428.11927	12361.75	2.344131524	**8.287982**	
Fresno	2023	T6 CAIRP Class 4	Aggregate	Aggregate	Diesel	14.64154254	980.5727418	336.4626	0.110853107	**8.845695**	
Fresno	2023	T6 CAIRP Class 5	Aggregate	Aggregate	Diesel	19.65233596	1345.31243	451.6107	0.151882308	**8.857598**	
Fresno	2023	T6 CAIRP Class 6	Aggregate	Aggregate	Diesel	61.92361662	3513.129711	1423.005	0.391104872	**8.982577**	
Fresno	2023	T6 CAIRP Class 7	Aggregate	Aggregate	Diesel	106.9316362	22050.69671	2457.289	2.304610344	**9.56808**	**MHD**
Fresno	2023	T6 Instate Delivery C	Aggregate	Aggregate	Diesel	283.5936317	9633.687539	4046.881	1.180246507	**8.162437**	**8.430064**
Fresno	2023	T6 Instate Delivery C	Aggregate	Aggregate	Diesel	353.8382876	12231.97651	5049.272	1.494588319	**8.184178**	
Fresno	2023	T6 Instate Delivery C	Aggregate	Aggregate	Diesel	816.5437216	28056.85712	11652.08	3.411094367	**8.225178**	
Fresno	2023	T6 Instate Delivery C	Aggregate	Aggregate	Diesel	317.6965342	17510.15231	4533.53	2.078088976	**8.426084**	
Fresno	2023	T6 Instate Other Cla	Aggregate	Aggregate	Diesel	566.3549635	23426.1468	6547.063	2.763330113	**8.477506**	
Fresno	2023	T6 Instate Other Cla	Aggregate	Aggregate	Diesel	1380.421359	60867.1524	15957.67	7.134617193	**8.531243**	
Fresno	2023	T6 Instate Other Cla	Aggregate	Aggregate	Diesel	1259.790831	53453.52516	14563.18	6.273596318	**8.520396**	
Fresno	2023	T6 Instate Other Cla	Aggregate	Aggregate	Diesel	734.8135043	33590.65362	8494.444	3.861249416	**8.699426**	
Fresno	2023	T6 Instate Tractor Cl	Aggregate	Aggregate	Diesel	11.5832701	595.6273678	133.9026	0.066865686	**8.907818**	
Fresno	2023	T6 Instate Tractor Cl	Aggregate	Aggregate	Diesel	856.3748289	55160.30949	9899.693	6.040424429	**9.13186**	
Fresno	2023	T6 OOS Class 4	Aggregate	Aggregate	Diesel	8.560936264	568.3198405	196.7303	0.064203034	**8.851916**	
Fresno	2023	T6 OOS Class 5	Aggregate	Aggregate	Diesel	11.4419835	779.6326236	262.9368	0.087988975	**8.860572**	
Fresno	2023	T6 OOS Class 6	Aggregate	Aggregate	Diesel	36.17013681	2037.202351	831.1897	0.226579225	**8.991126**	
Fresno	2023	T6 OOS Class 7	Aggregate	Aggregate	Diesel	58.80932952	14812.99433	1351.438	1.539884458	**9.619549**	
Fresno	2023	T6 Public Class 4	Aggregate	Aggregate	Diesel	81.46433659	2701.636292	417.912	0.360826569	**7.487354**	
Fresno	2023	T6 Public Class 5	Aggregate	Aggregate	Diesel	106.3705417	3906.384942	545.6809	0.509150321	**7.672361**	
Fresno	2023	T6 Public Class 6	Aggregate	Aggregate	Diesel	135.3013448	4819.518666	694.0959	0.630073562	**7.649136**	
Fresno	2023	T6 Public Class 7	Aggregate	Aggregate	Diesel	286.3791818	13115.78538	1469.125	1.690148341	**7.760139**	
Fresno	2023	T6 Utility Class 5	Aggregate	Aggregate	Diesel	59.03280957	2404.92046	755.62	0.272768646	**8.816704**	
Fresno	2023	T6 Utility Class 6	Aggregate	Aggregate	Diesel	11.20991237	453.5625365	143.4869	0.051290416	**8.843027**	
Fresno	2023	T6 Utility Class 7	Aggregate	Aggregate	Diesel	12.77616871	631.662356	163.535	0.071094198	**8.884865**	
Fresno	2023	T6TS	Aggregate	Aggregate	Gasoline	973.6402881	53538.05258	19480.59	11.5372138	**4.640466**	
Fresno	2023	T7 CAIRP Class 8	Aggregate	Aggregate	Diesel	2664.649423	545019.4108	61233.64	90.26159125	**6.038221**	**HHD**
Fresno	2023	T7 NNOOS Class 8	Aggregate	Aggregate	Diesel	2384.500818	645106.1794	54795.83	105.8750878	**6.093088**	**5.438606**
Fresno	2023	T7 NOOS Class 8	Aggregate	Aggregate	Diesel	998.4606912	234355.616	22944.63	38.88906243	**6.02626**	
Fresno	2023	T7 Other Port Class	Aggregate	Aggregate	Diesel	51.28286363	9623.571941	838.9876	1.623451517	**5.927847**	
Fresno	2023	T7 POAK Class 8	Aggregate	Aggregate	Diesel	234.4726465	23583.04652	3835.972	4.04978574	**5.823283**	
Fresno	2023	T7 POLA Class 8	Aggregate	Aggregate	Diesel	262.1153394	34463.02381	4288.207	5.924154763	**5.817374**	
Fresno	2023	T7 Public Class 8	Aggregate	Aggregate	Diesel	543.7539696	23936.26546	2789.458	4.615663682	**5.185877**	
Fresno	2023	T7 Single Concrete/I	Aggregate	Aggregate	Diesel	229.2544311	16238.21099	2159.577	2.784270161	**5.832125**	
Fresno	2023	T7 Single Dump Clas	Aggregate	Aggregate	Diesel	269.1420224	16940.97021	2535.318	2.941088809	**5.760102**	
Fresno	2023	T7 Single Other Clas	Aggregate	Aggregate	Diesel	1044.798193	56520.05316	9841.999	9.631121806	**5.868481**	
Fresno	2023	T7 SWCV Class 8	Aggregate	Aggregate	Diesel	357.3819412	23165.99604	1643.957	9.209921269	**2.515331**	
Fresno	2023	T7 Tractor Class 8	Aggregate	Aggregate	Diesel	4807.650867	381211.6007	69855.17	62.8041076	**6.069851**	
Fresno	2023	T7 Utility Class 8	Aggregate	Aggregate	Diesel	41.06227272	1904.108718	525.5971	0.328966636	**5.788151**	
Fresno	2023	T7IS	Aggregate	Aggregate	Gasoline	2.180899548	85.06306056	43.63544	0.025059111	**3.394496**	
Fresno	2023	UBUS	Aggregate	Aggregate	Gasoline	89.29970289	4172.538609	357.1988	0.869264013	**4.800082**	
Fresno	2023	UBUS	Aggregate	Aggregate	Diesel	14.69276886	1488.803087	58.77108	0.160275168	**9.289044**	
Fresno	2028	All Other Buses	Aggregate	Aggregate	Diesel	105.1875984	5398.286356	936.1696	0.592513398	**9.110826**	
Fresno	2028	LDA	Aggregate	Aggregate	Gasoline	320548.7601	12220901.2	1485943	380.8185189	**32.09114**	
Fresno	2028	LDA	Aggregate	Aggregate	Diesel	500.4175236	14974.67859	2144.265	0.316474977	**47.3171**	
Fresno	2028	LDT1	Aggregate	Aggregate	Gasoline	27915.10475	914249.2484	120882.4	34.66553313	**26.37344**	
Fresno	2028	LDT1	Aggregate	Aggregate	Diesel	4.483478545	51.16920242	12.59641	0.001878334	**27.2418**	
Fresno	2028	LDT2	Aggregate	Aggregate	Gasoline	159671.2599	6150317.943	739979.4	234.6904294	**26.20609**	
Fresno	2028	LDT2	Aggregate	Aggregate	Diesel	478.7176694	19762.97324	2281.418	0.530981847	**37.21968**	
Fresno	2028	LHD1	Aggregate	Aggregate	Gasoline	11625.08082	418678.6827	173196.4	41.45012046	**10.10078**	
Fresno	2028	LHD1	Aggregate	Aggregate	Diesel	10064.12519	345467.0229	126594	21.64664788	**15.95938**	
Fresno	2028	LHD2	Aggregate	Aggregate	Gasoline	1811.901754	60201.82363	26994.64	6.899849673	**8.725092**	
Fresno	2028	LHD2	Aggregate	Aggregate	Diesel	3947.742649	137455.4894	49657.64	10.24180528	**13.42102**	
Fresno	2028	MCY	Aggregate	Aggregate	Gasoline	15663.49423	83793.53673	31326.99	1.996214088	**41.97623**	
Fresno	2028	MDV	Aggregate	Aggregate	Gasoline	124972.0171	4313098.809	562920.1	205.5747583	**20.98068**	
Fresno	2028	MDV	Aggregate	Aggregate	Diesel	1790.441128	62779.71101	8154.294	2.37624131	**26.41975**	
Fresno	2028	MH	Aggregate	Aggregate	Gasoline	1234.830218	11336.01044	123.5324	2.568058364	**4.414234**	
Fresno	2028	MH	Aggregate	Aggregate	Diesel	697.6156483	6071.042783	69.76156	0.64689844	**9.384847**	
Fresno	2028	Motor Coach	Aggregate	Aggregate	Diesel	61.5360995	7489.740568	1414.1	1.306910719	**5.730874**	
Fresno	2028	OBUS	Aggregate	Aggregate	Gasoline	251.9632826	11190.87896	5041.281	2.278288018	**4.911968**	
Fresno	2028	PTO	Aggregate	Aggregate	Diesel	0	18639.30717	0	3.538361503	**5.267779**	
Fresno	2028	SBUS	Aggregate	Aggregate	Gasoline	312.4242662	18511.87382	1249.697	1.838608085	**10.06842**	
Fresno	2028	SBUS	Aggregate	Aggregate	Diesel	840.966317	18525.00981	12177.19	2.199748597	**8.421421**	**MHD**
Fresno	2028	T6 CAIRP Class 4	Aggregate	Aggregate	Diesel	15.2987112	1014.993949	351.5644	0.11041033	**9.192926**	**8.939233**
Fresno	2028	T6 CAIRP Class 5	Aggregate	Aggregate	Diesel	19.8996726	1398.861684	457.2945	0.152529788	**9.171072**	
Fresno	2028	T6 CAIRP Class 6	Aggregate	Aggregate	Diesel	72.9166192	3592.623891	1675.624	0.385787143	**9.312451**	
Fresno	2028	T6 CAIRP Class 7	Aggregate	Aggregate	Diesel	117.0523414	23346.60817	2689.863	2.284012115	**10.22175**	
Fresno	2028	T6 Instate Delivery C	Aggregate	Aggregate	Diesel	305.352458	10158.99439	4357.38	1.205989382	**8.423784**	
Fresno	2028	T6 Instate Delivery C	Aggregate	Aggregate	Diesel	387.9577806	12926.94018	5536.158	1.536605846	**8.412658**	
Fresno	2028	T6 Instate Delivery C	Aggregate	Aggregate	Diesel	887.9877091	29622.86096	12671.58	3.502046712	**8.458728**	
Fresno	2028	T6 Instate Delivery C	Aggregate	Aggregate	Diesel	367.9564166	18994.12484	5250.738	2.230601078	**8.51525**	
Fresno	2028	T6 Instate Other Cla	Aggregate	Aggregate	Diesel	603.6852248	24608.20811	6978.601	2.822715356	**8.717921**	
Fresno	2028	T6 Instate Other Cla	Aggregate	Aggregate	Diesel	1544.780993	64171.58774	17857.67	7.34550179	**8.736175**	
Fresno	2028	T6 Instate Other Cla	Aggregate	Aggregate	Diesel	1365.162597	56272.59266	15781.28	6.430353408	**8.751089**	
Fresno	2028	T6 Instate Other Cla	Aggregate	Aggregate	Diesel	899.4344363	35715.34267	10397.46	4.044223639	**8.831199**	
Fresno	2028	T6 Instate Tractor Cl	Aggregate	Aggregate	Diesel	13.05712268	622.6495183	150.9403	0.068807888	**9.049101**	
Fresno	2028	T6 Instate Tractor Cl	Aggregate	Aggregate	Diesel	1051.776222	59488.98976	12158.53	6.305699156	**9.434162**	
Fresno	2028	T6 OOS Class 4	Aggregate	Aggregate	Diesel	9.458373797	628.5797632	217.3534	0.065977414	**9.527196**	
Fresno	2028	T6 OOS Class 5	Aggregate	Aggregate	Diesel	12.20993061	862.2984014	280.5842	0.090933159	**9.482772**	
Fresno	2028	T6 OOS Class 6	Aggregate	Aggregate	Diesel	45.56292993	2253.210394	1047.036	0.231961497	**9.713726**	
Fresno	2028	T6 OOS Class 7	Aggregate	Aggregate	Diesel	64.0245686	16383.64141	1471.285	1.572582255	**10.4183**	
Fresno	2028	T6 Public Class 4	Aggregate	Aggregate	Diesel	73.83621035	2604.590675	378.7798	0.331160629	**7.865037**	
Fresno	2028	T6 Public Class 5	Aggregate	Aggregate	Diesel	107.2578665	3841.759423	550.2329	0.485160295	**7.918536**	
Fresno	2028	T6 Public Class 6	Aggregate	Aggregate	Diesel	129.5004475	4719.867611	664.3373	0.594991073	**7.93267**	
Fresno	2028	T6 Public Class 7	Aggregate	Aggregate	Diesel	277.5106808	12745.60157	1423.63	1.562555852	**8.156893**	
Fresno	2028	T6 Utility Class 5	Aggregate	Aggregate	Diesel	57.74119217	2319.715338	739.0873	0.256683823	**9.037248**	
Fresno	2028	T6 Utility Class 6	Aggregate	Aggregate	Diesel	10.92136387	437.7703055	139.7935	0.048313757	**9.060987**	
Fresno	2028	T6 Utility Class 7	Aggregate	Aggregate	Diesel	12.16308656	603.9413566	155.6875	0.066082655	**9.139181**	
Fresno	2028	T6TS	Aggregate	Aggregate	Gasoline	835.1222172	47160.45506	16709.13	9.619661371	**4.902507**	
Fresno	2028	T7 CAIRP Class 8	Aggregate	Aggregate	Diesel	2833.965231	572811.9669	65124.52	87.9720637	**6.511294**	**HHD**
Fresno	2028	T7 NNOOS Class 8	Aggregate	Aggregate	Diesel	2601.661223	710444.5489	59786.17	103.3970853	**6.871031**	**5.773599**
Fresno	2028	T7 NOOS Class 8	Aggregate	Aggregate	Diesel	1121.113254	258091.885	25763.18	38.88778417	**6.636837**	
Fresno	2028	T7 Other Port Class	Aggregate	Aggregate	Diesel	53.83539691	11214.34533	880.7471	1.805767948	**6.210291**	
Fresno	2028	T7 POAK Class 8	Aggregate	Aggregate	Diesel	240.1799956	25147.52208	3929.345	4.169193164	**6.031748**	
Fresno	2028	T7 POLA Class 8	Aggregate	Aggregate	Diesel	305.8434617	41579.86667	5003.599	7.091106689	**5.863664**	
Fresno	2028	T7 Public Class 8	Aggregate	Aggregate	Diesel	543.7568181	23562.07322	2789.472	4.349186316	**5.417582**	
Fresno	2028	T7 Single Concrete/I	Aggregate	Aggregate	Diesel	228.1202482	15372.02393	2148.893	2.501215469	**6.145822**	
Fresno	2028	T7 Single Dump Clas	Aggregate	Aggregate	Diesel	301.6580859	16587.26908	2841.619	2.820898533	**5.880137**	
Fresno	2028	T7 Single Other Clas	Aggregate	Aggregate	Diesel	1324.464247	58915.39889	12476.45	9.788937483	**6.018569**	
Fresno	2028	T7 SWCV Class 8	Aggregate	Aggregate	Diesel	311.4154408	20195.60708	1432.511	7.638832099	**2.643808**	
Fresno	2028	T7 Tractor Class 8	Aggregate	Aggregate	Diesel	6119.184964	410127.93	88911.76	65.00224816	**6.309442**	
Fresno	2028	T7 Utility Class 8	Aggregate	Aggregate	Diesel	44.40630191	1904.155441	568.4007	0.32098132	**5.932294**	
Fresno	2028	T7IS	Aggregate	Aggregate	Gasoline	0.505891803	86.61401002	10.12188	0.019875317	**4.357868**	
Fresno	2028	UBUS	Aggregate	Aggregate	Gasoline	92.49170241	4337.315772	369.9668	0.899825012	**4.820177**	
Fresno	2028	UBUS	Aggregate	Aggregate	Diesel	21.43397539	2302.714757	85.7359	0.2531729	**9.095424**	

On-road Mobile (Operational) Energy Usage

Unmitigated:

Step 1:

Therefore:

Average Daily VMT:

322,993 Source: CalEEMod Output File

Step 2: Given:

Fleet Mix (CalEEMod Output)

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
53.5430%	5.3975%	17.5864%	14.0525%	2.2799%	0.6183%	1.4960%	2.2785%	0.0688%	0.0282%	2.2547%	0.1379%	0.2584%

And:

Gasoline MPG Factors for each Vehicle Class - Year 2028 (EMFAC2021 Output)

LDA	LDT1	LDT2	MDV	MCY	MH	OBUS
32.0911421	26.37344	26.20609	20.98068287	41.97622752	4.414233958	4.911968

Diesel MPG Factors for each Vehicle Class - Year 2028 (EMFAC2021 Output)

LHD1	LHD2	MHD	HHD	UBUS	SBUS
15.9593774	13.42102	8.939233	5.773599046	9.095423562	8.421421355

Therefore:

Weighted Average MPG Factors

Gasoline: **29.1** Diesel: **10.6**

Step 3: **Therefore:**

10,320 daily gallons of gasoline **2,101 daily gallons of diesel**

or

3,766,659 annual gallons of gasoline **766,790 annual gallons of diesel**

Off-road Mobile (Construction) Energy Usage

Note: For the sake of simplicity, and as a conservative estimation, it was assumed that all off-road vehicles use diesel fuel as an energy source. Demolition (if applicable), Site preparation and grading off-road mobile vehicle on-site gallons of fuel are calculated below.

Given Factor:	**838.5**	**metric tons**	**CO2**	**(provided in CalEEMod Output File)**
Conversion Factor:	2204.6262	pounds	per metric ton	
Intermediate Result:	**1,848,537**	**pounds**	**CO2**	
Conversion Factor:	22.38	pounds	CO2 per 1 gallon of diesel fuel	Source: U.S. EIA, 2016
Final Result:	**82,598**	**gallons**	**diesel fuel**	http://www.eia.gov/tools/faqs/faq.cfm?id=307&t=11

Mitigated Onsite Scenario	Total CO2 (MT/yr) (provided in CalEEMod Output File)
Demolition - 2024	68.6
Site Preparation - 2024	51.7
Site Preparation - 2025	272.0
Grading - 2025	444.1

On-road Mobile (Construction) Energy Usage - Demolition

Step 1:

Total Daily Worker Trips (CalEEMod Output)
15

Total Daily Hauler Trips (CalEEMod Output)
8

Note: Assumes 5% of Plan Area under construction at given point in time (on average) until buildout.

Worker Trip Length (miles) (CalEEMod Output)
7.7

Hauler Trip Length (miles) (CalEEMod Output)
20

Therefore:

Average Worker Daily VMT:
116

Average Hauler Daily VMT:
157

Step 2:

Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

Assumed Fleet Mix for Vendors

Fleet Mix for Workers (CalEEMod Output)

MHD	HHD
0%	100%

And:

MPG Factors for each Vehicle Class - Year 2023 (EMFAC2021 Output)

Gasoline:

LDA	LDT1	LDT2
28.9925022	24.00704	23.25365

Diesel:

MHD	HHD
8.430063824	5.438606

Therefore:

Weighted Average Worker (Gasoline) MPG Factor
26.3

Weighted Average Vendor (Diesel) MPG Factor
5.4

Step 3:

Therefore:
4 **Worker daily gallons of gasoline**

Therefore:
29 **Hauler daily gallons of diesel**

Step 4:

44 **# of Days (CalEEMod Output)**

Therefore:
193 **Total gallons of gasoline**

Therefore:
1,269 **Total gallons of diesel**

On-road Mobile (Construction) Energy Usage - Site Preparation

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

18

Worker Trip Length (miles) (CalEEMod Output)

7.7

Therefore:

Average Worker Daily VMT:

139

Step 2: Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class - Year 2023 (EMFAC2021 Output)

LDA	LDT1	LDT2
28.992502	24.00704	23.25365

Therefore:

Weighted Average Worker MPG Factor

26.3

Step 3: **Therefore:**

5.3 Worker daily gallons of gasoline

Step 4: 135 **# of Days (CalEEMod Output)**

Therefore:

Result: **711 Total gallons of gasoline**

On-road Mobile (Construction) Energy Usage - Grading

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

20

Worker Trip Length (miles) (CalEEMod Output)

7.7

Therefore:

Average Worker Daily VMT:

154

Step 2: Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class - Year 2023 (EMFAC2021 Output)

LDA	LDT1	LDT2
28.992502	24.007041	23.253655

Therefore:

Weighted Average Worker MPG Factor

26.3

Step 3: **Therefore:**

5.9 Worker daily gallons of gasoline

Step 4: 149 **# of Days (CalEEMod Output)**

Therefore:

Result: **872** **Total gallons of gasoline**

On-road Mobile (Construction) Energy Usage - Building Construction

Step 1:

Total Daily Worker Trips (CalEEMod Output)

2,200	5%	**110**

Note: Assumes 5% of Plan Area under construction at given point in time (on average) until buildout.

Worker Trip Length (miles) (CalEEMod Output)

7.7

Therefore:

Average Worker Daily VMT:

847

Total Daily Vendor Trips (CalEEMod Output)

830	5%	**42**

Vendor Trip Length (miles) (CalEEMod Output)

20

Average Vendor Daily VMT:

830

Step 2:

Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

Assumed Fleet Mix for Vendors

Fleet Mix for Workers (CalEEMod Output)

MHD	HHD
0%	100%

And:

MPG Factors for each Vehicle Class - Year 2023 (EMFAC2021 Output)

Gasoline:

LDA	LDT1	LDT2
28.9925022	24.00704	23.25365

Diesel:

MHD	HHD
8.430063824	5.438606

Therefore:

Weighted Average Worker (Gasoline) MPG Factor

26.3

Weighted Average Vendor (Diesel) MPG Factor

5.4

Step 3:

Therefore:

32 Worker daily gallons of gasoline

Therefore:

153 Vendor daily gallons of diesel

Step 4:

1042 **# of Days (CalEEMod Output)**

Therefore:

33,543 Total gallons of gasoline

Therefore:

159,022 Total gallons of diesel

On-road Mobile (Construction) Energy Usage - Paving

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

15

Worker Trip Length (miles) (CalEEMod Output)

7.7

Therefore:

Average Worker Daily VMT:

116

Step 2: Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class - Year 2023 (EMFAC2021 Output)

LDA	LDT1	LDT2
28.992502	24.007041	23.253655

Therefore:

Weighted Average Worker MPG Factor

26.3

Step 3: **Therefore:**

4.4 Worker daily gallons of gasoline

Step 4: 260 **# of Days (CalEEMod Output)**

Therefore:

Result: **1,141** **Total gallons of gasoline**

On-road Mobile (Construction) Energy Usage - Architectural Coating

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

440	5%	22

Note: Assumes 5% of Plan Area under construction at given point in time (on average) until buildout.

Worker Trip Length (miles) (CalEEMod Output)

7.7

Therefore:

Average Worker Daily VMT:

169

Step 2: Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class - Year 2023 (EMFAC2021 Output)

LDA	LDT1	LDT2
28.992502	24.007041	23.253655

Therefore:

Weighted Average Worker MPG Factor

26.3

Step 3: **Therefore:**

6.4 Worker daily gallons of gasoline

Step 4: 781 **# of Days (CalEEMod Output)**

Therefore:

Result: **5,028** **Total gallons of gasoline**

Appendix D

Biological

Biological Resources Assessment for the Triangle Property Project

Fresno County, California

Prepared For:

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CONTENTS

1.0 INTRODUCTION 1
1.1 Study Area Location 1
1.2 Project Description 1
1.3 Purpose of this Biological Resources Assessment 1
2.0 REGULATORY SETTING 3
2.1 Federal Regulations 3
2.1.1 Federal Endangered Species Act 3
2.1.2 Migratory Bird Treaty Act 4
2.1.3 Federal Clean Water Act 5
2.1.4 U.S. Fish and Wildlife Service Birds of Conservation Concern 5
2.2 State or Local Regulations 5
2.2.1 California Fish and Game Code 5
2.2.2 Species of Special Concern 7
2.2.3 Watch List Species 7
2.2.4 California Rare Plant Ranks 7
2.2.5 Sensitive Natural Communities 8
2.2.6 Porter-Cologne Water Quality Act 8
2.2.7 California Environmental Quality Act 9
2.3 Local Plans and Ordinances 10
2.3.1 Clovis General Plan 10
2.3.2 Clovis Municipal Code Ch. 9.30 Tree Protection Standards 10
3.0 METHODS 11
3.1 Literature Review 11
3.2 Field Surveys Conducted 11
3.2.1 Site Reconnaissance 11
3.2.2 Aquatic Resource Assessment 12
3.3 Special-Status Species Considered for the Project 12
4.0 RESULTS 12
4.1 Site Characteristics and Land Use 12
4.2 Soils and Topography 13
4.3 Land Cover Types and Vegetation Communities 16
4.3.1 Annual Grassland 16
4.3.2 Fallow Farmland/Pasture 16
4.3.3 Developed 18

4.4 Aquatic Resources Assessment 18
4.4.1 Seasonal Wetland 18
4.4.2 Intermittent Drainage 18
4.5 Critical Habitat 20
4.6 Riparian Habitats and Sensitive Natural Communities 20
4.7 Wildlife Movement/Corridors and Nursery Sites 20
4.8 Wildlife Observations 20
4.9 Evaluation of Species Identified in the Literature Search 20
4.9.1 Plants 40
4.9.2 Invertebrates 45
4.9.3 Fish 47
4.9.4 Amphibians 47
4.9.5 Reptiles 48
4.9.6 Birds 50
4.9.7 Mammals 54
5.0 IMPACT ANALYSIS 57
5.1 Special-Status Species, Designated Critical Habitat and Essential Fish Habitat 58
5.1.1 Impacts to Special-Status Plants 58
5.1.2 Impacts to Special-Status Invertebrates 58
5.1.3 Impacts to Special-Status Amphibians 58
5.1.4 Impacts to Special-Status Reptiles 58
5.1.5 Impacts to Special-Status Birds 58
5.1.6 Impacts to Special-Status Mammals 59
5.2 Riparian Habitat and Sensitive Natural Communities 59
5.3 Aquatic Resources, Including Waters the U.S. and State 59
5.4 Wildlife Movement/Corridors 59
5.5 Local Policies, Ordinances, and Other Plans 60
6.0 RECOMMENDATIONS 60
6.1 General Recommendations 60
6.2 Special-Status Species 61
6.2.1 Plants 61
6.2.2 Invertebrates 61
6.2.3 Amphibians 62
6.2.4 Reptiles 63

6.2.5 Special-Status Birds and Migratory Bird Treaty Act-Protected Birds (Including Nesting Raptors) 63
6.2.6 Special-Status Mammals 64
6.2.7 Aquatic Resources, Including Waters of the U.S. and State 65
6.2.8 Trees 66
7.0 REFERENCES 67

LIST OF FIGURES

Figure 1. Study Area Location and Vicinity 2
Figure 2. Natural Resources Conservation Service Soil Units 14
Figure 3. Vegetation Communities and Land Cover Types 17
Figure 4. Aquatic Resources Assessment 19

LIST OF TABLES

Table 1. Map Units and Hydric Components Occurring within the Study Area 15
Table 2. Aquatic Resources Assessment 18
Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area 21

LIST OF APPENDICES

Appendix A – Special-Status Species Searches
Appendix B – Representative Site Photographs
Appendix C – Plant Species Observed Onsite
Appendix D – Wildlife Observed Onsite

LIST OF ACRONYMS AND ABBREVIATIONS

Term	Description
BA	Biological Assessment
BCC	Birds of Conservation Concern
BO	Biological Opinion
BRA	Biological Resources Assessment
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
City	City of Clovis
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database

LIST OF ACRONYMS AND ABBREVIATIONS

Term	Description
CNPS	California Native Plant Society
CRPR	California Rare Plant Ranks
CWA	Clean Water Act
ESA	Endangered Species Act
HCP	Habitat Conservation Plan
MBTA	Migratory Bird Treaty Act
MSL	Mean sea level
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
Project	Triangle Property
RWQCB	Regional Water Quality Control Board
SSC	Species of Special Concern
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1.0 INTRODUCTION

At the request of Wilson Premier Homes, ECORP Consulting, Inc. conducted a Biological Resources Assessment (BRA) for the proposed Triangle Property Project (Project) located in Fresno County, California. The purpose of the assessment was to collect information on the biological resources present within the Study Area and to determine any potential biological constraints to Project activities.

1.1 Study Area Location

The approximately 398.4-acre Study Area for the Project is generally located north of East Shepherd Avenue, west of North Carson Avenue, east of North Fowler Avenue, and south of East Behymer Avenue and is just north of the city of Clovis in unincorporated Fresno County, California (Figure 1). The Study Area corresponds to Sections 21 through 23 and 26 through 28; Township 12 South, Range 21 East (Mount Diablo Base and Meridian) of the "Clovis, California" and "Friant, California" 7.5-minute quadrangles (U.S. Geological Survey [USGS] 1964a, 1964b, photorevised 1981; Figure 1). The approximate center of the Study Area is located at 36.872799° North and -119.670887° West within the Upper Dry Watershed (Hydrologic Unit Code #18030009; Natural Resources Conservation Service [NRCS] et al. 2016).

1.2 Project Description

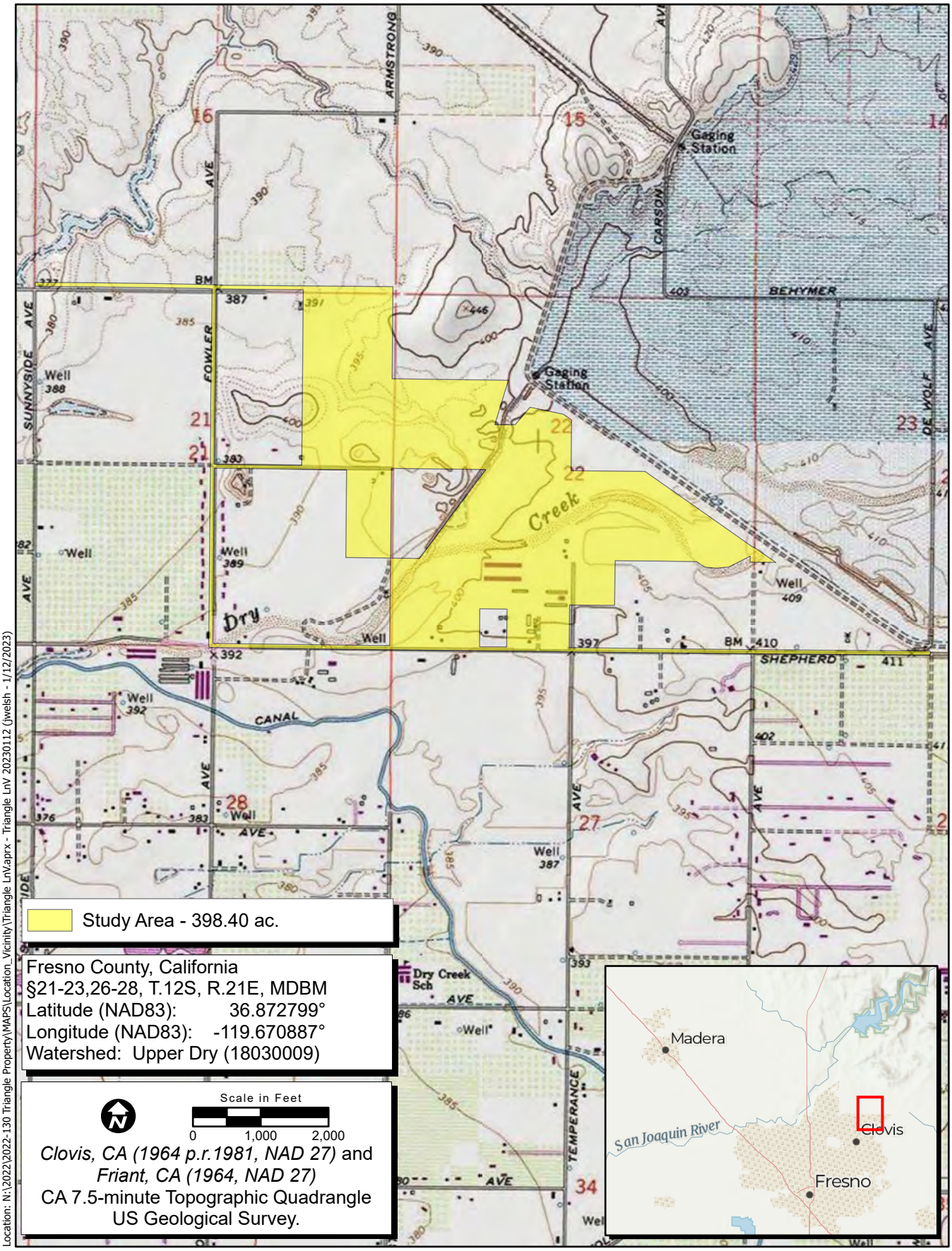
Wilson Premier Homes is proposing the development of "Vista Ranch," a master-planned community to be located in the City of Clovis. The entitlements would include a sphere of influence amendment, general plan amendment, annexation, master development plan, prezoning, and vesting tentative tract map. The Project would include a 2,800- to 3,000-unit residential development varying from low to very high density, as well as mixed use, open space, trails and parks, and community recreation facilities.

1.3 Purpose of this Biological Resources Assessment

The purpose of this BRA is to assess the potential for occurrence of special-status plant and animal species or their habitat, and sensitive habitats such as wetlands within the Study Area. This assessment does not include determinate field surveys conducted according to agency-promulgated protocols. The conclusions and recommendations presented in this report are based upon a review of the available literature and site reconnaissance.

For the purposes of this assessment, special-status species are defined as plants or animals that:

- are listed, proposed for listing, or candidates for future listing as threatened or endangered under the federal Endangered Species Act (ESA);
- are listed or candidates for future listing as threatened or endangered under the California ESA;
- meet the definitions of endangered or rare under Section 15380 of the California Environmental Quality Act (CEQA) Guidelines;



Location: N:\2022\2022-130 Triangle Property\MAPS\Location_Vicinity\Triangle LnV.aprx - Triangle LnV 20230112 (jwelsh - 1/12/2023)

Map Date: 1/12/2023
Sources: ESRI, USGS

Figure 1. Study Area Location and Vicinity

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

2022-130 Triangle Property

- are identified as a species of special concern by the California Department of Fish and Wildlife (CDFW);
- are birds identified as Birds of Conservation Concern (BCC) by the U.S. Fish and Wildlife Service (USFWS);
- are included on the CDFW watch list;
- are plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (California Rare Plant Ranks [CRPRs] 1 and 2);
- plants listed by CNPS as species about which more information is needed to determine their status (CRPR 3), and plants of limited distribution (CRPR 4);
- are plants listed as rare under the California Native Plant Protection Act (NPPA; California Fish and Game Code, Section 1900 et seq.); or
- are fully protected in California in accordance with the California Fish and Game Code, Sections 3511 (birds), 4700 (mammals), 5050 (amphibians and reptiles), and 5515 (fishes).

2.0 REGULATORY SETTING

2.1 Federal Regulations

2.1.1 Federal Endangered Species Act

The federal ESA protects plants and animals that are listed as endangered or threatened by the USFWS and the NMFS. Section 9 of ESA prohibits the taking of listed wildlife, where take is defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct” (50 Code of Federal Regulations [CFR] 17.3). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any listed plant on federal land and removing, cutting, digging up, damaging, or destroying any listed plant on non-federal land in knowing violation of state law (16 U.S. Code [USC] 1538). Under Section 7 of ESA, federal agencies are required to consult with the USFWS if their actions, including permit approvals or funding, could adversely affect a listed (or proposed) species (including plants) or its Critical Habitat. Through consultation and the issuance of a Biological Opinion (BO), the USFWS may issue an incidental take statement allowing take of the species that is incidental to an otherwise authorized activity provided the activity will not jeopardize the continued existence of the species. Section 10 of the ESA provides for issuance of incidental take permits where no other federal actions are necessary provided a Habitat Conservation Plan (HCP) is developed.

2.1.1.1 Section 7

Section 7 of ESA mandates that all federal agencies consult with USFWS and/or NMFS to ensure that federal agencies’ actions do not jeopardize the continued existence of a listed species or adversely modify Critical Habitat for listed species. The adverse modifications will require formal consultation with USFWS or NMFS if direct and/or indirect effects will occur to Critical Habitat that appreciably diminish the value of Critical Habitat for both the survival and recovery of a species. The applicant must conduct a Biological

Assessment (BA) for the purpose of analyzing the potential effects of the project on listed species and Critical Habitat to establish and justify an "effect determination." if adverse effects are likely. The federal agency reviews the BA and prepares a BO if it concludes that the project may adversely affect a listed species or its habitat. The BO may recommend *reasonable and prudent alternatives* to the project to avoid jeopardizing or adversely modifying habitat.

2.1.1.2 Critical Habitat and Essential Habitat

Critical Habitat is defined in Section 3 of the ESA as (1) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the ESA, on which are found those physical or biological features essential to the conservation of the species and that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. For inclusion in a Critical Habitat designation, habitat within the geographical area occupied by the species at the time it was listed must first have features that are essential to the conservation of the species. Critical Habitat designations identify, to the extent known and using the best scientific data available, habitat areas that provide essential life cycle needs of the species (areas on which are found the primary physical and biological features). Primary physical and biological features are features essential to the conservation of the species and that may require special management considerations or protection. These include but are not limited to the following:

- Space for individual and population growth and for normal behavior;
- Food, water, air, light, minerals, or other nutritional or physiological requirements;
- Cover or shelter;
- Sites for breeding, reproduction, or rearing (or development) of offspring; or
- Habitats that are protected from disturbance or are representative of the historic, geographical, and ecological distributions of a species.

2.1.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements international treaties between the U.S. and other nations devised to protect migratory birds, any of their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. As authorized by the MBTA, the USFWS issues permits to qualified applicants for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, education, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal. The regulations governing migratory bird permits can be found in 50 CFR part 13 General Permit Procedures and 50 CFR part 21 Migratory Bird Permits. The State of California has incorporated the protection of birds of prey in Sections 3800, 3513, and 3503.5 of the California Fish and Game Code.

2.1.3 Federal Clean Water Act

The purpose of the federal Clean Water Act (CWA) is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Section 404 of the CWA prohibits the discharge of dredged or fill material into "Waters of the U.S." without a permit from the U.S. Army Corps of Engineers (USACE). "Discharges of fill material" is defined as the addition of fill material into Waters of the U.S., including, but not limited to, the following: placement of fill necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes, and subaqueous utility lines" (33 CFR § 328.2(f)). In addition, Section 401 of the CWA (33 USC 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into Waters of the U.S. to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

Substantial impacts to wetlands (over 0.5 acre of impact) may require an individual permit. Projects that only minimally affect wetlands (less than 0.5 acre of impact) may meet the conditions of one of the existing Nationwide Permits. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions; this certification or waiver is issued by the Regional Water Quality Control Board (RWQCB).

2.1.4 U.S. Fish and Wildlife Service Birds of Conservation Concern

The 1988 amendment to the Fish and Wildlife Conservation Act mandates USFWS "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under ESA." To meet this requirement, USFWS published a list of BCC (USFWS 2021) for the U.S. The list identifies the migratory and nonmigratory bird species (beyond those already designated as federally threatened or endangered) that represent USFWS' highest conservation priorities. Depending on the policy of the lead agency, projects that result in substantial impacts to BCC may be considered significant under CEQA.

2.2 State or Local Regulations

2.2.1 California Fish and Game Code

2.2.1.1 California Endangered Species Act

The California ESA (California Fish and Game Code §§ 2050-2116) generally parallels the main provisions of the federal ESA, but unlike its federal counterpart, the California ESA applies the take prohibitions to species proposed for listing (called *candidates* by the state). Section 2080 of the California Fish and Game Code prohibits the taking, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or in the regulations. *Take* is defined in Section 86 of the California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." The California ESA allows for take incidental to otherwise lawful development projects. State lead agencies are required to consult with the CDFW to ensure that any

action they undertake is not likely to jeopardize the continued existence of any endangered, threatened or candidate species or result in destruction or adverse modification of essential habitat.

2.2.1.2 Fully Protected Species

The State of California first began to designate species as *fully protected* prior to the creation of the federal and California ESAs. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction and included fish, amphibians and reptiles, birds, and mammals. Most fully protected species have since been listed as threatened or endangered under the state and/or federal ESAs. The regulations that implement the Fully Protected Species Statute (California Fish and Game Code § 4700 for mammals, § 3511 for birds, § 5050 for reptiles and amphibians, and § 5515 for fish) provide that fully protected species may not be taken or possessed at any time. Furthermore, CDFW prohibits any state agency from issuing incidental take permits for fully protected species. The CDFW will issue licenses or permits for take of these species for necessary scientific research or live capture and relocation pursuant to the permit.

2.2.1.3 Native Plant Protection Act

The NPPA of 1977 was created with the intent to "preserve, protect and enhance rare and endangered plants in this State." The NPPA is administered by CDFW and provided in California Fish and Game Code §§ 1900-1913. The Fish and Wildlife Commission has the authority to designate native plants as *endangered* or *rare* and to protect endangered and rare plants from take. The California ESA of 1984 (California Fish and Game Code §§ 2050-2116) provided further protection for rare and endangered plant species, but the NPPA remains part of the California Fish and Game Code.

2.2.1.4 Protected Birds

Sections 3800, 3513, and 3503 of the California Fish and Game Code specifically protect birds. Section 3800 states that it is unlawful to take nongame birds, such as those occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds, except when in accordance with regulations of the commission or a mitigation plan approved by CDFW for mining operations. Section 3513 specifically prohibits the take or possession of any migratory nongame bird as designated in the MBTA.

Section 3503 of the California Fish and Game Code prohibits the take, possession, or needless destruction of the nest or eggs of any bird. Additionally, Subsection 3503.5 prohibits the take, possession, or destruction of any birds and their nests in the orders Strigiformes (owls) or Falconiformes (hawks and eagles). These provisions, along with the federal MBTA, serve to protect nesting birds.

2.2.1.5 California Streambed Alteration Notification/Agreement

Section 1602 of the California Fish and Game Code requires that a Streambed Alteration Application (SAA) be submitted to CDFW for "any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake." The CDFW reviews the

proposed actions and, if necessary, submits proposed measures to protect affected fish and wildlife resources to the applicant. The SAA is the final proposal mutually agreed upon by CDFW and the Applicant. Projects that require an SAA often also require a permit from the USACE under Section 404 of the CWA.

2.2.2 Species of Special Concern

Species of Special Concern (SSC) are defined by the CDFW as a species, subspecies, or distinct population of an animal native to California that are not legally protected under ESA, the California ESA or the California Fish and Game Code, but currently satisfy one or more of the following criteria:

- The species has been completely extirpated from the state or, as in the case of birds, it has been extirpated from its primary seasonal or breeding role.
- The species is listed as federally (but not state) threatened or endangered, or meets the state definition of threatened or endangered but has not formally been listed.
- The species has or is experiencing serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for state threatened or endangered status.
- The species has naturally small populations that exhibit high susceptibility to risk from any factor that if realized, could lead to declines that would qualify it for state threatened or endangered status.
- SSC are typically associated with threatened habitats. Project-related impacts to SSC, state-threatened or endangered species are considered significant under CEQA.

2.2.3 Watch List Species

The CDFW maintains a list consisting of taxa that were previously designated as SSC but no longer merit that status, or which do not yet meet SSC criteria, but for which there is concern and a need for additional information to clarify status.

Depending on the policy of the lead agency, projects that result in substantial impacts to species on the Watch List (WL) may be considered significant under CEQA.

2.2.4 California Rare Plant Ranks

The CNPS maintains the Rare Plant Inventory (CNPS 2022a), which provides a list of plant species native to California that are threatened with extinction, have limited distributions, or low populations. Plant species meeting one of these criteria are assigned to one of six CRPRs. The rank system was developed in collaboration with government, academia, non-governmental organizations, and private sector botanists, and is jointly managed by CDFW and the CNPS. The CRPRs are currently recognized in the California Natural Diversity Database (CNDDB). The following are definitions of the CNPS CRPRs:

- Rare Plant Rank 1A – presumed extirpated in California and either rare or extinct elsewhere
- Rare Plant Rank 1B – rare, threatened, or endangered in California and elsewhere

- Rare Plant Rank 2A – presumed extirpated in California, but more common elsewhere
- Rare Plant Rank 2B – rare, threatened, or endangered in California but more common elsewhere
- Rare Plant Rank 3 – a review list of plants about which more information is needed
- Rare Plant Rank 4 – a watch list of plants of limited distribution

Additionally, the CNPS has defined Threat Ranks that are added to the CRPR as an extension. Threat Ranks designate the level of threat on a scale of 1 through 3, with 1 being the most threatened and 3 being the least threatened. Threat Ranks are generally present for all plants ranked 1B, 2B, or 4, and for the majority of plants ranked 3. Plant species ranked 1A and 2A (presumed extirpated in California), and some species ranked 3, which lack threat information, do not typically have a Threat Rank extension. The following are definitions of the CNPS Threat Ranks:

- Threat Rank 0.1 – Seriously threatened in California (over 80 percent of occurrences threatened/high degree and immediacy of threat)
- Threat Rank 0.2 – Moderately threatened in California (20 to 80 percent of occurrences threatened/moderate degree and immediacy of threat)
- Threat Rank 0.3 – Not very threatened in California (less than 20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known)

Factors, such as habitat vulnerability and specificity, distribution, and condition of occurrences, are considered in setting the Threat Rank; and differences in Threat Ranks do not constitute additional or different protection (CNPS 2022b). Depending on the policy of the lead agency, substantial impacts to plants ranked 1A, 1B, or 2 are typically considered significant under CEQA Guidelines Section 15380. Significance under CEQA is typically evaluated on a case-by-case basis for plants ranked 3 or 4.

2.2.5 Sensitive Natural Communities

The CDFW maintains the California Natural Community List (CDFW 2022a), which provides a list of vegetation alliances, associations, and special stands as defined in *A Manual of California Vegetation Online* (CNPS 2022b) along with their respective state and global rarity ranks. Natural communities with a state rarity rank of S1, S2, or S3 are considered sensitive natural communities. Depending on the policy of the lead agency, impacts to sensitive natural communities may be considered significant under CEQA.

2.2.6 Porter-Cologne Water Quality Act

The RWQCB implements water quality regulations under the federal CWA and the Porter-Cologne Water Quality Act. These regulations require compliance with the National Pollutant Discharge Elimination System (NPDES), including compliance with the California Storm Water NPDES General Construction Permit for discharges of storm water runoff associated with construction activities. General Construction Permits for projects that disturb one or more acres of land require development and implementation of a Storm Water Pollution Prevention Plan. Under the Porter-Cologne Water Quality Act, the RWQCB regulates actions that would involve "discharging waste, or proposing to discharge waste, with any region that could affect the water of the state" (Water Code 13260(a)). Waters of the State are defined as "any

surface water or groundwater, including saline waters, within the boundaries of the state" (Water Code 13050 (e)). The RWQCB regulates all such activities, as well as dredging, filling, or discharging materials into Waters of the State, that are not regulated by the USACE due to a lack of connectivity with a navigable water body. The RWQCB may require issuance of a Waste Discharge Requirements for these activities.

2.2.7 California Environmental Quality Act

Per CEQA Guidelines Section 15380, a species not protected on a federal or state list may be considered rare or endangered if the species meets certain specified criteria. These criteria follow the definitions in the federal and California ESAs, and Sections 1900-1913 of the California Fish and Game Code, which deal with rare or endangered plants or animals. Section 15380 was included in the CEQA Guidelines primarily to deal with situations where a project under review may have a significant effect on a species that has not yet been listed by either the USFWS or CDFW.

2.2.7.1 California Environmental Quality Act Significance Criteria

Sections 15063-15065 of the CEQA Guidelines address impact evaluation, and is particularly relevant to biological resources other than listed (endangered, threatened or candidate) species. Generally, impacts to listed species are considered significant and require lead agencies to adopt mitigation measures and prepare an Environmental Impact Report if impacts cannot be mitigated to a less than significant level.

Specifically, Section 15064.7 of the CEQA Guidelines encourages local agencies to develop and publish the thresholds that the agency uses in determining the significance of environmental effects caused by projects under its review. However, agencies may also rely upon the guidance provided by the expanded Initial Study checklist contained in Appendix G of the CEQA Guidelines. Appendix G provides examples of impacts that would normally be considered significant. Based on these examples, impacts to biological resources would normally be considered significant if a project would:

- 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 CDFW or USFWS;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS;
- have a substantial adverse effect on state or federally protected aquatic resources, including Waters of the U.S. and wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means;
- 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;
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

- conflict with the provisions of an adopted HCP, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan.

An evaluation of whether or not an impact on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local context. Assessment of "impact significance" to populations of nonlisted species (e.g., SSC) usually considers the proportion of the species' range that will be affected by a project, the number of individuals or extent of habitat impacted, and the regional and population level effects. Substantial impacts would be those that would diminish, or result in the loss of, an important biological resource, or those that would obviously conflict with local, state, or federal resource conservation plans, goals, or regulations. Impacts are sometimes locally important but not significant according to CEQA because although the impacts would result in an adverse alteration of existing conditions, they would not substantially diminish or result in the permanent loss of an important resource on a population-wide or region-wide basis.

2.3 Local Plans and Ordinances

2.3.1 Clovis General Plan

The Open Space and Conservation Element of the City of Clovis (City) General Plan includes goals and policies for protection of natural resources. The following goals and policies are relevant to biological resources:

- Goal 2: Natural, agricultural, and historic resources that are preserved and promoted as key features for civic pride and identity.
- Policy 2.2: New development. Encourage new development to incorporate on-site natural resources and low impact development techniques;
- Policy 2.6: Biological resources. Support the protection of biological resources through the conservation of high-quality habitat area.
- Policy 2.7: Native plants. Encourage the use of native and climate-appropriate plant species and prohibit the use of plant species known to be invasive.

2.3.2 Clovis Municipal Code Ch. 9.30 Tree Protection Standards

Chapter 9.30 (Tree Protection Standards) of the City Municipal Code establishes regulations and standards to protect and manage trees on private property to ensure that development is compatible with and enhances the City's quality and character. It is unlawful to remove any protected tree from private property without first obtaining a tree removal permit or exemption in compliance with Section 9.30.060 (tree removal permit/application requirements). Protected trees in all zones include heritage trees, any tree required to be planted or retained as a condition of approval of a development application or a building permit, or trees required by site plan review. Protected trees in all zones except for developed single-family residential properties include any tree with at least one trunk measuring 12 inches or greater in diameter or 38 inches or greater in circumference, measured from 4 feet above the adjacent grade.

Mitigation for impacts to protected trees may include onsite replanting or payment of an in-lieu fee.

3.0 METHODS

3.1 Literature Review

The following resources were reviewed to determine whether any special-status species have potential to occur within the Study Area (Appendix A):

- The CDFW CNDDB record search for the "Clovis, California" and "Friant, California" 7.5-minute quadrangles and the 10 surrounding USGS quadrangles (CDFW 2022a).
- The USFWS Information, Planning, and Consultation System Resource Report List for the Study Area (USFWS 2022).
- The CNPS electronic Inventory of Rare and Endangered Plants of California for the "Clovis, California" and "Friant, California" 7.5-minute quadrangles and the eight surrounding USGS quadrangles (CNPS 2022a).
- National Marine Fisheries Service (NMFS) West Coast Region Species, Critical Habitat, and Essential Habitat (National Oceanic and Atmospheric Administration 2016).

The CNDDB literature review included both mapped data and unprocessed data. Mapped data has been evaluated by a CNDDB Program biologist and has been incorporated into CNDDB occurrence databases. Unprocessed data has been submitted to the CNDDB but has not yet been entered into the CNDDB occurrence database and has not been quality controlled by a CNDDB Program biologist.

3.2 Field Surveys Conducted

3.2.1 Site Reconnaissance

ECORP biologists Rachel Bennett, Stephanie Castle, Keith Kwan, and Daniel Wong conducted the site reconnaissance visit on August 3 and 4, 2022. The Study Area was systematically surveyed on foot using a Trimble Global Positioning System unit with submeter accuracy, topographic maps, and aerial imagery to ensure total site coverage. Special attention was given to identifying those portions of the Study Area with the potential to support special-status species and sensitive habitats. During the field survey, biological communities occurring onsite were characterized and the following biological resource information was collected:

- Vegetation communities
- Plants and animal species directly observed
- Burrows and any other special habitat features
- Representative site photographs (Appendix B)

3.2.2 Aquatic Resource Assessment

ECORP biologists Stephanie Castle, Daniel Wong, and Keith Kwan conducted an aquatic resource assessment of the Study Area concurrently with the August 3 and 4, 2022 site visit. The aquatic resource assessment utilized methods detailed in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008), however; this was only assessment-level, so wetland data points were not collected.

3.3 Special-Status Species Considered for the Project

Based on species occurrence information from the literature review and observations in the field, a list of special-status plant and animal species that have the potential to occur within the Study Area was generated. Only special-status species as defined in Section 1.3 were included in this analysis. Each of these species' potential to occur onsite was assessed based on the following criteria:

- **Present** - Species was observed during the site visit or is known to occur within the Project site based on documented occurrences within the CNDDB or other literature
- **Potential to Occur** - Habitat (including soils and elevation requirements) for the species occurs within the Project site
- **Low Potential to Occur** - Marginal or limited amounts of habitat occurs, or the species is not known to occur within the vicinity of the Project site based on CNDDB records and other available documentation
- **Absent** - No suitable habitat (including soils and elevation requirements) or the species is not known to occur within the vicinity of the Project site based on CNDDB records and other documentation

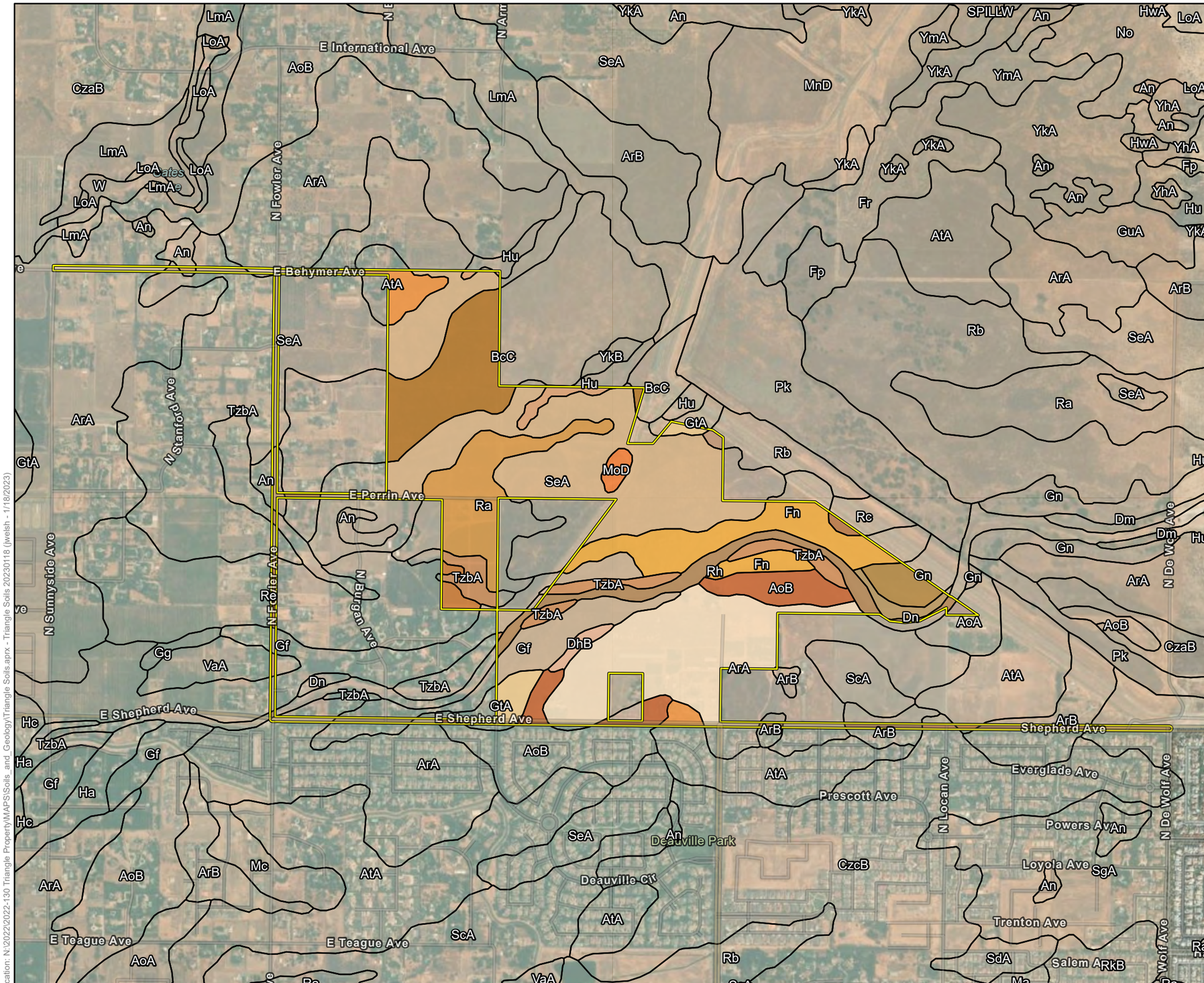
4.0 RESULTS

4.1 Site Characteristics and Land Use

The Study Area is located within flat to gently sloping terrain situated at an elevational range of approximately 390 to 416 feet above mean sea level in the San Joaquin Valley Area Subregion of the Central Western floristic region of California (Jepson eFlora 2022). The Study Area is primarily undeveloped and consists of farmed annual grassland, fallow farmland or pasture, and developed or disturbed areas that consist of a rural residence, farm buildings, abandoned poultry pens, abandoned nursery operations. The offsite infrastructure portions of the Study Area are located along developed roads fronting rural residential development on East Behymer Avenue, East Perrin Avenue, East Shepherd Avenue, and North Fowler Avenue.

4.2 Soils and Topography

According to the Web Soil Survey (NRCS 2022a), 25 map units are delineated within the Study Area (Figure 2). Of these map units, 12 contain hydric components (NRCS 2022b). Table 1 summarizes the hydric components and the landforms on which they occur per map unit.



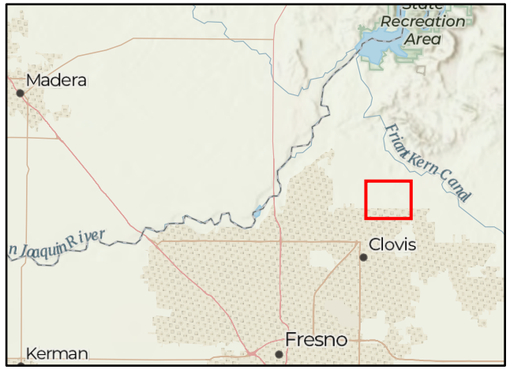
Map Contents

Study Area - 398.40 ac.

Soil Types within Study Area

- An - Alamo clay
- AoA - Atwater loamy sand, 0 to 3 percent slopes, MLRA 17
- AoB - Atwater loamy sand, 3 to 9 percent slopes
- ArA - Atwater sandy loam, 0 to 3 percent slopes
- ArB - Atwater sandy loam, 3 to 9 percent slopes
- AtA - Atwater sandy loam, moderately deep, 0 to 3 percent slopes
- BcC - Blasingame loam, 3 to 15 percent slopes
- CzcB - Cometa-San Joaquin sandy loams, 3 to 9 percent slopes
- DhB - Delhi loamy sand, 3 to 9 percent slopes
- Dn - Dello sandy loam
- Fn - Foster loam
- Gf - Grangeville fine sandy loam, 0 to 1 percent slopes, MLRA 17
- Gn - Grangeville fine sandy loam, hard substratum
- GtA - Greenfield sandy loam, 0 to 3 percent slopes
- Hu - Hildreth clay
- MoD - Millerton rocky fine sandy loam, 3 to 30 percent slopes
- Ra - Ramona sandy loam
- Rb - Ramona sandy loam, hard substratum
- Rc - Ramona loam
- Re - Ramona loam, hard substratum
- Rh - Riverwash
- SeA - San Joaquin loam, 0 to 3 percent slopes
- SgA - San Joaquin loam, shallow, 0 to 3 percent slopes
- TzbA - Tujunga loamy sand, 0 to 3 percent slopes
- VaA - Visalia sandy loam, 0 to 3 percent slopes

Sources: Maxar (3/9/2022), NRCS SSURGO (2019), ESRI



Location: N:\2022\2022-130 Triangle Property\MAPS\Soils_and_Geology\Triangle Soils.aprx - Triangle Soils 20230118 (jwelsh - 1/18/2023)

Map Date: 1/18/2023

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Scale in Feet
0 600 1,200

Figure 2. Natural Resources Conservation Service Soil Units

2022-130 Triangle Property

Table 1. Map Units and Hydric Components Occurring within the Study Area

Map Unit	Hydric?	Hydric Components and Landforms
An – Alamo clay	Yes	Alamo (depressions on fan remnants)
AoA – Atwater loamy sand, 0 to 3 percent slopes, MLRA17	No	None
AoB – Atwater loamy sand, 3 to 9 percent slopes	No	None
ArA – Atwater sandy loam, 0 to 3 percent slopes	No	None
ArB – Atwater sandy loam, 3 to 9 percent slopes	No	None
AtA – Atwater sandy loam, moderately deep, 0 to 3 percent slopes	No	None
BcC – Blasingame loam, 3 to 25 percent slopes	No	None
CzcB – Cometa-San Joaquin sandy loams, 3 to 9 percent slopes	Yes	Alamo (depressions on stream terraces)
DhB – Delhi loamy sand, 3 to 9 percent slopes	No	None
Dn – Dello sandy loam	Yes	Dello (depressions on alluvial fans and floodplains), Unnamed (depressions and channels on floodplains)
Fn – Foster loam	Yes	Foster (depressions on alluvial fans and floodplains), Grangeville (floodplains, alluvial fans), Unnamed, wet (alluvial fans, floodplains)
Gf – Grangeville fine sandy loam, 0 to 1 percent slopes, MLRA 17	Yes	Grangeville (floodplains, alluvial fans), Traver (floodplains, alluvial fans), Unnamed, hydric (floodplains, alluvial fans)
Gn – Grangeville fine sandy loam, hard substratum	Yes	Grangeville (floodplains, alluvial fans)
GtA – Greenfield sandy loam, 0 to 3 percent slopes	No	None
Hu – Hildreth clay	Yes	Hildreth (floodplains, drainageways on floodplains)
MoD – Millerton rocky fine sandy loam, 3 to 30 percent slopes	No	None
Ra – Ramona sandy loam	No	None
Rb – Ramona sandy loam, hard substratum	No	None
Rc – Ramona loam	No	None
Re – Ramona loam, hard substratum	No	None
Rh – Riverwash	Yes	Riverwash (floodplains), Grangeville (floodplains), Visalia (depressions on floodplains)

Table 1. Map Units and Hydric Components Occurring within the Study Area		
Map Unit	**Hydric?**	**Hydric Components and Landforms**
SeA – San Joaquin loam, 0 to 3 percent slopes	Yes	Unnamed (ponded)
SgA – San Joaquin loam, shallow, 0 to 3 percent slopes	Yes	Unnamed (ponded)
TzbA – Tujunga loamy sand, 0 to 3 percent slopes	Yes	Unnamed (flooded)
VaA – Visalia sandy loam, 0 to 3 percent slopes	Yes	Unnamed, somewhat poorly drained (depressions on valleys and drainageways), Hildreth (swales on floodplains), Foster (depressions on floodplains)

4.3 Land Cover Types and Vegetation Communities

Land cover types or vegetation communities found within the Study Area include annual grassland, fallow farmland/pasture, and developed (Figure 3). Descriptions of the land cover types and vegetation communities present within the Study Area are provided below. A list of plant species observed in the Study Area is included as Appendix C.

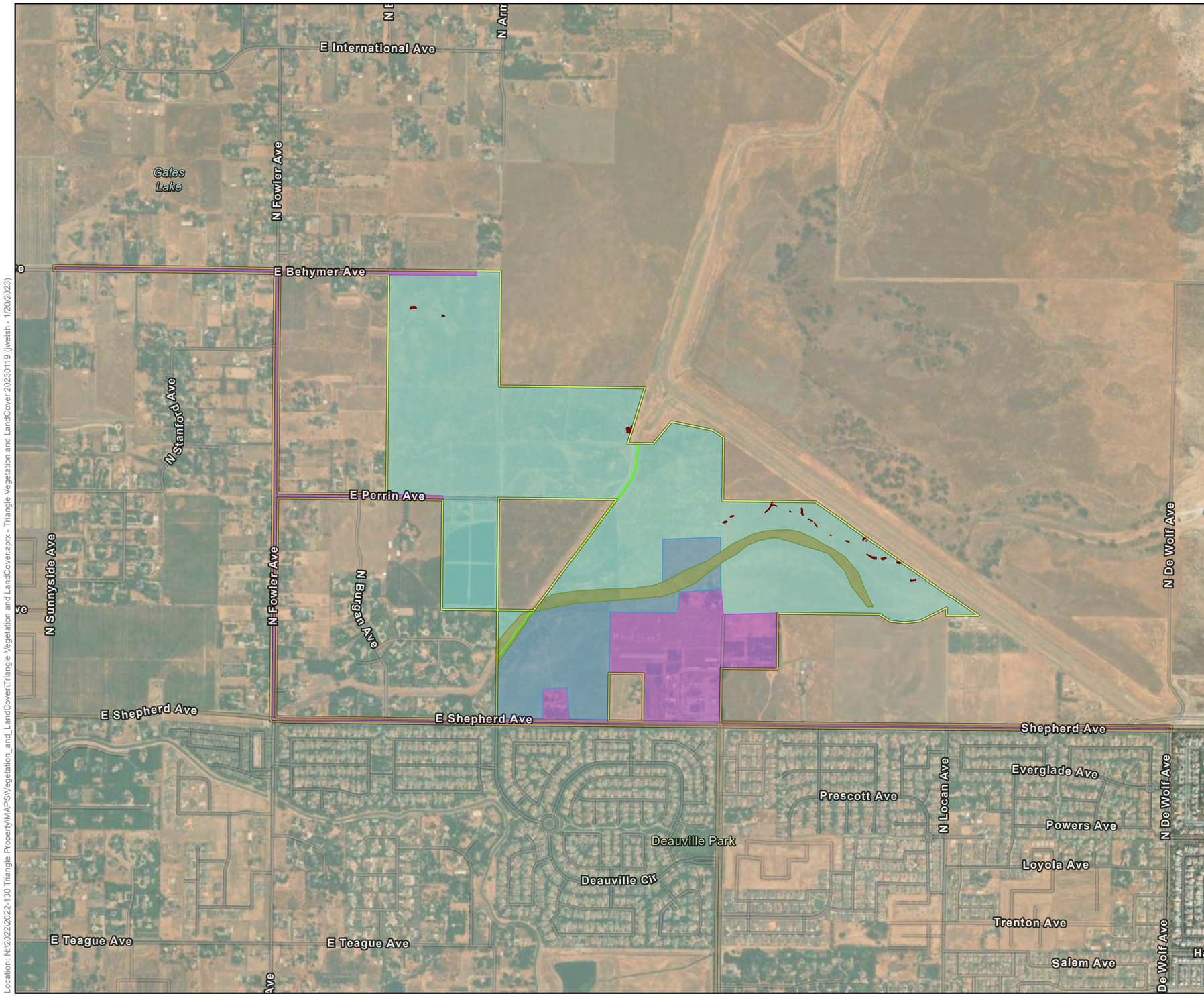
4.3.1 Annual Grassland

A majority of the Study Area is made up of annual grassland that has been farmed for hay. Evidence of regular, if not annual, mowing and plowing is present throughout the grassland. Predominant species include wild oats (*Avena* sp.), foxtail barley (*Hordeum murinum*), shortpod mustard (*Hirschfeldia incana*), ripgut brome (*Bromus diandrus*), soft brome (*Bromus hordeaceus*), and red brome (*Bromus madritensis* ssp. *rubens*).

The annual grassland most resembles the *Avena* spp. – *Bromus* spp. Herbaceous Semi-Natural Alliance as characterized by *A Manual of California Vegetation Online* (CNPS 2022b). Seminatural alliances are strongly dominated by nonnative plants that have become naturalized in the state, do not have state rarity rankings, and are not considered sensitive natural communities by CDFW.

4.3.2 Fallow Farmland/Pasture

A small percentage of the Study Area is made up of fallow farmland and pasture. The fallow farmland appears to have been a cereal grain, *Triticum* sp. such as wheat, oat, or barley. There is active horse and cow pasture along the southern portion of the Study Area. Some of these fields have been leveled and were likely historically irrigated. There is no evidence of current irrigation in the Study Area.



Map Contents

Study Area - 398.40 ac.

Vegetation Communities

Annual Grassland - 257.400 ac.

Land Cover

Developed - 81.096 ac.

Fallow Farmland/Pasture - 44.893 ac.

Unvegetated - 15.010 ac.

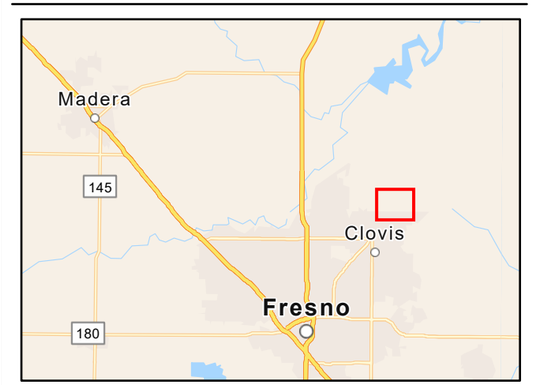
Aquatic Resources

Intermittent Drainage - 0.370 ac.

Seasonal Wetland - 0.436 ac.

The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.

Sources: Maxar (3/9/2022), ESRI



Location: N:\2022\2022-130 Triangle Property\MAPS\Vegetation_and_LandCover\Triangle Vegetation and LandCover.aprx - Triangle Vegetation and LandCover 20230119 (jwelsh - 1/20/2023)

Map Date: 1/20/2023

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Scale in Feet
0 600 1,200

Figure 3. Vegetation Communities and Land Cover Types
2022-130 Triangle Property

4.3.3 Developed

The developed portions of the Study Area include the paved streets (East Behymer Avenue, East Perrin Avenue, East Shepherd Avenue, North Fowler Avenue), several rural residences along the southern boundary, and a plant nursery.

4.4 Aquatic Resources Assessment

A total of 0.806 acres of aquatic resources were mapped during the assessment within the Study Area (Table 2). A discussion of the aquatic resources assessment is presented below, and the aquatic resources assessment map is presented as Figure 4.

Table 2. Aquatic Resources Assessment

Type	Acreage[1]
Wetlands:	
Seasonal Wetland	0.436
Other Waters:	
Intermittent Drainage	0.370
Total	**0.806**

[1]Acreages represent a calculated estimation from the aquatic resources assessment

4.4.1 Seasonal Wetland

Seasonal wetlands are ephemerally wet due to accumulation of surface runoff and rainwater within low-lying areas. Inundation periods tend to be relatively short and they are commonly dominated by nonnative annual and sometimes perennial hydrophytic species. Nineteen seasonal wetlands (0.436 acre) were mapped within the Study Area. Many of the seasonal wetlands onsite appear to be associated with remnant historic drainages present prior to installation of the Big Dry Creek Dam east of the Study Area and channelization of Big Dry Creek as an outflow of the reservoir. Dominant plant species in the seasonal wetlands included foxtail barley (*Hordeum jubatum*) and slender popcorn flower (*Plagiobothrys stipitatus*).

4.4.2 Intermittent Drainage

Intermittent drainages are linear features that exhibit a bed and bank, OHWM, and flow for weeks or months following significant precipitation events. Intermittent drainages differ from ephemeral drainages in that they flow for longer duration and are influenced by groundwater sources. This usually results in greater quantities and duration of flow relative to ephemeral drainages. The intermittent drainage mapped within the Study Area is a channelized outflow from the Big Dry Creek Reservoir and forms the modern alignment of Big Dry Creek. This aquatic feature was completely dry during the site reconnaissance survey and had vegetation similar to that observed in the annual grassland.

Map Contents

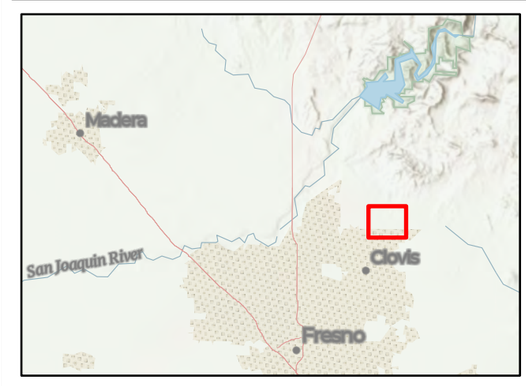
- Overall Study Area - 398.40 ac.
- Reference Coordinate

Aquatic Resources - 0.806 ac.

- Intermittent Drainage - 0.370 ac.
- Seasonal Wetland - 0.436 ac.

Photo Source: Maxar (2020/2021/2022)
Boundary Source: MP Engineering
Delineator(s): Rachel Bennett, Stephanie Castle, Keith Kwan, Daniel Wong
Coordinate System: NAD 1983 StatePlane California IV FIPS 0404 Feet

The information depicted on this graphic represents an aquatic resource assessment. The assessment was not conducted in accordance with the Corps of Engineers Wetland Delineation Manual and Sacramento District Minimum Standards.



Location: N:\2022\2022-130 Triangle Property\MAPS\Jurisdictional_Delineation\Triangle Aquatic Resources.aprx - Triangle ARA Overview 20230119 (DKrolick - 8/31/2023)

Map Date: 8/31/2023

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Scale in Feet
0 600 1,200

Figure 4. Aquatic Resources Assessment
2022-130 Triangle Property

4.5 Critical Habitat

There is no designated Critical Habitat within the Study Area (USFWS 2022).

4.6 Riparian Habitats and Sensitive Natural Communities

Five sensitive natural communities were identified as having potential to occur within the Study Area based on the literature review (CDFW 2022a). These include Great Valley Mixed Riparian Forest, Sycamore Alluvial Mixed Riparian Forest, Northern Basalt Flow Vernal Pool, Northern Claypan Vernal Pool, Northern Hardpan Vernal Pool. Based on the results of the site visit, no sensitive natural communities or riparian habitats are present within the Study Area.

4.7 Wildlife Movement/Corridors and Nursery Sites

The Study Area does not fall within an Essential Habitat Connectivity area mapped by the CDFW, but an expanse of undeveloped land, a portion of which is considered an Essential Habitat Connectivity area, exists east of the Study Area across North Carson Avenue (CDFW 2022b). The Study Area is not expected to provide significant wildlife movement corridors due to it bordering developed areas to the west and south and due to North Carson Avenue separating the Study Area from undeveloped land to the east. However, the open space within the Study Area may provide some migratory opportunities for wildlife.

For the purposes of this analysis, nursery sites include but are not limited to concentrations of nest or den sites such as heron rookeries or bat maternity roosts. These data are available through CDFW's Biogeographic Information and Observation System database (CDFW 2022b) or as occurrence records in the CNDDB and are supplemented with the results of the field reconnaissance. No nursery sites have been documented within the Study Area (CDFW 2022a) and none were observed during the site reconnaissance.

4.8 Wildlife Observations

The Study Area supports a variety of common wildlife species. A list of wildlife species observed within the Study Area during the site visit is included as Appendix D.

4.9 Evaluation of Species Identified in the Literature Search

A list of all special-status plant and wildlife species identified in the literature search as potentially occurring within the Study Area is provided in Table 3. This table includes the listing status for each species, a brief habitat description, and a determination on the potential to occur in the Study Area. Following the table is a brief description of each species with potential to occur.

Several species and sensitive habitat types that were identified in the database and literature searches have been formally delisted, are tracked by the CNDDB but possess no special-status or are identified as sensitive habitats but not located within the Study Area. These species and habitat types were not included in Table 3 and are not discussed further in this report.

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area						
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Observation Period**	**Potential to Occur Onsite**
	FESA	**CESA**	**Other Status**			
Plants						
Brassy bryum (*Bryum chryseum*)	-	-	4.3	Chaparral openings, cismontane woodland, and valley and foothill grassland (165'–1,970').	Any Season	Potential to occur. The grassland within the Study Area may provide suitable habitat for this species
Hoover's calycadenia (*Calycadenia hooveri*)	-	-	1B.3	Rocky soils in cismontane woodland and valley and foothill grassland (215'–985').	July–September	Absent. The Study Area does not include suitable rocky habitat for this species.
Bristly sedge (*Carex comosa*)	-	-	2B.1	Mesic (Jepson eFlora 2022) valley and foothill grassland, coastal prairie, and lake margins of marshes and swamps (0'–2,050').	May–September	Low potential to occur. There are few occurrences in the vicinity, however, the mesic areas within the Study Area may provide suitable habitat for this species.
Tree-anemone (*Carpenteria californica*)	-	CT	1B.2	Usually granitic substrates in chaparral and cismontane woodland (1,115' – 4,395').	May–July	Absent. The Study Area is significantly outside of the known elevational range for this species and does not include suitable habitat.
Succulent owl's-clover (*Castilleja campestris* var. *succulenta*)	FT	CE	1B.2	Vernal pools, often in acidic environments (165'–2,460').	April–May	Potential to occur. The seasonal wetlands within the Study Area may provide suitable habitat for this species.
California jewelflower (*Caulanthus californicus*)	FE	CE	1B.1	Chenopod scrub, pinyon and juniper woodland, and valley and foothill grassland (200'–3,280').	February–May	Absent. The Study Area is outside of the known geographic range for this species (USFWS 2022).

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area

Common Name (*Scientific Name*)	Status			Habitat Description	Observation Period	Potential to Occur Onsite
	FESA	CESA	Other Status			
Streambank spring beauty (*Claytonia parviflora* ssp. *grandiflora*)	-	-	4.2	Occurs in rocky cismontane woodland (820'–3,935').	February–May	Absent. No suitable habitat within the Study Area.
Ewan's larkspur (*Delphinium hansenii* ssp. *ewanianum*)	-	-	4.2	Rocky soils in cismontane woodland, and valley and foothill grassland (195'–1,970').	March–May	Potential to occur. The grassland within the Study Area may provide suitable habitat for this species.
Dwarf downingia (*Downingia pusilla*)	-	-	2B.2	Mesic areas in valley and foothill grassland, and vernal pools. Species has also been found in disturbed areas such as tire ruts and scraped depressions (CDFW 2022a) (5'–1,460').	March–May	Low potential to occur. The Study Area is just outside of the known geographic range for this species, but the seasonal wetlands and other mesic areas within the Study Area may provide suitable habitat.
Spiny-sepaled button-celery (*Eryngium spinosepalum*)	-	-	1B.2	Swales, roadside ditches (Preston et al. 2012), vernal pools and valley and foothill grassland (260'–3,200').	April–June	Potential to occur. The aquatic features within the Study Area may provide suitable habitat for this species.
Kings River monkeyflower (*Erythranthe acutidens*)	-	-	3	Cismontane woodland and lower montane coniferous forest (1,000'–4,005').	April–July	Absent. The Study Area is significantly outside of the known elevational range and does not include suitable habitat for this species.
Small-flowered monkeyflower (*Erythranthe inconspicua*)	-	-	4.3	Mesic. Chaparral, cismontane woodland and lower montane coniferous forest (900'–2,495').	May–June	Absent. The Study Area is significantly outside of the known elevational range and does not include

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area						
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Observation Period**	**Potential to Occur Onsite**
	FESA	**CESA**	**Other Status**			
						suitable habitat for this species.
Sierra Nevada monkeyflower (*Erythranthe sierrae*)	-	-	4.2	Openings of cismontane woodland and lower montane coniferous forest or dry meadows and seeps (605'–7,495').	March–July	Absent. The Study does not include suitable habitat for this species.
Boggs Lake hedge-hyssop (*Gratiola heterosepala*)	-	CE	1B.2	Marshes, swamps, lake margins, and vernal pools (35'–7,790').	April–August	Low potential to occur. The aquatic features within the Study Area may provide marginally suitable habitat for this species.
California satintail (*Imperata brevifolia*)	-	-	2B.1	Mesic areas in chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps (often alkali) and riparian scrub (0'–3,985').	September–May	Absent. The Study does not include suitable habitat for this species.
Forked hare-leaf (*Lagophylla dichotoma*)	-	-	1B.1	Cismontane woodland or valley and foothill grassland (150'–1,100').	April–May	Potential to occur. The grassland within the Study Area may provide suitable habitat for this species.
Madera leptosiphon (*Leptosiphon serrulatus*)	-	-	1B.2	Cismontane woodland and lower montane coniferous forest (985'–4,265').	April–May	Absent. The Study Area is significantly outside of the known elevational range and does not include suitable habitat for this species.
Orange lupine *(Lupinus citrinus* var. *citrinus)*	-	-	1B.2	Granitic substrates in chaparral, cismontane woodland, and lower montane coniferous forest (1,245'–5,580').	April–July	Absent. The Study Area is significantly outside of the known elevational range and does not include suitable habitat for this species.

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area						
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Observation Period**	**Potential to Occur Onsite**
	FESA	**CESA**	**Other Status**			
Hoary navarretia (*Navarretia eriocephala*)	-	-	4.3	Vernally mesic areas in cismontane woodland and valley and foothill grassland (345'–1,310').	May–June	Low potential to occur. The Study Area is just outside of the known geographic range for this species, but the seasonal wetlands and other mesic areas within the Study Area may provide suitable habitat.
Pincushion navarretia (*Navarretia myersii* ssp. *myersii*)	-	-	1B.1	Often acidic soils in vernal pools (65'–1,085').	April–May	Low potential to occur. The Study Area is just outside of the known geographic range for this species, but the seasonal wetlands within the Study Area may provide suitable habitat.
San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*)	FT	CE	1B.1	Vernal pools (35'–2,475').	April–September	Low potential to occur. The seasonal wetlands within the Study Area may provide very marginal habitat for this species. A conservative assessment was made for this species due to the listing status.
Hairy Orcutt grass (*Orcuttia pilosa*)	FE	CE	1B.1	Vernal pools (150'–655').	May–September	Low potential to occur. The seasonal wetlands within the Study Area may provide very marginal habitat for this species. A conservative assessment was

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area						
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Observation Period**	**Potential to Occur Onsite**
	FESA	**CESA**	**Other Status**			
						made for this species due to the listing status.
Arizona pholistoma (*Pholistoma auritum var. arizonicum*)	-	-	2B.3	Mojave desert scrub (900′ -2,740′).	March	Absent. The Study does not include suitable habitat for this species.
Wine-colored tufa moss (*Plagiobryoides vinosula*)	-	-	4.2	Usually in granitic rock or granitic soil along seeps and streams, sometimes in clay (100′–5,695′).	–	Potential to occur. The granitic substrates within the Study Area may provide suitable habitat for this species.
Hartweg's golden sunburst (*Pseudobahia bahiifolia*)	FE	CE	1B.1	Clay, often acidic soils in cismontane woodland, valley and foothill grasslands (50′–490′).	March–April	Low potential to occur. The grassland within the Study Area may provide marginally suitable habitat for this species.
San Joaquin adobe sunburst (*Pseudobahia peirsonii*)	FT	CE	1B.1	Adobe clay soils in cismontane woodland and valley and foothill grassland (295′–2,625′).	February–April	Low potential to occur. The grassland within the Study Area may provide very marginal habitat for this species. A conservative assessment was made for this species due to the listing status.
Sanford's arrowhead (*Sagittaria sanfordii*)	-	-	1B.2	Shallow marshes and freshwater swamps (0′–2,135′).	May–October	Absent. The Study does not include suitable habitat for this species.

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area

Common Name (*Scientific Name*)	Status			Habitat Description	Observation Period	Potential to Occur Onsite
	FESA	CESA	Other Status			
Greene's tuctoria (*Tuctoria greenei*)	FE	CR	1B.1	Vernal pools (100'–3,510').	May–July	Low potential to occur. The seasonal wetlands within the Study Area may provide very marginal habitat for this species. A conservative assessment was made for this species due to the listing status
Hall's wyethia (*Wyethia elata*)	-	-	4.3	Cismontane woodland and lower montane coniferous forest (3,280'–4,595').	May–August	Absent. The Study Area is significantly outside of the known elevational range and does not include suitable habitat for this species.
Invertebrates						
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	-	-	Vernal pools/wetlands.	November-April	Potential to occur. There is suitable habitat within the Study Area.
Vernal pool tadpole shrimp (*Lepidurus packardi*)	FE	-	-	Vernal pools/wetlands.	November-April	Low potential to occur. The seasonal wetlands within the Study Area may provide marginal habitat for this species.
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	FT	-	-	Elderberry shrubs.	Any season	Absent. The Study Area does not contain elderberry shrubs and is outside of the known geographical range for this species (USFWS 2022).

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area						
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Observation Period**	**Potential to Occur Onsite**
	FESA	**CESA**	**Other Status**			
Conservancy fairy shrimp (*Branchinecta conservatio*)	FE	-	-	Vernal pools/wetlands.	November-April	Low potential to occur. The seasonal wetlands within the Study Area may provide marginal habitat for this species.
Monarch butterfly (*Danaus plexippus*)	FC	-	-	Adult monarchs west of the Rocky Mountains typically overwinter in sheltered wooded groves of Monterey pine, Monterey cypress, and gum eucalyptus along coastal California, then disperse in spring throughout California, Nevada, Arizona, and parts of Oregon and Washington. Adults require milkweed and additional nectar sources during the breeding season. Larval caterpillars feed exclusively on milkweed.	Any season	Absent. No suitable habitat within the Study Area.
Fish						
Hardhead (*Mylopharodon conocephalus*)	-	-	SSC	Relatively undisturbed streams at low to mid elevations in the Sacramento-San Joaquin and Russian River drainages. In the San Joaquin River, scattered populations found in tributary streams, but only rarely in the valley reaches of the San Joaquin River	N/A	Absent. There is no suitable habitat within the Study Area.
Sacramento hitch (*Lavinia*	-	-	SSC	Warm, lowland, waters including clear streams, turbid sloughs, lakes and reservoirs. In streams they	N/A	Absent. There is no suitable habitat within the Study Area.

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area						
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Observation Period**	**Potential to Occur Onsite**
	FESA	**CESA**	**Other Status**			
exilicauda exilicauda)				are generally found in pools or runs among aquatic vegetation, although small individuals will also use riffles. Sacramento hitch prefer shallow (< 1 m deep) stream habitats with smaller gravel to mud substrates.		
Delta smelt (*Hypomesus transpacificus*)				Sacramento-San Joaquin delta.	N/A	Absent. There is no suitable habitat within the Study Area.
Amphibians						
California tiger salamander - central California Distinct Population Segment [DPS] (*Ambystoma californiense*)	FT	CT	CDFW WL	Vernal pools, wetlands (breeding) and adjacent grassland or oak woodland; needs underground refuge (e.g., ground squirrel and/or gopher burrows). Largely terrestrial as adults.	March-May	Present. There is a documented CNDDB occurrence and suitable habitat within the Study Area.
Western spadefoot (*Spea hammondii*)	-	-	SSC	California endemic species of vernal pools, swales, wetlands and adjacent grasslands throughout the Central Valley.	March-May	Potential to occur. There is suitable habitat within the Study Area.
Foothill yellow-legged frog East/Southern Sierra Clade (*Rana boylii*)	-	CE	SSC	Foothill yellow-legged frogs can be active all year in warmer locations but may become inactive or hibernate in colder climates. At lower elevations, foothill yellow-legged frogs likely spend most of the year in or near streams. Adult frogs, primarily males, will gather along main-stem rivers during spring to breed.	May-October	Absent. There is no suitable habitat within the Study Area.

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area						
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Observation Period**	**Potential to Occur Onsite**
	FESA	**CESA**	**Other Status**			
				Amador, Calaveras, Madera, Mariposa, Sacramento, Tulare, and Tuolumne counties. The portion of Kern County within this clade is bounded on the west by the California Aqueduct and by the following subbasins in the east: Middle Kern-Upper Tehachapi-Grapevine, South Fork Kern, and Upper Kern. The following subbasins in El Dorado and Alpine counties are included in this clade: South Fork American, Upper Cosumnes, and Upper Mokelumne. A small area where the estimated historical range spans into Mono County is also included in this clade. The following counties east of the California Aqueduct are included in this clade: Fresno, Kings, Merced, San Joaquin, and Stanislaus.		
California red-legged frog (*Rana draytonii*)	FT	-	SSC	Lowlands or foothills at waters with dense shrubby or emergent riparian vegetation. Adults must have aestivation habitat to endure summer dry down	May-November	Absent. Outside of known geographical range of species.
Reptiles						
Northwestern pond turtle (*Actinemys marmorata*)	-	-	SSC	Requires basking sites and upland habitats up to 0.5 km from water for egg laying. Uses ponds, streams, detention basins, and irrigation ditches.	April-September	Potential to occur. There is suitable nesting habitat within Study Area.

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area						
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Observation Period**	**Potential to Occur Onsite**
	FESA	**CESA**	**Other Status**			
Northern California legless lizard (*Anniella pulchra*)	-	-	SSC	The most widespread of California's *Anniella* species. Occurs in sandy or loose soils under sparse vegetation from Antioch south coastally to Ventura. Bush lupine is often an indicator plant, and two melanistic populations are known.	Generally spring, but depends on location and conditions	Low potential to occur. There is marginally suitable habitat within the Study Area.
Blainville's Coast horned lizard (*Phrynosoma blainvillii*)	-	-	SSC	Formerly a wide-spread horned lizard found in a wide variety of habitats, often in lower elevation areas with sandy washes and scattered low bushes. Also occurs in Sierra Nevada foothills. Requires open areas for basking, but with bushes or grass clumps for cover, patches of loamy soil or sand for burrowing and an abundance of ants (Stebbins and McGinnis 2012). In the northern Sacramento area, this species appears restricted to the foothills between 1000 to 3000 feet from Cameron Park (El Dorado County) north and west to Grass Valley and Nevada City.	March-October	Potential to occur. There is suitable habitat within the Study Area.
California glossy snake (*Arizona elegans occidentalis*)	-	-	SSC	Occurs from the eastern part of the San Francisco Bay Area south to northwestern Baja California. Inhabits arid scrub, rocky washes, grasslands, and chaparral (Stebbins and McGinnis 2012)	April-October	Absent. There is no suitable habitat within the Study Area.

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area						
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Observation Period**	**Potential to Occur Onsite**
	FESA	**CESA**	**Other Status**			
Blunt-nosed leopard lizard (*Gambelia sila*)	FE	CE	FP	Occurs in sparsely vegetated alkali scrub habitats in the southern San Joaquin Valley. Uses mammal burrows, shrubs and other structures for shade.	April-July	Absent. There is no suitable habitat within the Study Area.
Giant garter snake (*Thamnophis gigas*)	FT	CT	-	Freshwater ditches, sloughs, and marshes in the Central Valley. Almost extirpated from the southern parts of its range.	April-October	Absent. There is no suitable habitat within the Study Area.
Birds						
Western grebe (*Aechmophorus occidentalis*)	-	-	BCC	Winters on salt or brackish bays, estuaries, sheltered sea coasts, freshwater lakes, and rivers. Nests on freshwater lakes and marshes with open water bordered by emergent vegetation.	June-August (breeding)	Absent. There is no suitable habitat within the Study Area.
Clark's grebe (*Aechmophorus clarkii*)	-	-	BCC	Winters on salt or brackish bays, estuaries, sheltered sea coasts, freshwater lakes, and rivers. Breeds on freshwater to brackish marshes, lakes, reservoirs and ponds, with a preference for large stretches of open water fringed with emergent vegetation.	June-August (breeding)	Absent. There is no suitable habitat within the Study Area.
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	FT	CE	-	Breeds in California, Arizona, Utah, Colorado, and Wyoming. In California, they nest along the upper Sacramento River and the South Fork Kern River from Isabella Reservoir to Canebrake Ecological Reserve. Other known nesting locations	June 15-August 15	Absent. There is no suitable habitat within the Study Area.

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area						
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Observation Period**	**Potential to Occur Onsite**
	FESA	**CESA**	**Other Status**			
				include Feather River (Butte, Yuba, Sutter counties), Prado Flood Control Basin (San Bernardino and Riverside County), Amargosa River and Owens Valley (Inyo County), Santa Clara River (Los Angeles County), Mojave River and Colorado River (San Bernardino County). Nests in riparian woodland. Winters in South America		
Short-billed dowitcher (*Limnodromus griseus*)	-	-	BCC	Nests in Canada, southern Alaska; winters in coastal California south to South America; wintering habitat includes coastal mudflats and brackish lagoons	wintering/migrant period: late-August-May	Absent. There is no suitable habitat within the Study Area.
Double-crested cormorant (*Nannopterum auritum*)	-	-	CDFW WL	Nests near ponds, lakes, artificial impoundments, slow-moving rivers, lagoons, estuaries, and open coastlines and typically forages in shallow water. Non-nesters are found in many coastal and inland waters.	April-August	Absent. There is no suitable habitat within the Study Area.
Osprey (*Pandion haliaetus*)	-	-	CDFW WL	Nesting habitat requires close proximity to accessible fish, open nest site free of mammalian predators, and extended ice-free season. The nest in large trees, snags, cliffs, transmission/communication towers, artificial nest platforms, channel markers/buoys.	April-September	Absent. There is no suitable habitat within the Study Area.

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area						
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Observation Period**	**Potential to Occur Onsite**
	FESA	**CESA**	**Other Status**			
Golden eagle (*Aquila chrysaetos*)	-	-	CFP; CDFW WL	Nesting habitat includes mountainous canyon land, rimrock terrain of open desert and grasslands, riparian, oak woodland/savannah, and chaparral. Nesting occurs on cliff ledges, river banks, trees, and human-made structures (e.g. windmills, platforms, and transmission towers). Breeding occurs throughout California, except the immediate coast, Central Valley floor, Salton Sea region, and the Colorado River region, where they can be found during Winter.	Nest (February-August); winter CV (October-February)	Potential to occur. There is no suitable nesting habitat within the Study Area but the site supports foraging habitat.
Cooper's hawk (*Accipiter cooperii*)	-	-	CDFW WL	Nests in trees in riparian woodlands in deciduous, mixed and evergreen forests, as well as urban landscapes	March-July	Present. An individual was observed foraging near Perrin Road. There is suitable nesting and foraging habitat within the Study Area.
Bald eagle (*Haliaeetus leucocephalus*)	De-listed	CE	CFP	Typically nests in forested areas near large bodies of water in the northern half of California; nest in trees and rarely on cliffs; wintering habitat includes forest and woodland communities near water bodies (e.g. rivers, lakes), wetlands, flooded agricultural fields, open grasslands	February – September (nesting); October-March (wintering)	Low potential to occur. There is no nesting habitat, but the Study Area supports marginal foraging habitat. The adjacent reservoir likely supports suitable foraging habitat.
Swainson's hawk (*Buteo swainsoni*)	-	CT	-	Nesting occurs in trees in agricultural, riparian, oak woodland, scrub, and	March-August	Potential to occur. There is suitable nesting and foraging

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area						
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Observation Period**	**Potential to Occur Onsite**
	FESA	**CESA**	**Other Status**			
				urban landscapes. Forages over grassland, agricultural lands, particularly during disking/harvesting, irrigated pastures		habitat within the Study Area.
Burrowing owl (*Athene cunicularia*)	-	-	SSC	Nests in burrows or burrow surrogates in open, treeless, areas within grassland, steppe, and desert biomes. Often with other burrowing mammals (e.g. prairie dogs, California ground squirrels). May also use human-made habitat such as agricultural fields, golf courses, cemeteries, roadside, airports, vacant urban lots, and fairgrounds.	February-August	Potential to occur. There is suitable burrow and foraging habitat within the Study Area.
Nuttall's woodpecker (*Dryobates nuttallii*)	-	-	BCC	Resident from northern California south to Baja California. Nests in tree cavities in oak woodlands and riparian woodlands.	April-July	Low potential to occur. There is marginal nesting habitat within the Study Area.
Prairie falcon (*Falco mexicanus*)	-	-	CDFW WL	Found in open habitat at all elevations up to 3,350 meters (Steenhof 2020). Nests on cliffs and bluffs in arid plains and steppes; In California, nesting throughout state except northwest corner, along immediate coast, and the Central Valley floor. Winters throughout California, in open habitats, such as grasslands in Central Valley.	March-July (breeding); September-February (wintering in Central Valley)	Low potential to occur. There is no nesting habitat onsite, but the Study Area supports potential foraging habitat.

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area						
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Observation Period**	**Potential to Occur Onsite**
	FESA	**CESA**	**Other Status**			
Olive-sided flycatcher (*Contopus cooperi*)	-	-	SSC, BCC	Nests in montane and northern coniferous forests, in forest openings, forest edges, semi-open forest stands. In California, nests in coastal forests, Cascade and Sierra Nevada region. Winters in Central to South America.	May-August	Absent. There is no suitable habitat within the Study Area
Least Bell's vireo (*Vireo bellii pusillus*)	CE	FE	-	In California, breeding range includes Ventura, Los Angeles, Riverside, Orange, San Diego, and San Bernardino counties, and rarely Stanislaus and Santa Clara counties. Nesting habitat includes dense, low shrubby vegetation in riparian areas, brushy fields, young second-growth woodland, scrub oak, coastal chaparral and mesquite brushland. Winters in southern Baja California Sur.	April 1-July 31	Absent. There is no suitable habitat within the Study Area.
Loggerhead shrike (*Lanius ludovicianus*)	-	-	SSC	Found throughout California in open country with short vegetation, pastures, old orchards, grasslands, agricultural areas, open woodlands. Not found in heavily forested habitats.	March-July	Potential to occur. There is suitable nesting and foraging habitat within the Study Area.
Yellow-billed magpie (*Pica nuttallii*)	-	-	BCC	Endemic to California; found in the Central Valley and coast range south of San Francisco Bay and north of Los Angeles County; nesting habitat includes oak savannah with large in large expanses of open ground;	April-June	Potential to occur. There is suitable nesting habitat within the Study Area.

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area						
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Observation Period**	**Potential to Occur Onsite**
	FESA	**CESA**	**Other Status**			
				also found in urban parklike settings.		
California horned lark (*Eremophila alpestris actia*)	-	-	CDFW WL	San Joaquin Valley, coast range from Sonoma County south to Baja California; grassland, agricultural.	March-July	Potential to occur. There is suitable nesting and foraging habitat within the Study Area.
Lawrence's goldfinch (*Spinus lawrencei*)	-	-	BCC	Breeds in Sierra Nevada and inner Coast Range foothills surrounding the Central Valley and the southern Coast Range to Santa Barbara County east through southern California to the Mojave Desert and Colorado Desert into the Peninsular Range. Nests in arid and open woodlands with chaparral or other brushy areas, tall annual weed fields, and a water source (e.g. small stream, pond, lake), and to a lesser extent riparian woodland, coastal scrub, evergreen forests, pinyon-juniper woodland, planted conifers, and ranches or rural residences near weedy fields and water.	March-September	Low potential to occur. Marginal nesting habitat is present within the Study Area.
Belding's savannah sparrow (*Passerculus sandwichensis beldingi*)	-	CE	BCC	Resident coastally from Point Conception south into Baja California; coastal salt marsh	Year-round resident; nests March-August	Absent. There is no suitable habitat within the Study Area.
Yellow-headed blackbird	-	-	BCC, SSC	In California, breeds in the Great Basin region, along Colorado River south to Baja California, Salton Sea,	April-July	Absent. There is no suitable habitat within the Study Area.

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area						
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Observation Period**	**Potential to Occur Onsite**
	FESA	**CESA**	**Other Status**			
(*Xanthocephalus xanthocephalus*)				Kern, Ventura, Riverside, San Diego, and possibly Orange and Lake counties, and locally in the Central Valley. Nests are constructed over deep water in emergent vegetation of prairie wetlands, quaking aspen parklands, mountain meadows, forest edges, large lakes.		
Bullock's oriole (*Icterus bullockii*)	-	-	BCC	Breeding habitat includes riparian and oak woodlands.	March-July	Potential to occur. There is suitable nesting habitat within the Study Area.
Tricolored blackbird (*Agelaius tricolor*)	-	CT	BCC, SSC	Breeds locally west of Cascade-Sierra Nevada and southeastern deserts from Humboldt and Shasta counties south to San Bernardino, Riverside and San Diego counties. Central California, Sierra Nevada foothills and Central Valley, Siskiyou, Modoc, and Lassen counties. Nests colonially in freshwater marsh, blackberry bramble, milk thistle, triticale fields, weedy (mustard, mallow) fields, giant cane, safflower, stinging nettles, tamarisk, riparian scrublands and forests, fiddleneck, and fava bean fields.	March-August	Potential to occur. There is no nesting habitat, but the Study Area supports suitable foraging habitat. The adjacent reservoir likely supports suitable nesting habitat.
Common yellowthroat	-	-	BCC, SSC	Breeds in salt marshes of San Francisco Bay; winters San Francisco south along	March-July	Absent. There is no suitable habitat within the Study Area.

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area						
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Observation Period**	**Potential to Occur Onsite**
	FESA	**CESA**	**Other Status**			
(*Geothlypis trichas sinuosa*)				coast to San Diego County.		
Yellow warbler (*Setophaga petechia*)	-	-	SSC	Breeding range includes most of California, except Central Valley (isolated breeding locales on Valley floor, Stanislaus, Colusa, and Butte counties), Sierra Nevada range above tree line, and southeastern deserts. Nesting habitat includes riparian vegetation near streams and meadows. Winters in Mexico south to South America.	May-August	Absent. There is no suitable habitat within the Study Area.
Mammals						
Spotted bat (*Euderma maculatum*)	-	-	SSC	Roost in cracks, crevices, and caves, usually high in fractured rock cliffs. Found in desert, sub-alpine meadows, desert-scrub, pinyon-juniper woodland, ponderosa pine, mixed conifer forest, canyon bottoms, rims of cliffs, riparian areas, fields, and open pastures (Western Bat Working Group [WBWG] 2022).	April-September	Absent. No suitable habitat within Study Area.
Pallid bat (*Antrozous pallidus*)	-	-	SSC	Crevices in rocky outcrops and cliffs, caves, mines, trees (e.g., basal hollows of redwoods, cavities of oaks, exfoliating pine and oak bark, deciduous trees in riparian areas, and fruit trees in orchards). Also roosts in various human structures such as bridges, barns, porches, bat boxes, and human-occupied as	April-September	Potential to occur. Suitable roosting habitat is present within the Study Area.

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area						
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Observation Period**	**Potential to Occur Onsite**
	FESA	**CESA**	**Other Status**			
				well as vacant buildings (WBWG 2022).		
Western mastiff bat (*Eumops perotis californicus*)	-	-	SSC	Primarily a cliff-dwelling species, found in similar crevices in large boulders and buildings (WBWG 2022).	April-September	Low potential to occur. Marginal roosting habitat present within the Study Area.
Western red bat (*Lasiurus blossevillii*)	-	-	SSC	Roosts in foliage of trees or shrubs; Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores) (WBWG 2022).	April-September	Low potential to occur. Suitable roosting habitat within Study Area.
Townsend's big-eared bat (*Corynorhinus townsendii*)	-	-	SSC	Caves, mines, buildings, rock crevices, trees.	April-September	Low Potential to occur. Marginal roosting habitat present within the Study Area.
Fresno kangaroo rat (*Dipodomys nitratoides exilis*)	FE	CE	-	Elevated grassy patches on alkali plains or in grassy terrain with scattered alkali patches. Friable soils for burrow digging and annual and native forbs and grasses for foraging are necessary habitat components. Distribution is limited to the flat San Joaquin Valley Floor from Merced County to the northern border of Kings County (USFWS 2010).	Any season	Absent. Outside elevational range for species.
San Joaquin kit fox	FE	CT	-	Grasslands, sagebrush scrub.	April 15 - July 15, September 1 - December 1	Low potential to occur. Marginal habitat within the Study Area.

Table 3. Evaluation of Special-Status Plant and Wildlife Species for the Study Area						
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Observation Period**	**Potential to Occur Onsite**
	FESA	**CESA**	**Other Status**			
(*Vulpes macrotis mutica*)						
American badger (*Taxidea taxus*)	-	-	SSC	Drier open stages of most shrub, forest, and herbaceous habitats with friable soils.	Any season	Potential to occur. Suitable habitat within the Study Area.

Status Codes:

FESA	Federal Endangered Species Act
CESA	California Endangered Species Act
FE	FESA listed, Endangered.
FP	Listed under FESA, but formally proposed for delisting.
FT	FESA listed, Threatened.
FC	Candidate for FESA listing as Threatened or Endangered
BCC	USFWS Bird of Conservation Concern (USFWS 2002).
CR	CESA- or NPPA-listed, Rare.
CT	CESA- or NPPA-listed, Threatened.
CE	CESA or NPPA listed, Endangered.
CFP	California Fish and Game Code Fully Protected Species (§ 3511-birds, § 4700-mammals, §5 050-reptiles/amphibians).
CDFW WL	CDFW Watch List
SSC	CDFW Species of Special Concern (CDFW, updated July 2017).
1B	CRPR/Rare or Endangered in California and elsewhere.
2B	Plants rare, threatened, or endangered in California but more common elsewhere.
3	CRPR/Plants About Which More Information is Needed – A Review List.
4	CRPR/Plants of Limited Distribution – A Watch List.
0.1	Threat Rank/Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2	Threat Rank/Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
0.3	Threat Rank/Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)
Delisted	Formally Delisted (delisted species are monitored for 5 years).

4.9.1 Plants

Twenty-nine special-status plant species were identified as having the potential to occur within the Study Area based on the literature review (Table 3). However, upon further analysis and after the site visit, 13 species were determined to be absent from the Study Area due to the lack of suitable habitat, or because the Study Area is outside the known range for the species. No further discussion of those species are provided in this analysis. Brief descriptions of the remaining 16 species that have the potential to occur within the Study Area are presented below.

4.9.1.1 Brassy Bryum

Brassy bryum (*Bryum chryseum*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.3 species. This species is a moss that occurs in chaparral openings, cismontane woodland, and valley and foothill grassland. Brassy bryum is known to occur at elevations ranging from 165 to 1,970 feet above mean sea level (MSL). The current range in California for Brassy bryum includes Amador, Butte, Fresno, Madera, Mendocino, and San Bernardino counties (CNPS 2022a).

There are no mapped CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). However, there are unprocessed CNDDB records in the vicinity and the grassland within the Study Area may provide suitable habitat. Brassy bryum has potential to occur.

4.9.1.2 Bristly Sedge

Bristly sedge (*Carex comosa*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 2B.1 plant. This species is a perennial rhizomatous herb that occurs in coastal prairies, marshes and swamps including lake margins, and in valley and foothill grassland. Bristly sedge blooms from May through September and is known to occur at elevations ranging from sea level to 2,050 feet above MSL. The current range of this species in California includes Contra Costa, Fresno, Lake, Mendocino, Sacramento, San Bernardino, Santa Cruz, San Francisco, Shasta, San Joaquin, San Mateo, and Sonoma counties; it is considered extirpated from San Bernardino and San Francisco counties (CNPS 2022a).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The mesic areas within the Study Area may provide suitable habitat. Bristly sedge has low potential to occur.

4.9.1.3 Succulent Owl's-Clover

Succulent owl's clover (*Castilleja campestris* ssp. *succulenta*) is listed as threatened pursuant to the federal ESA, endangered pursuant to the California ESA, and is designated as a CRPR 1B.2 species. This species is a hemiparasitic herbaceous annual that occurs in vernal pools that are often acidic. Succulent owl's clover blooms from April through May, and is known to occur at elevations ranging from 165 to 2,460 feet above MSL. Succulent owl's clover is endemic to California; the current range of this species includes Fresno, Madera, Merced, Mariposa, San Joaquin, and Stanislaus counties (CNPS 2022a).

There are five CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The seasonal wetlands within the Study Area may provide suitable habitat. Succulent owl's clover has potential to occur.

4.9.1.4 Ewan's Larkspur

Ewan's larkspur (*Delphinium hansenii* ssp. *ewanianum*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is an herbaceous perennial that occurs in rocky cismontane woodland and valley and foothill grassland. Ewan's larkspur blooms from March through May and is known to occur at elevations ranging from 195 to 1,970 feet above MSL.

Ewan's larkspur is endemic to California; its current range includes Amador, Calaveras, El Dorado, Fresno, Kern, Madera, Mariposa, Merced, Stanislaus, and Tulare counties (CNPS 2022a).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). However, there are unprocessed CNDDB records in the vicinity and the grassland within the Study Area may provide suitable habitat. Ewan's larkspur has potential to occur.

4.9.1.5 Dwarf Downingia

Dwarf downingia (*Downingia pusilla*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 2B.2 species. This species is an herbaceous annual that occurs in vernal pools and mesic areas of valley and foothill grasslands. Dwarf downingia has also been found in manmade features such as tire ruts, scraped depressions, stock ponds, and roadside ditches. This species blooms from March through May and is known to occur at elevations ranging from 5 to 1,460 feet above MSL. The current range of this species in California includes Fresno, Merced, Napa, Placer, Sacramento, San Joaquin, Solano, Sonoma, Stanislaus, Tehama, and Yuba counties (CNPS 2022a).

There is one CNDDB occurrence of this species within 5 miles of the Study Area (CDFW 2022a). The Study Area is slightly out of range for this species however, the seasonal wetlands and other mesic areas may provide suitable habitat. Dwarf downingia has low potential to occur.

4.9.1.6 Spiny-Sepaled Button-Celery

Spiny-sepaled button-celery (*Eryngium spinosepalum*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous annual/perennial that occurs in valley and foothill grassland and vernal pools. Spiny-sepaled button-celery blooms from April through June and is known to occur at elevations ranging from 260 to 3,200 feet above MSL. Spiny-sepaled button-celery is endemic to California; the current range of this species includes Calaveras, Contra Costa, Fresno, Kern, Madera, Mariposa, Merced, San Luis Obispo, Stanislaus, Tulare, and Tuolumne counties (CNPS 2022a).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The aquatic features within the Study Area may provide suitable habitat. Spiny-sepaled button-celery has potential to occur.

4.9.1.7 Boggs Lake Hedge-Hyssop

Boggs Lake hedge-hyssop (*Gratiola heterosepala*) is not listed pursuant to the federal ESA, is listed as endangered pursuant to the California ESA, and is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in clay in marshes and swamps (lake margins), and vernal pools. Boggs Lake hedge-hyssop blooms from April through August and is known to occur at elevations ranging from 35 to 7,790 feet above MSL. The current range of this species in California includes Fresno, Lake, Lassen, Madera, Mendocino, Merced, Modoc, Placer, Sacramento, Shasta, Siskiyou, San Joaquin, Solano, Sonoma, and Tehama counties (CNPS 2022a).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The aquatic features within the Study Area may provide suitable habitat. Boggs Lake hedge-hyssop has potential to occur.

4.9.1.8 Forked Hare-Leaf

Forked hare-leaf (*Lagophylla dichotoma*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs sometimes in clay in cismontane woodland and valley and foothill grassland. Forked hare-leaf blooms from April through May and is known to occur at elevations from 150 to 1,100 feet above MSL. Forked hare-leaf is endemic to California; the current range of this species includes Calaveras, Fresno, Merced, and Stanislaus counties. It is believed to possibly be extirpated from Merced County (CNPS 2022a).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The grassland within the Study Area may provide suitable habitat. Forked hare-leaf has potential to occur.

4.9.1.9 Hoary Navarretia

Hoary navarretia (*Navarretia eriocephala*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.3 species. This species is an herbaceous annual that occurs in vernally mesic areas within cismontane woodland and valley and foothill grassland. Hoary navarretia blooms from May through June and is known to occur at elevations ranging from 345 to 1,310 feet above MSL. Hoary navarretia is endemic to California; its current range includes Fresno and Sacramento counties (CNPS 2022a).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). However, there are unprocessed CNDDB records in the vicinity. The Study Area is slightly out of range for this species however, the seasonal wetlands and other mesic areas may provide suitable habitat. Hoary navarretia has low potential to occur.

4.9.1.10 Pincushion Navarretia

Pincushion navarretia (*Navarretia myersii* ssp. *myersii*) is not listed pursuant to either the federal or California ESAs, but is designated as a CNPS 1B.1 species. This species is an herbaceous annual that occurs in vernal pools that are often acidic. Pincushion navarretia blooms from April through May and is known to occur at elevations ranging from 65 to 1,085 feet above MSL. Pincushion navarretia is endemic to California; the current range of this species includes Amador, Calaveras, Madera, Merced, Placer, and Sacramento counties (CNPS 2022a).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The Study Area is slightly out of range for this species however, the seasonal wetlands and other mesic areas may provide suitable habitat. Pincushion navarretia has low potential to occur.

4.9.1.11 San Joaquin Valley Orcutt Grass

San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*) is listed as threatened pursuant to the federal ESA, endangered pursuant to the California ESA, and designated as a CRPR 1B.1 species. This herbaceous annual occurs on acidic soils that vary in texture from clay to sandy loam in vernal pools (California Department of Fish and Game [CDFG] 2005). San Joaquin Valley Orcutt grass blooms from April through September and is known to occur at elevations ranging from 35 to 2,475 feet above MSL. San Joaquin Valley Orcutt grass is endemic to California; the current range of this species includes Fresno, Madera, Merced, Solano, Stanislaus, and Tulare counties, and is likely extirpated from Stanislaus County (CNPS 2022a).

There are three CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The seasonal wetlands within the Study Area may provide marginal habitat. San Joaquin Valley Orcutt grass has low potential to occur.

4.9.1.12 Hairy Orcutt Grass

Hairy Orcutt grass (*Orcuttia pilosa*) is listed endangered pursuant to both the federal and California ESAs, and is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in vernal pools. Hairy Orcutt grass blooms from May through September and is known to occur at elevations ranging from 150 to 655 feet above MSL. Hairy Orcutt grass is endemic to California; the current range of this species includes Glenn, Madera, Merced, Stanislaus, and Tehama counties (CNPS 2022a).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The seasonal wetlands within the Study Area may provide marginal habitat. Hairy Orcutt grass has low potential to occur.

4.9.1.13 Wine Colored-Tufa Moss

Wine-colored tufa moss (*Plagiobryoides vinosula*) is not listed pursuant to either the federal and California ESAs and is designated as a CRPR 4.2 species. This species is a moss that occurs usually in granitic rock or granitic soil along seeps and streams (or sometimes in clay) within cismontane woodland, Mojavean desert scrub, meadows and seeps, pinyon and juniper woodland, or riparian woodland. Wine-colored tufa moss is known to occur at 100 to 5,695 feet above MSL. The current range of this species includes Butte, Inyo, Kern, Lake, Madera, Monterey, San Bernardino, San Diego, and Tulare counties (CNPS 2022a).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). However, there are unprocessed CNDDB records in the vicinity and the Study Area may provide suitable habitat. Wine-colored tufa moss has potential to occur.

4.9.1.14 Hartweg's Golden Sunburst

Hartweg's golden sunburst (*Pseudobahia bahiifolia*) is listed as endangered pursuant to both the federal and California ESAs, and is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs on clay soils that are often acidic in cismontane woodlands, and valley and foothill grasslands.

Hartweg's golden sunburst blooms from March through April and is known to occur at elevations ranging from 50 to 490 feet above MSL. Hartweg's golden sunburst is endemic to California; the current range of this species includes Fresno, Madera, Merced, Stanislaus, Sutter, Tuolumne, and Yuba counties. This species is believed to be extirpated from Yuba County (CNPS 2022a).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The grassland within the Study Area may provide marginally suitable habitat. Hartweg's golden sunburst has low potential to occur.

4.9.1.15 San Joaquin Adobe Sunburst

San Joaquin adobe sunburst (*Pseudobahia peirsonii*) is listed as threatened pursuant to the federal ESA, endangered pursuant to the California ESA, and is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs on adobe clay in cismontane woodlands and valley and foothill grasslands. San Joaquin adobe sunburst blooms from February through April and is known to occur at elevations ranging from 295 to 2,625 feet above MSL. San Joaquin adobe sunburst is endemic to California; the current range of this species includes Fresno, Kern, and Tulare counties (CNPS 2022a).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The grassland within the Study Area may provide marginally suitable habitat. San Joaquin adobe sunburst has low potential to occur.

4.9.1.16 Greene's Tuctoria

Greene's tuctoria (*Tuctoria greenei*) is listed endangered pursuant to the federal ESA, listed as rare pursuant to the California ESA, and is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in vernal pools. Greene's tuctoria blooms from May through July and is known to occur at elevations ranging from 100 to 3,510 feet above MSL. Greene's tuctoria is endemic to California; the current range of this species includes Butte, Fresno, Glenn, Madera, Merced, Modoc, Shasta, San Joaquin, Stanislaus, Tehama, and Tulare counties. It is considered extirpated from Fresno, Madera, San Joaquin, Stanislaus, and Tulare counties (CNPS 2022a).

There is one CNDDB occurrence of this species within 5 miles of the Study Area (CDFW 2022a). The seasonal wetlands within the Study Area may provide marginal habitat for this species. Greene's tuctoria has low potential to occur.

4.9.2 Invertebrates

Five special-status invertebrate species were identified as having the potential to occur within the Study Area based on the literature review (Table 3). However, upon further analysis and after the site visit, two species, valley elderberry longhorn beetle and monarch butterfly, were determined to be absent from the Study Area due to the lack of suitable habitat, or because the Study Area is outside the known range for the species. No further discussion of those species are provided in this analysis. Brief descriptions of the remaining three species that have the potential to occur within the Study Area are presented below.

4.9.2.1 Vernal Pool Fairy Shrimp

The vernal pool fairy shrimp (*Branchinecta lynchi*) is listed as threatened pursuant to the federal ESA. Vernal pool fairy shrimp may occur in seasonal ponds, vernal pools, and swales during the wet season, which generally occurs from December through May. This species can be found in a variety of pool sizes, ranging from less than 0.001 acre to over 24.5 acres (Eriksen and Belk 1999). The shrimp hatch from cysts when colder water (10°C [50°F] or less) fills the pool and mature in as few as 18 days, under optimal conditions (Eriksen and Belk 1999). At maturity, mating takes place and cysts are dropped. Vernal pool fairy shrimp occur in disjunct patches dispersed across California's Central Valley from Shasta County to Tulare County, the central and southern Coast Ranges from northern Solano County to Ventura County, and three areas in Riverside County (USFWS 2003a).

There are 30 CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The seasonal wetlands within the Study Area provide suitable habitat. Vernal pool fairy shrimp has potential to occur.

4.9.2.2 Vernal Pool Tadpole Shrimp

The vernal pool tadpole shrimp (*Lepidurus packardi*) is listed as endangered pursuant to the federal ESA. This species inhabits vernal pools containing clear to highly turbid water, ranging in size from 0.001 to 89.0 acres (USFWS 1994). Vernal pool tadpole shrimp are distinguished from other vernal pool branchiopods discussed in this report by a large, shield like carapace that covers the anterior half of their body (USFWS 2003a). Cysts hatch during the wet season and the shrimp reach maturity in a few weeks. This species matures slowly and is long lived, relative to other species. Vernal pool tadpole shrimp will continue to grow as long as the pools they occur in remain inundated, and in some instances can survive for six months or longer (USFWS 2003a). The geographic range of vernal pool tadpole shrimp extends from Shasta County to northern Tulare County in California's Central Valley, and in the central coast range from Solano County to Alameda County (USFWS 2003a).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The seasonal wetlands within the Study Area provide marginal habitat. Vernal pool tadpole shrimp has low potential to occur.

4.9.2.3 Conservancy Fairy Shrimp

The conservancy fairy shrimp (*Branchinecta conservatio*) is listed as endangered pursuant to the federal ESA. This fairy shrimp is endemic to California and is found in grasslands in the northern two thirds of the Central Valley (Eriksen and Belk 1999). The historic distribution of conservancy fairy shrimp is not known, but it likely occurred throughout a large portion of the Central Valley and Southern Coastal regions of California (USFWS 2005). Until recently, this species has only been known from a few disjunct populations in California, including four clustered populations in the Vina Plains area in Tehama and Butte Counties, Jepson Prairie Preserve in Solano County, The Sacramento National Wildlife Refuge in Glenn County, the Tule Ranch Unit of CDFG's Yolo basin Wildlife Area in Yolo County, the Grasslands Ecological Area in Merced County, one location in Stanislaus County, three locations in the Southern Sierra Foothills Vernal

Pool Region, and two locations near the Santa Barbara Vernal Pool Region (USFWS 2003a, 2006). In April of 2007, the USFWS reported that a single conservancy fairy shrimp was documented in one vernal pool within the Mariner Conservation Bank in Placer County, near the town of Lincoln, California.

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The seasonal wetlands within the Study Area provide marginal habitat. Conservancy fairy shrimp has low potential to occur.

4.9.3 Fish

Three special-status fish species were identified as having the potential to occur within the Study Area based on the literature review: Sacramento hitch, hardhead, and delta smelt. However, upon further analysis and after the site visit, all three species were determined to be absent from the Study Area due to the lack of suitable habitat. No further discussion of special-status fish is provided in this analysis.

4.9.4 Amphibians

Four special-status amphibian species were identified as having the potential to occur within the Study Area based on the literature review (Table 3). However, upon further analysis and after the site visit, two species, foothill yellow-legged frog and California red-legged frog, were considered to be absent from the Study Area due to the lack of suitable habitat. No further discussion of those species is provided in this analysis. Brief descriptions of the remaining two species that have the potential to occur within the Study Area are presented below.

4.9.4.1 California Tiger Salamander

The Central Valley DPS of California tiger salamander (*Ambystoma californiense)* is listed as threatened under the federal ESA. The Santa Barbara County and Sonoma County DPS of California tiger salamander are federally listed as endangered. The species is listed as threatened under the California ESA throughout its range. It is most commonly associated with annual grassland habitats but may also occur within open woodland areas of low hills and valleys. The California tiger salamander occurs from Yolo County (Dunnigan area) south through the Central Valley to Kern County, and discontinuously from Santa Barbara County north through the inner coast range to Sonoma County (USFWS 2003b, 2015).

There are 21 CNDDB occurrences of this species within 5 miles of the Study Area, including one occurrence mapped within the Study Area (Occurrence 729; CDFW 2022a). California tiger salamander larvae was mapped within a swale in the Study Area in 2006. Aquatic features within the Study Area provide suitable breeding habitat and the annual grassland provides suitable upland habitat. California tiger salamander is considered present within the Study Area.

4.9.4.2 Western Spadefoot

The western spadefoot (*Spea hammondii*) is not listed pursuant to either the California or federal ESAs; however, it is designated as a CDFG SSC. Necessary habitat components of the western spadefoot include loose friable soils in which to burrow in upland habitats and breeding ponds. Breeding sites include

temporary rain pools, such as vernal pools and seasonal wetlands, or pools within portions of intermittent drainages (Jennings and Hayes 1994). Spadefoots spend most of their adult life within underground burrows or other suitable refugia, such as rodent burrows. In California, western spadefoot toads are known to occur from the Redding area, Shasta County southward to northwestern Baja California, at elevations below 4,475 feet (Jennings and Hayes 1994).

There are 11 CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The seasonal wetlands within the Study Area provide suitable habitat. Western spadefoot has potential to occur.

4.9.5 Reptiles

Six special-status reptile species were identified as having the potential to occur within the Study Area based on the literature review (Table 3). However, upon further analysis and after the site visit, three species, blunt-nosed leopard lizard, California glossy snake, and giant garter snake, were considered to be absent from the Study Area due to the lack of suitable habitat for the species. No further discussion of those species is provided in this analysis. Brief descriptions of the remaining four species that have the potential to occur within the Study Area are presented below.

4.9.5.1 Northwestern Pond Turtle

The northwestern pond turtle (*Actinemys marmorata*) is not listed pursuant to either the federal or California ESAs; however, it is designated as a CDFW SSC. Northwestern pond turtles occur in a variety of fresh and brackish water habitats including marshes, lakes, ponds, and slow-moving streams (Jennings and Hayes 1994). This species is primarily aquatic; however, they typically leave aquatic habitats in the fall to reproduce and to overwinter (Jennings and Hayes 1994). Deep, still water with abundant emergent woody debris, overhanging vegetation, and rock outcrops is optimal for basking and thermoregulation. Although adults are habitat generalists, hatchlings and juveniles and hatchlings require shallow edgewater with relatively dense submergent or short emergent vegetation in which to forage. Northwestern pond turtles are typically active between March and November. Mating generally occurs during late April and early May and eggs are deposited between late April and early August (Jennings and Hayes 1994). Eggs are deposited within excavated nests in upland areas, with substrates that typically have high clay or silt fractions (Jennings and Hayes 1994). The majority of nesting sites are located within 650 feet (200 meters) of aquatic sites; however, nests have been documented as far as 1,310 feet (400 meters) from aquatic habitat.

There are two CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The intermittent drainage and annual grassland within the Study Area provide suitable nesting/over-wintering habitat. Northwestern pond turtle has potential to occur.

4.9.5.2 Northern California Legless Lizard

The Northern California legless lizard (*Anniella pulchra*) is one of five species of legless lizard in California (Papenfuss and Parham 2013). Although CDFW only recognizes two subspecies (*A. p. pulchra* and *A. p.*

nigra), all California legless lizards are considered SSC. They are not listed under the California or federal ESAs.

Although lacking legs, the legless lizards (*Anniella*) are decidedly lizards as shown by their eyelids, which are lacking in all snakes. Like snakes, however, these species lack external ear openings. The Northern California legless lizard has the largest range of all California *Anniella*, ranging from sites in and around Antioch, in the east bay, south to northern San Luis Obispo County. Two disjunct segments of this species range occur: one in the eastern foothills of Tulare and Fresno counties, and another at the western edge of the Antelope Valley in Kern and Los Angeles counties. A large area of undetermined species status connects those populations to areas occupied by Southern Sierra legless lizard (*A. campi*), Bakersfield legless lizard (*A. grinnelli*), Temblor legless lizard (*A. alexanderae*), and southern California legless lizard (*A. stebbinsi*). Although not recognized by taxonomists, a melanistic form of A. pulchra that exists in Monterey Bay is considered to be the subspecies *A. p. nigra* by CDFW.

There is one CNDDB occurrence of this species within 5 miles of the Study Area (CDFW 2022a). The grassland within the Study Area provides marginally suitable habitat. Northern California legless lizard has low potential to occur.

4.9.5.3 Blainville's "Coast" Horned Lizard

Blainville's horned lizard (*Phrynosoma blainvillii*) is considered an SSC by CDFW. This species is a relatively large (to 105 millimeters [mm] in snout-vent length) dorsoventrally flattened, rounded lizard found historically from Redding, California to Baja, Mexico (Jennings and Hayes 1994). Formally considered the coast horned lizard (*P. coronatum*), the species has gone through a long period of taxonomic instability (Jennings and Hayes 1994; Montanucci 2004; Leaché et al. 2009). This diurnal species can occur within a variety of habitats including scrubland, annual grassland, valley-foothill woodlands, and coniferous forests, although it is most common along lowland desert sandy washes and chaparral (Stebbins 2003). In the Coast Ranges, it occurs from Sonoma County south into Baja California (CDFG 1988). It occurs from sea level to 8,000 feet above MSL and an isolated population occurs in Siskiyou County (Stebbins 2003).

Blainville's horned lizard is found in open microhabitats such as sandy washes with scattered shrubs or firebreaks in chaparral, where they forage for ants, small beetles and other insects (Jennings and Hayes 1994). Horned lizards (*Phrynosoma*) are native ant specialists and daily activities are centered on aboveground activity patterns of ants, with lizards active generally in mornings and later in the afternoon in the summer. They usually emerge from hibernation in March or April, and are active until September or later. Mating takes place in April through early May (Jennings and Hayes 1994), and an average of 12 (but up to 21) eggs are laid from April to June (Stebbins and McGinnis 2012). Hatchlings 25 to 27 mm in length emerge from July through September (Stebbins and McGinnis 2012). Periods of daily or seasonal inactivity are spent within rodent burrows or underneath the soil or surface objects (CDFG 1988).

There is one CNDDB occurrence of this species within 5 miles of the Study Area (CDFW 2022a). The grassland and fallowed areas within the Study Area provide suitable habitat. Blainville's horned lizard has potential to occur.

4.9.6 Birds

Twenty-five special-status bird species were identified as having the potential to occur within the Study Area based on the literature review (Table 3). However, upon further analysis and after the site visit, 12 species were considered to be absent from the Study Area due to the lack of suitable habitat for the species. No further discussion of those species is provided in this analysis. Brief descriptions of the remaining 13 species that have the potential to occur within the Study Area are presented below.

4.9.6.1 Golden Eagle

The golden eagle (*Aquila chrysaetos*) is not listed pursuant to either the California or federal Endangered Species Acts. However, it is fully protected according to Section 3511 of the Fish and Game Code of California and the federal Bald and Golden Eagle Protection Act. Golden eagles generally nest on cliff ledges and/or large lone trees in rolling to mountainous terrain. Golden eagles nest throughout California except the flat portions of the Central Valley, the immediate coast, and portions of southeastern California (Katzner et al. 2020). Occurrences within the Central Valley are usually dispersing post-breeding birds, non-breeding sub-adults, or migrants. Foraging habitat includes open grassland and savannah. Nesting occurs during February through August.

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The Study Area provides suitable foraging habitat. Golden eagle has potential to occur.

4.9.6.2 Cooper's Hawk

The Cooper's hawk (*Accipiter cooperii*) is not listed pursuant to either the California or federal Endangered Species Acts. However, it is a CDFW "watch list" species and is currently tracked in the CNDDB. Typical nesting and foraging habitats include riparian woodland, dense oak woodland, and other woodlands near water. Cooper's hawk nest throughout California from Siskiyou County to San Diego County and includes the Central Valley (Rosenfield et al. 2020). Breeding occurs during March through July, with a peak from May through July.

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a), however an individual was observed foraging during the site survey. The Study Area provides suitable nesting and foraging habitat. Cooper's hawk is present.

4.9.6.3 Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) has been delisted under the federal ESA but remains listed as Endangered under the California ESA. It is fully protected pursuant to the California Fish and Game Code Section 3511 and the federal Bald and Golden Eagle Protection Act. It is a Bureau of Land Management sensitive species, and a U. S. Forest Service sensitive species. Bald eagles breed at lower elevations in the northern Sierra Nevada and North Coast ranges. Bald eagles breed in forested areas adjacent to large waterbodies (Buehler 2020). Tree species used for nesting is quite variable and includes conifers (dominant where available), oaks, hickories, cottonwoods and aspens (Buehler 2020). Nest trees are

generally the largest tree available in a suitable area (Buehler 2020). Breeding activity occurs during late-February through September, with peaks in activity from March to June.

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). However, there are unprocessed CNDDB records in the vicinity and the Study Area provides marginal foraging habitat. Bald eagle has low potential to occur.

4.9.6.4 Swainson's Hawk

The Swainson's hawk (*Buteo swainsoni*) is listed as a threatened species and are protected pursuant to the California ESA. This species nests in North America (Canada, western U.S., and Mexico) and typically winters from South America north to Mexico. However, a small population has been observed wintering in the Sacramento-San Joaquin River Delta (Bechard et al. 2020). In California, the nesting season for Swainson's hawk ranges from mid-March to late August.

Swainson's hawks nest within tall trees in a variety of wooded communities including riparian, oak woodland, roadside landscape corridors, urban areas, and agricultural areas, among others. Foraging habitat includes open grassland, savannah, low-cover row crop fields, and livestock pastures. In the Central Valley, Swainson's hawks typically feed on a combination of California vole (*Microtus californicus*), California ground squirrel (*Spermophilus beecheyi*), ring-necked pheasant (*Phasianus colchicus*), many passerine birds, and grasshoppers (*Melanopulus* species). Swainson's hawks are opportunistic foragers and will readily forage in association with agricultural mowing, harvesting, disking, and irrigating (Estep 1989). The removal of vegetative cover by such farming activities results in more readily available prey items for this species.

There is one CNDDB occurrence of this species within 5 miles of the Study Area (CDFW 2022a). The Study Area provides suitable nesting and foraging habitat. Swainson's hawk has potential to occur.

4.9.6.5 Burrowing Owl

The burrowing owl (*Athene cunicularia*) is not listed pursuant to either the California or federal ESAs; however, it is designated as a BCC by the USFWS and a SSC by the CDFW. Burrowing owls inhabit dry open rolling hills, grasslands, desert floors, and open bare ground with gullies and arroyos. They can also inhabit developed areas such as golf courses, cemeteries, roadsides within cities, airports, vacant lots in residential areas, school campuses, and fairgrounds (Poulin et al. 2020). This species typically uses burrows created by fossorial mammals, most notably the California ground squirrel (*Spermophilus beecheyi*) but may also use man-made structures such as concrete culverts or pipes; concrete, asphalt, or wood debris piles; or openings beneath concrete or asphalt pavement (CDFG 2012). The breeding season typically occurs between February 1 and August 31 (California Burrowing Owl Consortium 1993; CDFG 2012).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The Study Area provides suitable burrow and foraging habitat. Burrowing owl has potential to occur.

4.9.6.6 Nuttall's Woodpecker

The Nuttall's woodpecker (*Dryobates nuttallii*) is not listed and protected under either state or federal ESAs but is considered a USFWS BCC. They are resident from Siskiyou County south to Baja California. Nuttall's woodpeckers nest in tree cavities primarily within oak woodlands, but also can be found in riparian woodlands (Lowther et al. 2020). Breeding occurs during April through July.

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The Study Area provides marginal nesting habitat. Nuttall's woodpecker has low potential to occur.

4.9.6.7 Prairie Falcon

Prairie falcons (*Falco mexicanus*) are not listed pursuant to either the California or federal ESAs; however, they are considered to be a CDFW watch list species. The breeding distribution of prairie falcons includes the entire state except the extreme northwestern part of the state and coastal areas (Steenhof 2020). Nesting occurs during March through July. However, prairie falcons have not been documented to nest in the Central Valley but may occur as migrants and wintering birds. They nest primarily on shelves, ledges, or potholes in cliffs, but may also use trees, power line structures, buildings, mine highwalls, caves, or stone quarries (Steenhof 2020). Breeding habitat includes open habitat at all elevation up to 3,350 meters in arid plains and stepped, wherever cliffs or bluffs are present (Steenhof 2020).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). There is no nesting habitat, but the Study Area provides potential foraging habitat. Prairie falcon has low potential to occur.

4.9.6.8 Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is not listed pursuant to either the California or federal ESAs; but is considered a species of special concern by the CDFW. Loggerhead shrikes nest throughout California except the northwestern corner, montane forests, and high deserts (Small 1994). Loggerhead shrikes nest in small trees and shrubs in open country with short vegetation such as pastures, old orchards, mowed roadsides, cemeteries, golf courses, agricultural fields, riparian areas, and open woodlands (Yosef 2020). The nesting season extends from March through July.

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). However, there are unprocessed CNDDB records in the vicinity and the Study Area provides suitable nesting and foraging habitat. Loggerhead shrike has potential to occur.

4.9.6.9 Yellow-Billed Magpie

The yellow-billed magpie (*Pica nuttalli*) is not listed pursuant to either the California or federal ESAs but is considered a USFWS BCC. This endemic species is a yearlong resident of the Central Valley and Coast Ranges from San Francisco Bay to Santa Barbara County. Yellow-billed magpies build large, bulky nests in trees in a variety of open woodland habitats, typically near grassland, pastures or cropland. Nest building begins in late January to mid-February, which may take up to six to eight weeks to complete, with eggs

laid during April through May, and fledging during May through June (Koenig and Reynolds 2020). The young leave the nest at about 30 days after hatching (Koenig and Reynolds 2020). Yellow-billed magpies are highly susceptible to West Nile Virus, which may have been the cause of death to thousands of magpies during 2004-2006 (Koenig and Reynolds 2020).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The Study Area provides suitable nesting habitat. Yellow-billed magpie has potential to occur.

4.9.6.10 California Horned Lark

The California horned lark (*Eremophila alpestris actia*) is not listed and protected pursuant to either the California or federal ESAs but is considered a CDFW watch list species. Horned larks are widely distributed throughout North America with 21 recognized subspecies (American Ornithologists' Union 1957). The California horned lark is one of approximately nine subspecies that breeds and/or winters in California and is found in the Coast Range and southern San Joaquin Valley south into northern Baja California (Beason 2020). The California horned lark is resident and nonmigratory. They are found in grasslands and other open habitats with sparse vegetation. Nests are grass lined and built on the ground. Breeding season includes March through July, with a peak of activity in May.

There is one CNDDB occurrence of this species within 5 miles of the Study Area (CDFW 2022a). The Study Area provides suitable nesting and foraging habitat. California horned lark potential to occur.

4.9.6.11 Lawrence's Goldfinch

The Lawrence's goldfinch (*Spinus lawrencei*) is not listed pursuant to either the California or federal ESAs but is currently a BCC according to the USFWS. Lawrence's goldfinch breed west of the Sierra Nevada-Cascade axis from Tehama, Shasta, and Trinity counties south into the foothills surrounding the Central Valley to Kern County; and on the Coast Range from Contra Costa County to Santa Barbara County (Watt et al. 2020). Lawrence's goldfinch nest in arid woodlands usually with brushy areas, tall annual weeds and a local water source (Watt et al. 2020). Nesting occurs during March through September.

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The Study Area provides marginal nesting habitat. Lawrence's goldfinch has low potential to occur.

4.9.6.12 Bullock's Oriole

The Bullock's oriole (*Icterus bullockii*) is not listed pursuant to either the California or federal ESAs but is currently a species of BCC according to the USFWS. In California, Bullock's orioles are found throughout the state except the higher elevations of mountain ranges and the eastern deserts (Small 1994). They are found in riparian and oak woodlands where nests are built in deciduous trees, but may also use orchards, conifers, and eucalyptus trees (Flood et al. 2020). Nesting occurs from March through July.

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The Study Area provides suitable nesting habitat. Bullock's oriole has potential to occur.

4.9.6.13 Tricolored Blackbird

The tricolored blackbird (*Agelaius tricolor*) was granted emergency listing for protection under the California ESA in December 2014 but the listing status was not renewed in June 2015. After an extensive status review, the California Fish and Game Commission listed tricolored blackbirds as a threatened species in 2018. In addition, it is currently considered a USFWS BCC and a CDFW SSC. This colonial nesting species is distributed widely throughout the Central Valley, Coast Range, and into Oregon, Washington, Nevada, and Baja California (Beedy et al. 2020). Tricolored blackbirds nest in colonies that can range from several pairs to several thousand pairs, depending on prey availability, the presence of predators, or level of human disturbance. Tricolored blackbird nesting habitat includes emergent marsh, riparian woodland/scrub, blackberry thickets, densely vegetated agricultural and idle fields (e.g., wheat, triticale, safflower, fava bean fields, thistle, mustard, cane, and fiddleneck), usually with some nearby standing water or ground saturation (Beedy et al. 2020). They feed mainly on grasshoppers during the breeding season, but may also forage upon a variety of other insects, grains, and seeds in open grasslands, wetlands, feedlots, dairies, and agricultural fields (Beedy et al. 2020). The nesting season is generally from March through August.

There are five CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). There is no suitable nesting habitat onsite, but the grassland/pasture communities in the Study Area represents suitable foraging habitat. Tricolored blackbird has potential to occur.

4.9.7 Mammals

Eight special-status mammal species were identified as having the potential to occur within the Study Area based on the literature review (Table 3). However, upon further analysis and after the site visit, two species, Fresno kangaroo rat and spotted bat, were considered to be absent from the Study Area due to the lack of suitable habitat, or due to the Study Area being outside the known range for the species. No further discussion of those species is provided in this analysis. Brief descriptions of the remaining six species that have the potential to occur within the Study Area are presented below.

4.9.7.1 Pallid Bat

The pallid bat (*Antrozous pallidus*) is not listed pursuant to either the federal or California ESAs; however, this species is considered an SSC by CDFW. The pallid bat is a large, light-colored bat with long, prominent ears and pink, brown, or grey wing and tail membranes. This species ranges throughout North America from the interior of British Columbia, south to Mexico, and east to Texas. The pallid bat inhabits low elevation (below 6,000 feet) rocky arid deserts and canyonlands, shrub-steppe grasslands, karst formations, and higher elevation coniferous forest (above 7,000 feet). This species roosts alone or in groups in the crevices of rocky outcrops and cliffs, caves, mines, trees, and in various human structures such as bridges and barns. Pallid bats are feeding generalists that glean a variety of arthropod prey from surfaces as well as capturing insects on the wing. Foraging occurs over grasslands, oak savannahs, ponderosa pine forests, talus slopes, gravel roads, lava flows, fruit orchards, and vineyards. Although this species utilizes echolocation to locate prey, they often use only passive acoustic cues. This species is not thought to migrate long distances between summer and winter sites (WBWG 2021).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The abandoned buildings and trees within the Study Area provide suitable roosting habitat. Pallid bat has potential to occur.

4.9.7.2 Western Mastiff Bat

The western mastiff bat (*Eumops perotis californicus*) is not listed pursuant to either the California or federal Endangered Species Acts; however, this species is considered a species of special concern by CDFW (CDFW 2022a). The greater mastiff bat is the largest North American molossid (free-tailed bat) with a forearm length of 73 to 83 mm. This species has a disjunct distribution and ranges from central Mexico across the southwestern U.S., and throughout California to within a few miles of the Oregon border. The greater mastiff bat can be found in a variety of habitats, including desert scrub, chaparral, oak woodland, the ponderosa pine belt, and at high elevation meadows and mixed conifer forests. This species is primarily a cliff-dwelling species and roosting colonies are generally found on or under exfoliating rock slabs. Roosts have also been identified in similar crevices in large boulders and buildings. Foraging has been documented as high as 2,000 feet above the ground, although 100 to 200 feet is more typical. This species is most commonly encountered in broad open areas including dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, and agricultural areas. The diet of the greater mastiff bat consists primarily of moths but also includes beetles, crickets, and katydids (WBWG 2021).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The abandoned buildings within the Study Area provide marginal roosting habitat. Western mastiff bat has low potential to occur.

4.9.7.3 Western Red Bat

The western red bat (*Lasiurus blossevillii*) is not listed pursuant to either the California or federal ESAs; however, this species is considered a SSC by CDFW. The western red bat is easily distinguished from other western bat species by its distinctive red coloration. This species is broadly distributed, its range extending from southern British Columbia in Canada through Argentina and Chile in South America, and including much of the western U.S. This solitary species day roosts primarily in the foliage of trees or shrubs in edge habitats bordering streams or open fields, in orchards, and occasionally urban areas. They may be associated with intact riparian habitat, especially with willows, cottonwoods, and sycamores. This species may occasionally utilize caves for roosting as well. They feed on a variety of insects, and generally begin to forage one to two hours after sunset. This species is considered highly migratory, however the timing of migration and the summer ranges of males and females may be different. Winter behavior of this species is poorly understood (WBWG 2021).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). However, there are unprocessed CNDDB records in the vicinity and some of the vegetation within the Study Area provides marginal roosting habitat. Western red bat has low potential to occur.

4.9.7.4 Townsend's Big-Eared Bat

The Townsend's big-eared bat (*Corynorhinus townsendii*) is not listed pursuant to either the California or federal ESAs; however, this species is considered a SSC by CDFW. Townsend's big-eared bat is a fairly large bat with prominent bilateral noes lumps and large rabbit-like ears. This species occurs throughout the west and ranges from the southern portion of British Columbia south along the Pacific coast to central Mexico and east into the Great Plains. This species has been reported from a wide variety of habitat types and elevations from sea level to 10,827 feet. Habitats used include coniferous forests, mixed mesophytic forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. Its distribution is strongly associated with the availability of caves and cave-like roosting habitat including abandoned mines, buildings, bridges, rock crevices, and hollow trees. This species is readily detectable when roosting due to their habit of roosting pendant-like on open surfaces. Townsend's big-eared bat is a moth specialist with more than 90 percent of its diet composed of lepidopterans. Foraging habitat is generally edge habitats along streams adjacent to and within a variety of wooded habitats. This species often travels long distances when foraging and large home ranges have been documented in California (WBWG 2021).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). However, there are unprocessed CNDDB records in the vicinity and the trees within the Study Area provide marginal roosting habitat. Townsend's big-eared bat has low potential to occur.

4.9.7.5 San Joaquin Kit Fox

The San Joaquin kit fox (*Vulpes macrotis*) is listed as threatened under the California ESA and as endangered under the federal ESA. Although the precise historical range of the San Joaquin kit fox is unknown, Grinnell et al. (1937) believed that prior to 1930 San Joaquin kit fox occupied most of the San Joaquin Valley from southern Kern County north to Tracy in San Joaquin County on the west side, and near La Grange in Stanislaus County on the east side. Since then the San Joaquin kit fox population has declined primarily as a result of habitat loss to agricultural, urban, industrial and mineral development in the San Joaquin Valley. San Joaquin kit fox has been listed as endangered for over 30 years, yet despite the loss of habitat and apparent decline in numbers since the early 1970s, there has never been a comprehensive survey of its entire range or habitat that was once thought to be occupied (USFWS 1983; Morrell 1975). Despite the lack of a comprehensive data set, local surveys, research projects, and incidental sightings indicate that kit foxes currently inhabit some areas of suitable habitat on the San Joaquin Valley floor and in the surrounding foothills of the coastal ranges, Sierra Nevada, and Tehachapi Mountains, from southern Kern County north to Contra Costa, Alameda, and San Joaquin counties on the west, and near La Grange in Stanislaus County on the east side of the Valley (Williams in litt. 1990), and some of the larger scattered islands of natural land on the Valley floor in Kern, Tulare, Kings, Fresno, Madera, and Merced counties (USFWS 1998).

In the southern portion of the range, the kit fox is commonly associated with Valley Sink Scrub, Valley Saltbush Scrub, Upper Sonoran Subshrub Scrub, and Annual Grassland. Kit foxes also inhabit grazed grasslands, petroleum fields (Morrell 1971; O'Farrell 1980), and survive adjacent to tilled or fallow fields (Jensen 1972; Ralls and White 1991). In the central portion of the range, which includes Madera County,

the kit fox is associated with Valley Sink Scrub, Interior Coast Range Saltbush Scrub, Upper Sonoran Subshrub Scrub, Annual Grassland and the remaining native grasslands. Agriculture dominates this region where kit foxes mostly inhabit grazed, nonirrigated grasslands, but also live next to and forage in tilled or fallow fields, irrigated row crops, orchards, and vineyards (USFWS 1998). In the northern portion of their range, kit foxes commonly are associated with annual grassland (Hall 1983) and Valley Oak Woodland (Bell 1994). Kit foxes inhabit grazed grasslands, grasslands with wind turbines, and also live adjacent to and forage in tilled and fallow fields, and irrigated row crops (Bell 1994). They usually inhabit areas with loose-textured (friable) soils, suitable for den excavation (USFWS 1983). Where soils make digging difficult, the foxes frequently use and modify burrows built by other animals (Orloff et al. 1986). Structures such as culverts, abandoned pipelines, and well casings also may be used as den sites (USFWS 1983).

Kit foxes are primarily nocturnal and carnivorous, but are commonly seen during the day in the late spring and early summer (Orloff et al. 1986). Major prey includes kangaroo rats, black-tailed hares, desert cottontails, deer mice, California ground squirrels, ground-nesting birds, and insects (Scrivner et al. 1987).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The Study Area is at the eastern limits of the species' distribution range. San Joaquin kit fox has low potential to occur.

4.9.7.6 American Badger

The American badger (*Taxidea taxus*) is designated in California as a SSC. The species historically ranged throughout much of the state, except in humid coastal forests. Badgers were once numerous in the Central Valley; however, populations now occur in low numbers in the surrounding peripheral parts of the valley and in the adjacent lowlands of eastern Monterey, San Benito, and San Luis Obispo counties (Williams 1986). Badgers occupy a variety of habitats, including grasslands and savannas. The principal requirements seem to be significant food supply, friable soils, and relatively open, uncultivated ground (Williams 1986).

There are no CNDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022a). The grasslands and burrows found within the Study Area provide suitable habitat. American badger has potential to occur.

5.0 IMPACT ANALYSIS

This section specifically addresses the questions raised by the CEQA - Appendix G Environmental Checklist Form, IV. Biological Resources. This section also identifies the appropriate recommendations to reduce potential impacts of the actions to less than significant. The recommendations are described in detail in Section 6.0.

5.1 Special-Status Species, Designated Critical Habitat and Essential Fish Habitat

Would the Project result in effects, either directly or through habitat modifications, to species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS?

The Project would result in construction-related impacts to potential habitat for special-status species within the Study Area. As such, the Project would potentially have a substantial adverse effect, either directly or through habitat modifications, on special-status species identified by CDFW and USFWS. Impacts by taxon group are summarized below.

5.1.1 Impacts to Special-Status Plants

There are 16 special-status plant species with potential to occur in the Study Area. Vegetation removal, grading, and other ground-disturbing activities associated with construction implementation has potential to impact these species. Implementation of recommended measures described in Section 6.0 would avoid or minimize potential effects to special-status plants.

5.1.2 Impacts to Special-Status Invertebrates

There is one special-status invertebrate with potential to occur in the Study Area: vernal pool fairy shrimp. Grading and other ground-disturbing activities associated with construction implementation has potential to impact vernal pool fairy shrimp. Implementation of the recommended measures outlined in Section 6.0 would avoid or minimize the potential for effects on special-status invertebrates.

5.1.3 Impacts to Special-Status Amphibians

There are two special-status amphibians with potential to occur in the Study Area. Vegetation removal, grading, and other ground-disturbing activities associated with construction implementation has potential to impact these species. Implementation of recommended measures outlined in Section 6.0 would avoid or minimize potential effects to these species within the Study Area.

5.1.4 Impacts to Special-Status Reptiles

There are three special-status reptiles with potential to occur in the Study Area. Vegetation removal, grading, and other ground-disturbing activities associated with construction implementation has potential to impact these species. Implementation of recommended measures outlined in Section 6.0 would avoid or minimize potential effects to these species within the Study Area.

5.1.5 Impacts to Special-Status Birds

There are 12 special-status bird species with potential to occur within or adjacent to the Study Area. Additionally, most birds and their nests are protected by the MBTA and Fish and Game Code. Construction activities have potential to impact nesting birds. Implementation of recommended measures outlined in Section 6.0 would avoid or minimize potential effects to special-status birds.

5.1.6 Impacts to Special-Status Mammals

There are six special-status mammals with potential to occur in the Study Area. Vegetation removal, grading, and other ground-disturbing activities associated with construction implementation has potential to impact these species. Implementation of recommended measures outlined in Section 6.0 would avoid or minimize potential for effects to special-status mammals.

5.2 Riparian Habitat and Sensitive Natural Communities

Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?

The Project would not have a substantial adverse effect on any riparian habitat or other sensitive natural communities.

5.3 Aquatic Resources, Including Waters the U.S. and State

Would the Project 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?

Approximately 0.806 acre of aquatic resources were mapped during the aquatic resource assessment in the Study Area. Of the 0.806 acre, 0.436 acre are classified as seasonal wetlands and 0.370 acre are classified as other waters (intermittent drainage; Figure 3). This acreage represents an assessment of the extent of aquatic resources within the Study Area and is subject to modification following USACE review and/or the verification process.

Any alterations of, or discharges into, Waters of the U.S. and Waters of the State, including wetlands as defined pursuant to Section 404 of the federal CWA, must be in conformance with the CWA. Compliance is achieved through conformance with Sections 404 and 401 permitting and certification requirements, respectively, prior to any grading or construction that may impact jurisdictional area(s), as applicable. Specific impact avoidance, minimization, and/or compensation measures shall be developed and implemented as part of the Section 404 Permit to ensure no-net-loss of wetland function and values.

Implementation of recommendations described in Section 6.0 would avoid, minimize, and/or compensate for potential effects to Waters of the U.S. and State.

5.4 Wildlife Movement/Corridors

Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

The open space within the Study Area may provide some migratory opportunities for wildlife but is not expected to support significant wildlife movement corridors. Project construction is likely to temporarily disturb and displace most wildlife from the Study Area. Once construction is complete, wildlife

movements are expected to be more limited through the Study Area and mostly restricted to the open space areas. As previously described, there are no known active nursery sites within the Study Area. The Project is not expected to substantially interfere with wildlife movement or impact wildlife nursery sites.

5.5 Local Policies, Ordinances, and Other Plans

Does the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The Study Area includes trees that are protected under Chapter 9.30 (Tree Protection Standards) of the City Municipal Code.

The Applicant will coordinate with the local jurisdiction to secure the necessary variance, permit, or approval prior to impacting protected trees and if any other potential conflicts are determined. Therefore, the Project does not conflict with a local policy or ordinance protecting biological resources, including tree ordinances.

Does the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The Study Area is not currently covered by any local, regional, or state conservation plan. Therefore, the Project would not conflict with a local, regional, or state conservation plan.

6.0 RECOMMENDATIONS

This section summarizes recommended measures to avoid, minimize, or compensate for potential impacts to biological resources from the Proposed Project.

6.1 General Recommendations

The following general measures are recommended to avoid impacts to offsite and onsite biological resources:

- Erosion control measures will be placed between avoided aquatic resources and the outer edge of the impact area within an area identified with highly visible markers (e.g., construction fencing, flagging, silt barriers) prior to commencement of construction activities. Such identification and erosion control measures will be properly maintained until construction is completed and the soils have been stabilized.
- Fiber rolls used for erosion control will be certified by the California Department of Food and Agriculture as weed free.
- Seed mixtures applied for erosion control will not contain California Invasive Plant Council designated invasive species (http://cal-ipc.org/) and will be composed of native species appropriate for the site.
- Trash generated onsite will be promptly and properly removed from the site.

- Any fueling in the upland portion of the Study Area will use appropriate secondary containment techniques to prevent spills.
- A qualified biologist will conduct a mandatory Worker Environmental Awareness Program for all contractors, work crews, and any onsite personnel on the potential for special-status species to occur on the Project site. The training will provide an overview of habitat and characteristics of the species, the need to avoid certain areas, and the possible penalties for noncompliance.

6.2 Special-Status Species

Recommendations to minimize impacts to special-status species or their habitats are summarized in the following sections.

6.2.1 Plants

The following measures are recommended to minimize potential impacts to special-status plants.

- A floristic plant survey shall be conducted according to USFWS, CDFW, and CNPS protocols prior to ground or vegetation disturbance in areas with the potential to support special-status plants. The area of disturbance and a 25-foot buffer shall be surveyed by a qualified botanist during the appropriate phenological stage for identifying target species.. If no special-status plants are found during the survey, no further measures are necessary.
- If surveys identify special-status plants and if avoidance of special-status plants is feasible, establish and clearly demarcate avoidance zones for special-status plant occurrences prior to construction. Avoidance zones shall include the extent of the special-status plants plus a 25-foot buffer, unless otherwise determined by a qualified biologist, and shall be maintained until the completion of construction. A qualified biologist/biological monitor shall be present if work must occur within the avoidance buffer to ensure special-status plants are not impacted by the work.
- If surveys identify special-status plants and if avoidance of special-status plants is not feasible, mitigation for significant impacts to special-status plants may be required. Mitigation measures shall be developed in consultation with CDFW. Mitigation measures may include restoration or permanent preservation of onsite or offsite habitat for special-status plants and/or translocation of plants or seeds from impacted areas to unaffected habitats.

6.2.2 Invertebrates

The following measures are recommended to minimize potential impacts to special-status invertebrates.

- Conduct USFWS protocol-level dry and wet season surveys to determine presence or absence of vernal pool fairy shrimp, conservancy fairy shrimp, and vernal pool tadpole shrimp, or if surveys are not conducted, presence should be assumed for all three species within suitable habitat. If no vernal pool fairy shrimp, conservancy fairy shrimp, or vernal pool tadpole shrimp are found during protocol-level dry and wet season surveys and the results are accepted by USFWS, no further measures are recommended.

- If federally listed branchiopod species are found during surveys or presence is assumed, obtain take coverage from USFWS (under Sections 7 or 10 of federal ESA) and preserve federally listed branchiopod habitat (e.g., vernal pools and seasonal wetlands) at an offsite mitigation property at a minimum ratio of 1.5:1 and as agreed upon through consultation with USFWS. Comply with all avoidance and/or minimization measures of the USFWS BO or HCP. Measures may include implementation of Best Management Practices and erosion control measures to prevent direct and indirect effects to avoided habitat for vernal pool fairy shrimp, conservancy fairy shrimp, and vernal pool tadpole shrimp.

6.2.3 Amphibians

6.2.3.1 California Tiger Salamander Mitigation

The following measures are recommended to mitigate for potential impacts to California tiger salamander.

- Obtain take coverage for California tiger salamander from USFWS under Section 7 or Section 10 of federal ESA and obtain take coverage for California tiger salamander from CDFW under Section 2081 of the California Fish and Game Code.
- Preserve in perpetuity suitable upland habitat for California tiger salamander at an offsite mitigation property at a minimum ratio of 1:1 and as agreed upon through consultation with USFWS and CDFW. The amount of impacted potential suitable upland habitat shall be determined by a qualified biologist.

6.2.3.2 Special-Status Amphibian Avoidance

The following measures are recommended to minimize potential impacts to California tiger salamander and western spadefoot.

- Prior to the start of ground-disturbing activities on the Project site, the Project proponent shall retain a qualified California tiger salamander and western spadefoot biologist (Biologist).
- Prior to the start of ground-disturbing activities on the Project site, the Biologist shall conduct an education program to the workers onsite. The program shall consist of a presentation from the Biologist that includes a discussion of the biology and general behavior of California tiger salamander and western spadefoot, information about the distribution and habitat needs of these animals, sensitivity of these animals to human activities, and their status of legal protection. A pamphlet that summarizes this information shall be handed out to the workers. If new workers come to the Project site, their direct supervisor will be responsible for providing them with the pamphlet.
- Prior to the start of ground-disturbing activities in areas considered potential habitat for California tiger salamander and western spadefoot, the Biologist shall conduct a preconstruction survey. This survey shall be conducted within 72 hours prior to the start of ground-disturbing activities. If a California tiger salamander is found, the Biologist shall allow the animal to leave on

its own volition. If a western spadefoot is found, the Biologist may relocate the animal to a safe location offsite.

- The Biologist shall train the onsite workers to check all equipment and the surrounding area for California tiger salamander and western spadefoot every morning prior to starting construction. If either are found the workers shall allow the animal to leave on its own volition and immediately contact the Biologist regarding the observation.
- The Biologist shall submit all observations of western spadefoot and California tiger salamander to the CDFW CNDDB within 60 calendar days of the observation.

6.2.4 Reptiles

The following measure is recommended to minimize potential impacts to northern California legless lizard, northwestern pond turtle, and Blainville's horned lizard.

- Prior to the start of ground-disturbing activities in areas considered potential habitat for northern California legless lizard, northwestern pond turtle, and Blainville's horned lizard, a qualified biologist shall conduct a preconstruction survey. This survey shall be conducted within 72 hours prior to the start of ground-disturbing activities. Any individuals discovered on the Project site immediately prior to or during Project activities shall be allowed to move out of the work area of their own volition. If this is not feasible, they shall be captured by a qualified wildlife biologist and relocated out of harm's way to the nearest suitable habitat at least 100 feet from the Project work area where they were found.

6.2.5 Special-Status Birds and Migratory Bird Treaty Act-Protected Birds (Including Nesting Raptors)

The following measures are recommended to minimize potential impacts to nesting birds.

- All Nesting Birds (Non raptors) – A qualified biologist shall perform a preconstruction nesting bird survey within 14 days prior to construction (or less if recommended by CDFW) within the Project work area and a 100-foot radius. If any active nests are observed, these nests shall be designated a sensitive area and protected by an avoidance buffer established in coordination with CDFW until a qualified biologist has determined that the young have fledged and are no longer reliant upon the nest or parental care for survival.
- Raptors – A qualified biologist shall perform a preconstruction nesting raptor survey within 14 days prior to construction (or less if recommended by CDFW) within the Project work area and a 500-foot radius. If any active raptor nests are observed, these nests shall be designated a sensitive area and protected by an avoidance buffer established in coordination with CDFW until a qualified biologist has determined that the young have fledged and are no longer reliant upon the nest or parental care for survival.
- Burrowing Owl – A qualified wildlife biologist shall survey for burrowing owl within the Project work area and a 250-foot radius of the Project work area within 14 days prior to starting Project activities. Surveys shall be conducted according to the Staff Report on Burrowing Owl Mitigation (CDFG 2012). If any occupied burrows are observed, these burrows shall be designated a sensitive

area and protected by an avoidance buffer established in coordination with CDFW. Consult with CDFW to develop avoidance and minimization measures, which could include preparing and implementing a passive relocation plan.

- Swainson's Hawk – A qualified biologist shall perform a preconstruction nesting Swainson's hawk survey within 14 days prior to construction (or less if recommended by CDFW) within the Project work area and a 0.25-mile radius. If any active nests are observed, these nests shall be designated a sensitive area and protected by an avoidance buffer established in coordination with CDFW until the breeding season has ended or until a qualified biologist has determined that the young have fledged and are no longer reliant upon the nest or parental care for survival.

6.2.6 Special-Status Mammals

6.2.6.1 American Badger

The following measure is recommended to minimize potential impacts to American badger.

- Prior to the start of ground-disturbing activities a qualified biologist shall conduct a preconstruction survey for American badger. This survey shall be conducted within 14 days prior to ground-disturbing activities. If American badgers are found, allow them to leave the Project Area on their own volition. If American badgers do not leave, consultation with CDFW on potential eviction efforts shall be required prior to initiation of ground-disturbing activities.

6.2.6.2 San Joaquin Kit Fox

The following measures are recommended to minimize potential impacts to San Joaquin kit fox.

- At least 30 days prior to the start of ground-disturbing activities, a qualified wildlife biologist shall perform transect surveys of the Project site and a 250-foot buffer, to identify potential dens and other kit fox sign. If sign of kit fox is detected, a qualified wildlife biologist shall be available onsite during all Project-related activities that could impact the species. If kit foxes are found on or within 250 feet of the Project site, all activity shall cease until a qualified wildlife biologist confirms that the individual(s) has left of its own volition. If ground-disturbing activities are confined to a portion of the Project site (e.g., phasing), then that area and a 250-foot radius shall be surveyed.
- If San Joaquin kit fox dens are found, they shall be avoided by appropriate distances (known den = 100 feet; pupping den = 500 feet). Absolutely no disturbance to known San Joaquin kit fox dens shall occur and no work shall occur within the above buffers without contacting CDFW and obtaining written authorization to do so. An Incidental Take Permit for San Joaquin kit fox may be required for such activities.

6.2.6.3 Special-Status Bats

The following measures are recommended to minimize potential impacts to pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat.

- A qualified biologist shall conduct a bat habitat assessment for suitable bat roosting habitat prior to any construction activities that may impact bat habitat (e.g., trees or structures). If no suitable roosting habitat is identified, no further measures are necessary. If suitable roosting habitat and/or signs of bat use is identified during the assessment, the roosting habitat shall be avoided to the extent possible, and the following shall be implemented:
    - If suitable roosting habitat and/or signs of bat use is identified in a tree or other habitat structure that must be removed, a qualified biologist shall prepare a Bat Management Plan for CDFW's review. The Plan shall identify methods for determining occupation of the roosting habitat by special-status bats (e.g., acoustic monitoring, evening emergence surveys). If an active bat roost is found, a plan for passive exclusion of bats from the roost shall be prepared for CDFW's review. Exclusion shall be scheduled either (1) between approximately March 1 (or when evening temperatures are above 45 degrees Fahrenheit and rainfall less than 0.5 inch in 24 hours occurs) and April 15, prior to parturition of pups; or (2) between September 1 and October 15 (or prior to evening temperatures dropping below 45 degrees Fahrenheit and onset of rainfall greater than 0.5 inch in 24 hours). The qualified biologist shall monitor the roost prior to exclusion to confirm that it does not support a maternity colony. If a maternity colony is or may be present, the roost shall be avoided until it is no longer active or until the qualified biologist can confirm that no maternity colony is present.

6.2.7 Aquatic Resources, Including Waters of the U.S. and State

- Conduct a USACE ARD for the Project and submit to USACE and obtain an Approved Jurisdictional Determination or Preliminary Jurisdictional Determination.
- Request authorization to fill wetlands and other Waters of the U.S. under Sections 404 and 401 of the federal CWA (Section 404 Permit and Section 401 Water Quality Certification) prior to discharging any dredged or fill materials into any Waters of the U.S. Because the Waters of the U.S. are also Waters of the State, the 401 Water Quality Certification will authorize fill to Waters of the State. Specific impact avoidance, minimization, and/or compensation measures shall be developed and implemented as part of the Section 404 Permit to ensure no-net-loss of wetland function and values. To facilitate such authorization, an application for a Section 404 Permit and an application for a 401 Water Quality Certification for the Project shall be prepared and submitted to USACE and RWQCB and shall include direct, avoided, and preserved acreages to Waters of the U.S. Mitigation for impacts to Waters of the U.S. would consist of a minimum of a 1:1 replacement ratio for direct impacts; however, final mitigation requirements shall be developed in consultation with USACE. These measures may include purchase of mitigation credits at an agency-approved mitigation bank and/or Permittee-responsible mitigation (e.g., preservation and creation) in an onsite preserve or offsite mitigation property.
- Prepare and submit a LSA Notification to CDFW under California Fish and Game Code Section 1602 to request authorization to impact regulated aquatic features.

6.2.8 Trees

Trees protected under the City tree ordinance are present within the Study Area. The following measure is recommended to prevent conflicts with the local tree ordinance:

- A tree removal permit or exemption shall be secured prior to impacting trees protected under the City ordinance. Avoidance buffers for protected trees shall be consistent with the City requirements, shall be clearly demarcated prior to construction, and shall be maintained until the completion of construction. A qualified biologist/biological monitor shall be present if work must occur within the avoidance buffer to ensure avoided protected trees are not impacted by the work.

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LIST OF APPENDICES

Appendix A – Special-Status Species Searches

Appendix B – Representative Site Photographs

Appendix C – Plant Species Observed Onsite

Appendix D – Wildlife Observed Onsite

APPENDIX A

Special-Status Species Searches

Selected Elements by Element Code

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Clovis (3611976) OR Friant (3611986) OR Little Table Mtn. (3711917) OR Lanes Bridge (3611987) OR Fresno North (3611977) OR Fresno South (3611967) OR Malaga (3611966) OR Sanger (3611965) OR Round Mountain (3611975) OR Academy (3611985) OR Millerton Lake East (3711915) OR Millerton Lake West (3711916))

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
AAAAA01181	***Ambystoma californiense pop. 1*** California tiger salamander - central California DPS	Threatened	Threatened	G2G3T3	S3	WL
AAABF02020	***Spea hammondii*** western spadefoot	None	None	G2G3	S3	SSC
AAABH01055	***Rana boylii pop. 5*** foothill yellow-legged frog - south Sierra DPS	Proposed Endangered	Endangered	G3T2	S2	
ABNFD01020	***Nannopterum auritum*** double-crested cormorant	None	None	G5	S4	WL
ABNGA04040	***Ardea alba*** great egret	None	None	G5	S4	
ABNGA06030	***Egretta thula*** snowy egret	None	None	G5	S4	
ABNGA11010	***Nycticorax nycticorax*** black-crowned night heron	None	None	G5	S4	
ABNKC19070	***Buteo swainsoni*** Swainson's hawk	None	Threatened	G5	S3	
ABNKC22010	***Aquila chrysaetos*** golden eagle	None	None	G5	S3	FP
ABNKD06090	***Falco mexicanus*** prairie falcon	None	None	G5	S4	WL
ABNRB02022	***Coccyzus americanus occidentalis*** western yellow-billed cuckoo	Threatened	Endangered	G5T2T3	S1	
ABNSB10010	***Athene cunicularia*** burrowing owl	None	None	G4	S3	SSC
ABPAT02011	***Eremophila alpestris actia*** California horned lark	None	None	G5T4Q	S4	WL
ABPBW01114	***Vireo bellii pusillus*** least Bell's vireo	Endangered	Endangered	G5T2	S2	
ABPBXB0020	***Agelaius tricolor*** tricolored blackbird	None	Threatened	G1G2	S1S2	SSC
AFCJB25010	***Mylopharodon conocephalus*** hardhead	None	None	G3	S3	SSC
AMACC05030	***Lasiurus cinereus*** hoary bat	None	None	G3G4	S4	
AMACC07010	***Euderma maculatum*** spotted bat	None	None	G4	S3	SSC

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
AMACC10010	***Antrozous pallidus*** pallid bat	None	None	G4	S3	SSC
AMACD02011	***Eumops perotis californicus*** western mastiff bat	None	None	G4G5T4	S3S4	SSC
AMAFD01060	***Perognathus inornatus*** San Joaquin pocket mouse	None	None	G2G3	S2S3	
AMAFD03151	***Dipodomys nitratoides exilis*** Fresno kangaroo rat	Endangered	Endangered	G3TH	SH	
AMAJA03041	***Vulpes macrotis mutica*** San Joaquin kit fox	Endangered	Threatened	G4T2	S2	
AMAJF04010	***Taxidea taxus*** American badger	None	None	G5	S3	SSC
ARAAD02030	***Emys marmorata*** western pond turtle	None	None	G3G4	S3	SSC
ARACC01020	***Anniella pulchra*** Northern California legless lizard	None	None	G3	S3	SSC
ARACF12100	***Phrynosoma blainvillii*** coast horned lizard	None	None	G3G4	S3S4	SSC
ARADB01017	***Arizona elegans occidentalis*** California glossy snake	None	None	G5T2	S2	SSC
CTT44110CA	***Northern Hardpan Vernal Pool*** Northern Hardpan Vernal Pool	None	None	G3	S3.1	
CTT44120CA	***Northern Claypan Vernal Pool*** Northern Claypan Vernal Pool	None	None	G1	S1.1	
CTT44131CA	***Northern Basalt Flow Vernal Pool*** Northern Basalt Flow Vernal Pool	None	None	G3	S2.2	
CTT61420CA	***Great Valley Mixed Riparian Forest*** Great Valley Mixed Riparian Forest	None	None	G2	S2.2	
CTT62100CA	***Sycamore Alluvial Woodland*** Sycamore Alluvial Woodland	None	None	G1	S1.1	
ICBRA03030	***Branchinecta lynchi*** vernal pool fairy shrimp	Threatened	None	G3	S3	
ICBRA03150	***Branchinecta mesovallensis*** midvalley fairy shrimp	None	None	G2	S2S3	
ICBRA06010	***Linderiella occidentalis*** California linderiella	None	None	G2G3	S2S3	
ICBRA10010	***Lepidurus packardi*** vernal pool tadpole shrimp	Endangered	None	G4	S3S4	
IICOL48011	***Desmocerus californicus dimorphus*** valley elderberry longhorn beetle	Threatened	None	G3T2T3	S3	
IICOL4C020	***Lytta moesta*** moestan blister beetle	None	None	G2	S2	

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
IICOL4C030	***Lytta molesta*** molestan blister beetle	None	None	G2	S2	
IIDIP07010	***Efferia antiochi*** Antioch efferian robberfly	None	None	G1G2	S1S2	
IIDIP08010	***Metapogon hurdi*** Hurd's metapogon robberfly	None	None	G1G2	S1S2	
IIHYM24480	***Bombus crotchii*** Crotch bumble bee	None	None	G2	S1S2	
ILARAU8070	***Calicina mesaensis*** Table Mountain harvestman	None	None	G1	S1	
IMBIV19010	***Gonidea angulata*** western ridged mussel	None	None	G3	S1S2	
PDAPI0Z0Y0	***Eryngium spinosepalum*** spiny-sepaled button-celery	None	None	G2	S2	1B.2
PDAST1P040	***Calycadenia hooveri*** Hoover's calycadenia	None	None	G2	S2	1B.3
PDAST5J070	***Lagophylla dichotoma*** forked hare-leaf	None	None	G2	S2	1B.1
PDAST7P010	***Pseudobahia bahiifolia*** Hartweg's golden sunburst	Endangered	Endangered	G1	S1	1B.1
PDAST7P030	***Pseudobahia peirsonii*** San Joaquin adobe sunburst	Threatened	Endangered	G1	S1	1B.1
PDBOR0A190	***Cryptantha hooveri*** Hoover's cryptantha	None	None	GH	SH	1A
PDBRA31010	***Caulanthus californicus*** California jewelflower	Endangered	Endangered	G1	S1	1B.1
PDCAM060C0	***Downingia pusilla*** dwarf downingia	None	None	GU	S2	2B.2
PDFAB2B103	***Lupinus citrinus var. citrinus*** orange lupine	None	None	G2T2	S2	1B.2
PDHDR04010	***Carpenteria californica*** tree-anemone	None	Threatened	G1?	S1?	1B.2
PDPLM09130	***Leptosiphon serrulatus*** Madera leptosiphon	None	None	G3	S3	1B.2
PDPLM0C0X1	***Navarretia myersii ssp. myersii*** pincushion navarretia	None	None	G2T2	S2	1B.1
PDSCR0D3Z1	***Castilleja campestris var. succulenta*** succulent owl's-clover	Threatened	Endangered	G4?T2T3	S2S3	1B.2
PDSCR0R060	***Gratiola heterosepala*** Boggs Lake hedge-hyssop	None	Endangered	G2	S2	1B.2
PMALI040Q0	***Sagittaria sanfordii*** Sanford's arrowhead	None	None	G3	S3	1B.2

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
PMCYP032Y0	***Carex comosa*** bristly sedge	None	None	G5	S2	2B.1
PMPOA3D020	***Imperata brevifolia*** California satintail	None	None	G3	S3	2B.1
PMPOA4G040	***Orcuttia pilosa*** hairy Orcutt grass	Endangered	Endangered	G1	S1	1B.1
PMPOA4G060	***Orcuttia inaequalis*** San Joaquin Valley Orcutt grass	Threatened	Endangered	G1	S1	1B.1
PMPOA6N010	***Tuctoria greenei*** Greene's tuctoria	Endangered	Rare	G1	S1	1B.1

Record Count: 65

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Fresno County, California

NOT FOR CONSULTATION

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

NOT FOR CONSULTATION

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Fresno Kangaroo Rat Dipodomys nitratoides exilis Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/5150	Endangered
San Joaquin Kit Fox Vulpes macrotis mutica Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2873	Endangered

Birds

NAME	STATUS
Yellow-billed Cuckoo Coccyzus americanus There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS

NOT FOR CONSULTATION

Blunt-nosed Leopard Lizard Gambelia silus — Endangered

Wherever found

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/625

Amphibians

NAME	STATUS
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt Hypomesus transpacificus Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Crustaceans

NOT FOR CONSULTATION

NAME	STATUS
Conservancy Fairy Shrimp Branchinecta conservatio Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp Branchinecta lynchi Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
Fleshy Owl's-clover Castilleja campestris ssp. succulenta Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/8095	Threatened
Greene's Tuctoria Tuctoria greenei Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/1573	Endangered
Hartweg's Golden Sunburst Pseudobahia bahiifolia Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1704	Endangered

NOT FOR CONSULTATION

San Joaquin Orcutt Grass Orcuttia inaequalis Threatened

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/5506

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

NOT FOR CONSULTATION

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Belding's Savannah Sparrow *Passerculus sandwichensis beldingi* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Bullock's Oriole *Icterus bullockii* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
Clark's Grebe *Aechmophorus clarkii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31

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Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch Carduelis lawrencei — Breeds Mar 20 to Sep 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

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Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Western Grebe aechmophorus occidentalis — Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/6743

Yellow-billed Magpie Pica nuttalli — Breeds Apr 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9726

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey

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events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

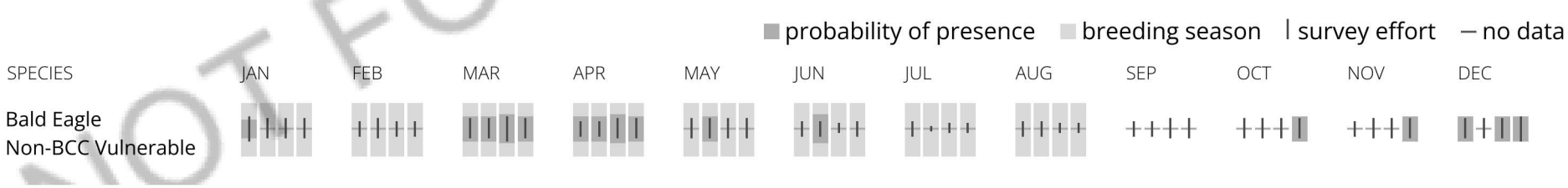
Breeding Season ( )
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



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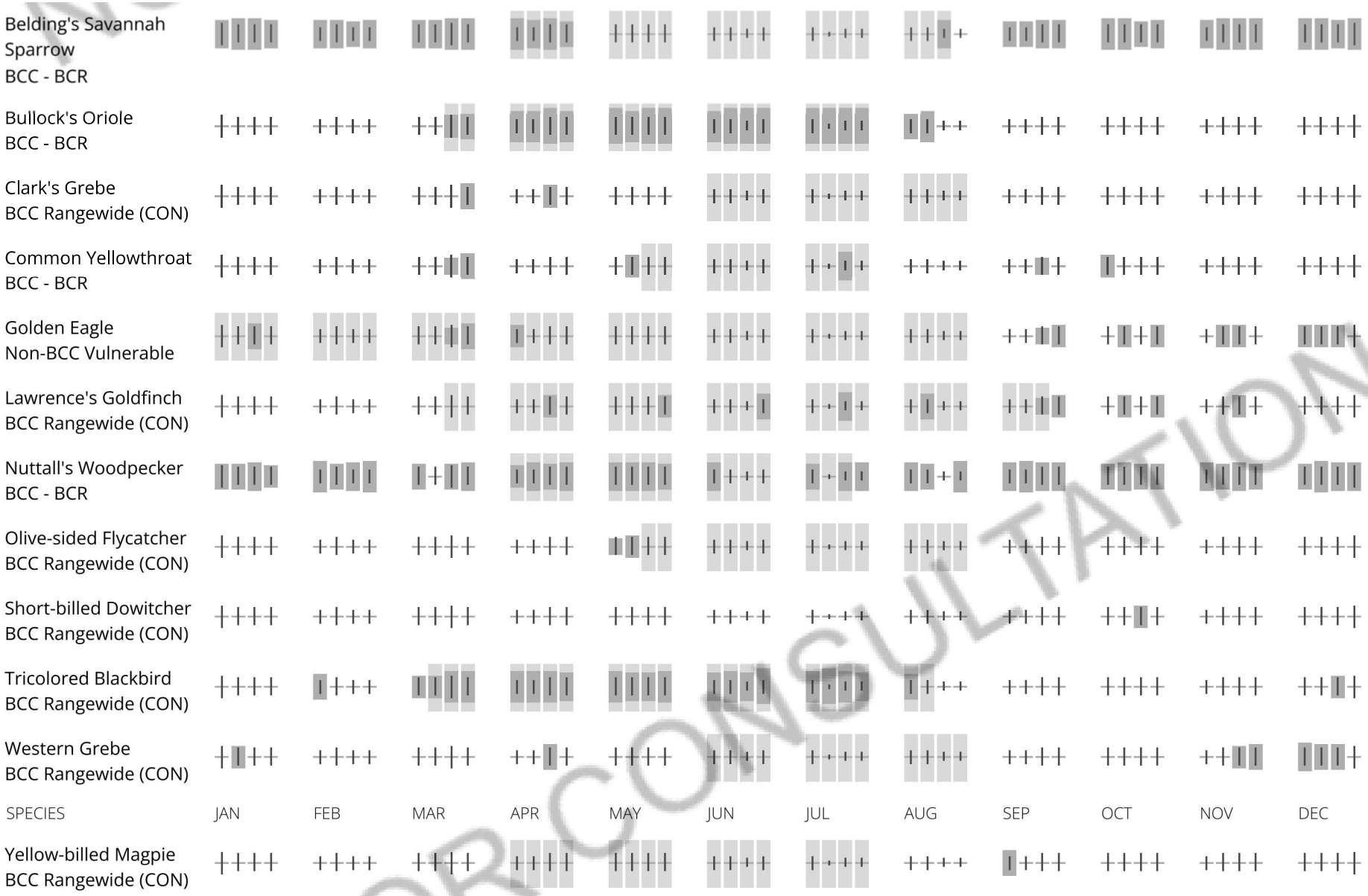

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure.

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To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

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Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In

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contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Coastal Barrier Resources System

Projects within the John H. Chafee Coastal Barrier Resources System (CBRS) may be subject to the restrictions on federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local Ecological Services Field Office or visit the CBRA Consultations website. The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

There are no known coastal barriers at this location.

Data limitations

The CBRS boundaries used in IPaC are representations of the controlling boundaries, which are depicted on the official CBRS maps. The boundaries depicted in this layer are not to be considered authoritative for in/out determinations close to a CBRS boundary (i.e., within the "CBRS Buffer Zone" that appears as a hatched area on either side of the boundary). For projects that are very close to a CBRS boundary but do not clearly intersect a unit, you may contact the Service for an official determination by following the instructions here: https://www.fws.gov/service/coastal-barrier-resources-system-property-documentation

Data exclusions

CBRS units extend seaward out to either the 20- or 30-foot bathymetric contour (depending on the location of the unit). The true seaward extent of the units is not shown in the CBRS data, therefore projects in the offshore areas of units (e.g., dredging, breakwaters, offshore wind energy or oil and gas projects) may be subject to CBRA even if they do not intersect the CBRS data. For additional information, please contact CBRA@fws.gov.

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Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

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The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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CNPS Rare Plant Inventory

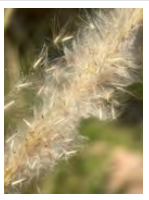
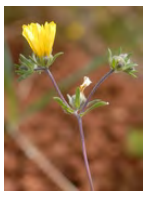
California Native Plant Society

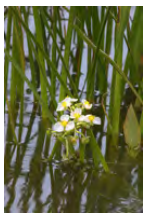
Search Results

30 matches found. Click on scientific name for details

Search Criteria: Quad is one of [**3611976:3611986:3711917:3611987:3611977:3611967:3611966:3611965:3611975:3611985:3711915:3711916**]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
Bryum chryseum	brassy bryum	Bryaceae	moss		None	None	G5	S3	4.3	No Photo Available
Calycadenia hooveri	Hoover's calycadenia	Asteraceae	annual herb	Jul-Sep	None	None	G2	S2	1B.3	No Photo Available
Carex comosa	bristly sedge	Cyperaceae	perennial rhizomatous herb	May-Sep	None	None	G5	S2	2B.1	Dean Wm. Taylor 1997
Carpenteria californica	tree-anemone	Hydrangeaceae	perennial evergreen shrub	(Apr)May-Jul	None	CT	G1?	S1?	1B.2	No Photo Available
Castilleja campestris var. *succulenta*	succulent owl's-clover	Orobanchaceae	annual herb (hemiparasitic)	(Mar)Apr-May	FT	CE	G4? T2T3	S2S3	1B.2	No Photo Available
Caulanthus californicus	California jewelflower	Brassicaceae	annual herb	Feb-May	FE	CE	G1	S1	1B.1	No Photo Available
Claytonia parviflora ssp. *grandiflora*	streambank spring beauty	Montiaceae	annual herb	Feb-May	None	None	G5T3	S3	4.2	No Photo Available
Cryptantha hooveri	Hoover's cryptantha	Boraginaceae	annual herb	Apr-May	None	None	GH	SH	1A	No Photo Available
Delphinium hansenii ssp. *ewanianum*	Ewan's larkspur	Ranunculaceae	perennial herb	Mar-May	None	None	G4T3	S3	4.2	No Photo Available
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	Mar-May	None	None	GU	S2	2B.2	No Photo Available
Eryngium spinosepalum	spiny-sepaled button-celery	Apiaceae	annual/perennial herb	Apr-Jun	None	None	G2	S2	1B.2	No Photo Available
Erythranthe acutidens	Kings River monkeyflower	Phrymaceae	annual herb	Apr-Jul	None	None	G2G3	S2S3	3	Barry Breckling
Erythranthe	small-flowered	Phrymaceae	annual herb	May-Jun	None	None	G4	S4	4.3	

inconspicua	monkeyflower									© 2017 Debra L. Cook
Erythranthe sierrae	Sierra Nevada monkeyflower	Phrymaceae	annual herb	Mar-Jul	None	None	G2	S2	4.2	© 2014 Neal Kramer
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	Apr-Aug	None	CE	G2	S2	1B.2	©2004 Carol W. Witham
Imperata brevifolia	California satintail	Poaceae	perennial rhizomatous herb	Sep-May	None	None	G3	S3	2B.1	 © 2020 Matt C. Berger
Lagophylla dichotoma	forked hare-leaf	Asteraceae	annual herb	Apr-May	None	None	G2	S2	1B.1	 © 2010 Chris Winchell
Leptosiphon serrulatus	Madera leptosiphon	Polemoniaceae	annual herb	Apr-May	None	None	G3	S3	1B.2	© 2008 Chris Winchell
Lupinus citrinus var. *citrinus*	orange lupine	Fabaceae	annual herb	Apr-Jul	None	None	G2T2	S2	1B.2	No Photo Available
Navarretia eriocephala	hoary navarretia	Polemoniaceae	annual herb	May-Jun	None	None	G4?	S4?	4.3	© 2018 Leigh Johnson
Navarretia myersii ssp. *myersii*	pincushion navarretia	Polemoniaceae	annual herb	Apr-May	None	None	G2T2	S2	1B.1	© 2020 Leigh Johnson
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	Poaceae	annual herb	Apr-Sep	FT	CE	G1	S1	1B.1	No Photo Available
Orcuttia pilosa	hairy Orcutt grass	Poaceae	annual herb	May-Sep	FE	CE	G1	S1	1B.1	© 2003 George W. Hartwell

Pholistoma auritum var. *arizonicum*	Arizona pholistoma	Hydrophyllaceae	annual herb	Mar	None	None	G5T4?	S3	2B.3	No Photo Available
Plagiobryoides vinosula	wine-colored tufa moss	Bryaceae	moss		None	None	G3G4	S3S4	4.2	No Photo Available
Pseudobahia bahiifolia	Hartweg's golden sunburst	Asteraceae	annual herb	Mar-Apr	FE	CE	G1	S1	1B.1	No Photo Available
Pseudobahia peirsonii	San Joaquin adobe sunburst	Asteraceae	annual herb	Feb-Apr	FT	CE	G1	S1	1B.1	No Photo Available
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	None	None	G3	S3	1B.2	 ©2013 Debra L. Cook
Tuctoria greenei	Greene's tuctoria	Poaceae	annual herb	May-Jul(Sep)	FE	CR	G1	S1	1B.1	©2008 F. Gauna
Wyethia elata	Hall's wyethia	Asteraceae	perennial herb	May-Aug	None	None	G4	S4	4.3	No Photo Available

Showing 1 to 30 of 30 entries

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2022. Rare Plant Inventory (online edition, v9-01 1.5). Website https://www.rareplants.cnps.org [accessed 7 September 2022].

National Marine Fisheries Service – West Coast Region – California
November 2016

Intersection of USGS 7.5' Quadrangles with NOAA Fisheries ESA Listed Species, Critical Habitat, Essential Fish Habitat, and MMPA Species Data within California.

An "X" following a listed feature indicates it may be present. Identified resources may be present throughout the entire quadrangle or only a portion of it.

Quad Name **Friant**
Quad Number **36119-H6**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) - **X**
Eulachon (T) -
sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat -
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) -
Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH -
Chinook Salmon EFH - **X**
Groundfish EFH -
Coastal Pelagics EFH -
Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds
See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -

APPENDIX B

Representative Site Photographs

Photo 1. Annual grassland within the Study Area.
Photo taken August 3, 2022, facing southwest.

Photo 2. Annual grassland within the Study Area.
Photo taken August 3, 2022, facing southeast.

Photo 3. Annual grassland within the Study Area.
Photo taken August 4, 2022 facing west.

Photo 4. Fallow farmland within the Study Area.
Photo taken August 3, 2022, facing south.

Photo 5. Fallow farmland within the Study Area. Photo taken August 3, 2022, facing northeast.

Photo 6. Intermittent drainage and annual grassland within the Study Area. Photo taken August 3, 2022, facing south.

Photo 7. Intermittent drainage within the Study Area. Photo taken August 3, 2022, facing south.

Photo 8. Unvegetated area of the old channel alignment within the Study Area. Photo taken August 4, 2022, facing south.

Photo 9. Unvegetated area of the old channel alignment within the Study Area. Photo taken August 3, 2022, facing east.

Photo 10. Pasture within the Study Area.
Photo taken August 4, 2022, facing northwest.

Photo 11. Seasonal wetland within the Study Area.
Photo taken August 4, 2022, facing north.

Photo 12. Seasonal wetland within the Study Area.
Photo taken August 4, 2022, facing southwest.

Photo 13. Seasonal wetland within the Study Area.
Photo taken August 4, 2022, facing northeast.

Photo 14. Structure within the Study Area.
Photo taken August 4, 2022, facing southwest.

Photo 15. Structure within the Study Area.
Photo taken August 4, 2022, facing southeast.

Photo 16. Burrows within the Study Area.
Photo taken August 3, 2022, facing west-southwest.

APPENDIX C

Plant Species Observed Onsite

Triangle Properties:
Plant Species Observed Onsite (August 3 4, 2022)

SCIENTIFIC NAME	COMMON NAME	Indicator
APOCYNACEAE	DOGBANE FAMILY	
Asclepias fascicularis	Narrow-leaf milkweed	FAC
ARECACEAE	PALM FAMILY	
Phoenix sp.	Palm	
ASTERACEAE	SUNFLOWER FAMILY	
*Centaurea solstitialis**	Yellow star-thistle	N/L
Centromadia sp.		
*Dittrichia graveolens**	Stinkwort	N/L
Heliotropium curassavicum	Seaside heliotrope	FACU
*Lactuca serriola**	Prickly lettuce	FACU
*Taraxacum officinale**	Common dandelion	FACU
Xanthium strumarium	Rough cockle-bur	FAC
BORAGINACEAE	BORAGE FAMILY	
Amsinckia menziesii	Small flowered fiddleneck	N/L
Amsinckia sp.	Fiddleneck	
Plagiobothrys stipitatus	Slender popcorn-flower	FACW
BRASSICACEAE	MUSTARD FAMILY	
*Hirschfeldia incana**	Shortpod mustard	N/L
CHENOPODIACEAE	GOOSEFOOT FAMILY	
*Chenopodium album**	White goosefoot	FACU
CONVOLVULACEAE	MORNING-GLORY FAMILY	
Cuscuta sp.	Dodder	
EUPHORBIACEAE	SPURGE FAMILY	
Croton setiger	Turkey mullein	N/L
FABACEAE	LEGUME FAMILY	
Acmispon americanus	Spanish clover	UPL
*Vicia villosa**	Hairy vetch	N/L
GERANIACEAE	GERANIUM FAMILY	
Erodium sp.	Filaree	
*Geranium dissectum**	Cut-leaved geranium	N/L
LAMIACEAE	MINT FAMILY	
*Marrubium vulgare**	Common horehound	FACU

An asterisk (*) indicates a non-native species

Triangle Properties:
Plant Species Observed Onsite (August 3 4, 2022)

SCIENTIFIC NAME	COMMON NAME	Indicator
LAMIACEAE	MINT FAMILY	
Trichostema lanceolatum	Vinegar weed	N/L
MALVACEAE	MALLOW FAMILY	
*Malva parviflora**	Cheeseweed	N/L
MORACEAE	MULBERRY FAMILY	
*Ficus carica**	Common fig	FACU
MYRSINACEAE	MYRSINE FAMILY	
*Lysimachia arvensis**	Scarlet pimpernel	FAC
MYRTACEAE	MYRTLE FAMILY	
*Eucalyptus globulus**	Blue gum	N/L
Eucalyptus sp.	Eucalyptus	
OLEACEAE	OLIVE FAMILY	
*Olea europaea**	European olive	N/L
POACEAE	GRASS FAMILY	
*Andropogon virginicus var. virginicus**	Broomsedge bluestem	FAC
*Avena fatua**	Wild oat	UPL
Avena sp.	Oat	
*Bromus diandrus**	Ripgut brome	N/L
*Bromus hordeaceus**	Soft brome	FACU
*Bromus madritensis ssp. rubens**	Red brome	UPL
Distichlis spicata	Saltgrass	FAC
*Festuca myuros**	Rat-tail vulpia	FACU
*Festuca perennis**	Italian Ryegrass	FAC
*Hordeum marinum ssp. gussoneanum**	Mediterranean barley	FAC
*Hordeum murinum**	Foxtail barley	FACU
POLYGONACEAE	BUCKWHEAT FAMILY	
Eriogonum nudum	Naked buckwheat	N/L
*Rumex crispus**	Curly dock	FAC
SCROPHULARIACEAE	FIGWORT FAMILY	
*Verbascum thapsus**	Common mullein	FACU
SOLANACEAE	NIGHTSHADE FAMILY	
Datura inoxia	Pricklybur	N/L

An asterisk (*) indicates a non-native species

Triangle Properties:
Plant Species Observed Onsite (August 3 4, 2022)

SCIENTIFIC NAME	COMMON NAME	Indicator
SOLANACEAE	NIGHTSHADE FAMILY	
*Datura stramonium**	Jimson weed	UPL
TAXODIACEAE	BALD CYPRESS FAMILY	
Sequoia sempervirens	Coast redwood	N/L
VERBENACEAE	VERVAIN FAMILY	
Phyla nodiflora	Common lippia	FACW
ZYGOPHYLLACEAE	CALTROP FAMILY	
*Tribulus terrestris**	Puncture vine	N/L

APPENDIX D

Wildlife Observed Onsite

Common Name	Scientific Name
Reptiles	
Western fence lizard	*Sceloporus occidentalis*
Birds	
Canada Goose	*Branta canadensis*
Rock Pigeon	*Columba livia*
Eurasian Collared-Dove	*Streptopelia decaocto*
Mourning Dove	*Zenaida macroura*
Black-chinned Hummingbird	*Archilochus alexandri*
Anna's Hummingbird	*Calypte anna*
Killdeer	*Charadrius vociferus*
Turkey Vulture	*Cathartes aura*
Cooper's Hawk	*Accipiter cooperii*
Red-tailed Hawk	*Buteo jamaicensis*
American Kestrel	*Falco sparverius*
Western Kingbird	*Tyrannus verticalis*
California Scrub-Jay	*Aphelocoma californica*
American Crow	*Corvus brachyrhynchos*
Common Raven	*Corvus corax*
Horned Lark	*Eremophila alpestris*
Northern Mockingbird	*Mimus polyglottos*
House Sparrow	*Passer domesticus*
House Finch	*Haemorhous mexicanus*
Brewer's Blackbird	*Euphagus cyanocephalus*
Mammals	
California ground squirrel	*Otospermophilus beecheyi*
Desert cottontail	*Sylvilagus audubonii*
Pocket gopher	*Thomomys sp.*

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Delineation of Potential Jurisdictional Aquatic Resources

Vista Ranch Project Site
Fresno County, California

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August 17, 2023

TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS ..... **II**
1.0 INTRODUCTION **1**
2.0 BACKGROUND INFORMATION **1**
2.1 LOCATION OF STUDY AREA **1**
2.2 GENERAL SETTING OF STUDY AREA **4**
3.0 REGULATORY BACKGROUND **5**
3.1 FEDERAL REGULATORY FRAMEWORK **5**
3.2 CALIFORNIA STATE AND REGIONAL REGULATORY FRAMEWORK **6**
4.0 METHODS **8**
4.1 PRELIMINARY REVIEW AND FIELD PREPARATION **8**
4.2 FIELD SURVEY **10**
4.2.1 Soils *10*
4.2.2 Hydrology *10*
4.3.3 Vegetation *14*
4.3.4 Wetland Mapping *14*
5.0 RESULTS **15**
5.1 OVERVIEW **15**
5.2 POTENTIAL JURISDICTIONAL AQUATIC RESOURCES **17**
5.2.1 Other Waters: Canal (Non-wetland Channel) *17*
5.2.2 Wetland: Canal (Wetland Channel and Fringing Wetland Margin) *27*
5.2.3 Wetland: Depressional Wetland Basins *27*
5.2.4 Wetland: Stockponds *29*
5.3 UPLANDS AND OTHER NON-JURISDICTIONAL AREAS **30**
6.0 REFERENCES **32**

FIGURES AND TABLES

Figure 1. Vicinity Map 2
Figure 2. Site Topography 3
Figure 3. Soil Unit Map 12
Figure 4. Geologic Unit Map 13
Figure 5. Aquatic Resources Overview Map 18
Figure 5A-H. Potential Jurisdictional Aquatic Resources (Detail Maps) 19-26

Table 1. WETS Table Analysis for the June 2023 Survey (USDA-NRCS 2023) 9
Table 2. WETS Table Analysis for the July 2023 Survey (USDA-NRCS 2023) 9
Table 3. Soil Map Units within the Vista Ranch Project Site, Fresno County, CA. 11
Table 4. Aquatic Resources, Vista Ranch Project Site, Fresno County, CA. 16

APPENDICES

Appendix A – Representative Site Photographs
Appendix B – Plant List
Appendix C – Wetland Delineation Data Sheets
Appendix D – Delineation Data Point Locations
Appendix E – Aquatic Resources Excel Sheet
Appendix F – Historical Aerial Imagery of Flood Irrigation Field and Irrigation Tailwater Pond

ACRONYMS AND ABBREVIATIONS

APN	Assessor's Parcel Number
CARI	California Aquatic Resource Inventory
CWA	Clean Water Act
EPA	U.S. Environmental Protection Agency
GIS	Geographic Information System
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
NWP	Nationwide Permit
NWPL	National Wetland Plant List
OHWM	ordinary high-water mark
PEM	palustrine emergent
RHA	Rivers and Harbors Act
RWQCB	Regional Water Quality Control Board
TNW	Traditional Navigable Water
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WDR	Waste Discharge Requirements

1.0 INTRODUCTION

This report summarizes the methods and results of a delineation of aquatic resources under potential federal and/or state jurisdiction within the Vista Ranch Project Site (site). The site is located just north of Clovis in Fresno County, California (**Figure 1**). The site is largely within an approximately 509-acre master-planned community (the Vista Ranch Master Plan Area). The Vista Ranch Project will result in the development of a portion of the Vista Ranch Master Plan Area, as well as associated off-site infrastructure.

The site addressed by this report is the area of effects of the Vista Ranch Project. It includes approximately 364.3 acres of the master plan area, as well as approximately 33.2 acres of areas planned for off-site improvements. Combined, these form the approximately 397.5-acre study area, and comprise the area where all direct impacts associated with the Vista Ranch Project will occur.

The purpose of this delineation is to identify, map, and describe aquatic resources on the site that may be subject to federal and/or state jurisdiction. A total of 1.924 acres of aquatic resources which may be subject to federal jurisdiction were delineated. In addition, a 1.129-acre agricultural pond which may not be subject to federal jurisdiction was mapped. The features which may be subject to federal jurisdiction include 0.278 acre of potential Other Waters within the spillway canal, and 1.646 acres of potential Wetlands within depressional basins, stockponds, and the spillway canal. Details on these delineated resources are provided in the Results section below.

The 2022-2023 rain-year (July 1-June 30) was much wetter than average, resulting in atypical prolonged flooding of depressional areas on the site as discussed below. These conditions were considered as part of the delineation field work. The findings of this delineation are preliminary and must be reviewed and verified in writing by the U.S. Army Corps of Engineers (USACE) to be considered an official delineation.

This delineation was prepared by Vollmar Natural Lands Consulting (VNLC), Berkeley, California. The address and contact information for both VNLC and Wilson Premier Homes representatives for this project are provided on the cover of this report.

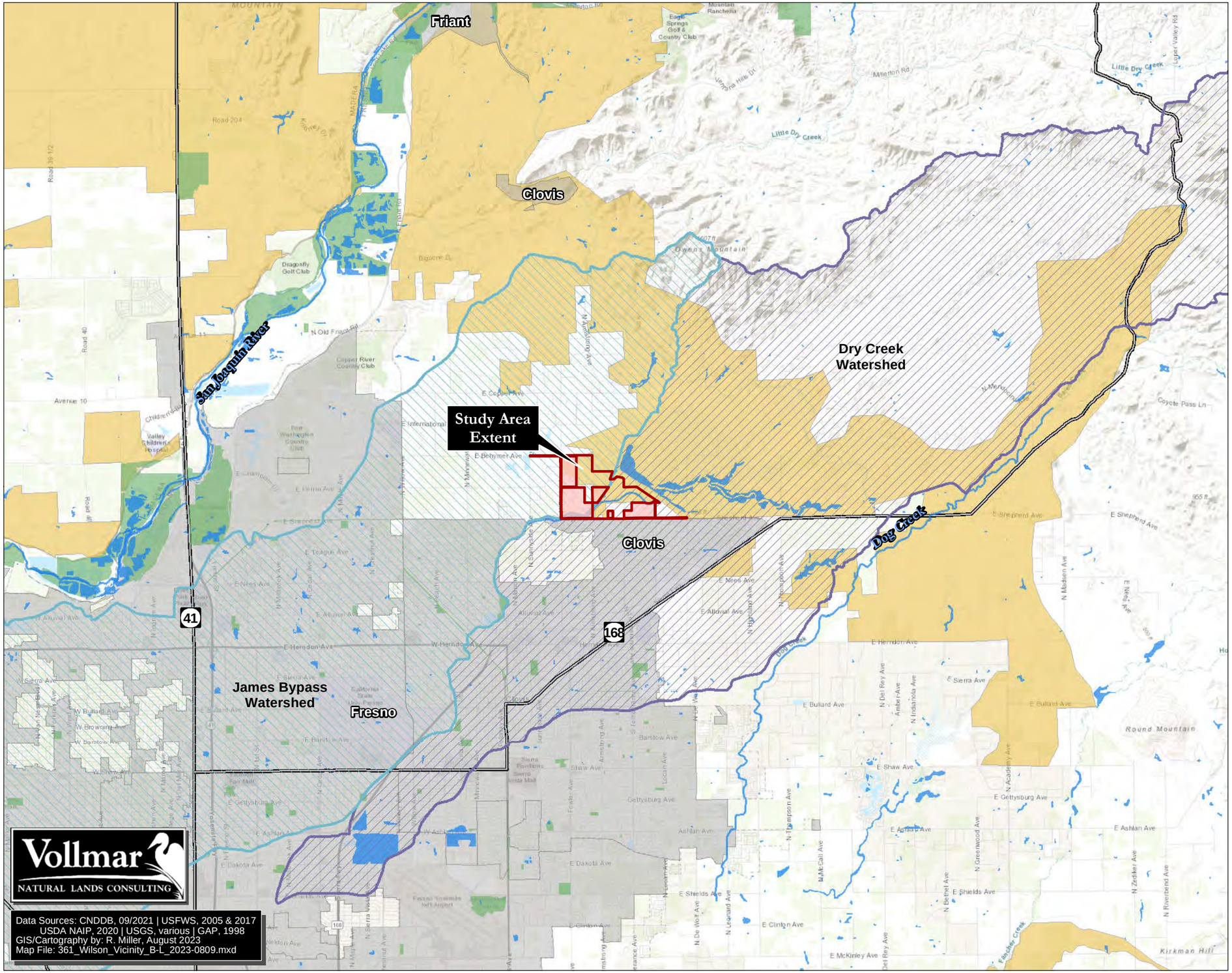
2.0 BACKGROUND INFORMATION

2.1 Location of Study Area

The site is located north of the City of Clovis in Fresno County, California. It is bordered on the south and west by suburban residential development and on the northwest by more open rural residential development. To the northeast, it is bordered by open range and the Big Dry Creek Dam and Reservoir. The dam and reservoir are flood control structures operated by the Fresno Metropolitan Flood Control District (FMFCD) (BOR, CDWR, and CBDA, 2003).

FIGURE 1
Regional Vicinity Map

Vista Ranch Development
Fresno County, California



Legend

- Highway
- Stream or River
- Study Area (397.5 ac.)
- Not Part of Study Area
- Wetland
- USFWS Vernal Pool Core Recovery Area
- Dry Creek Watershed
- James Bypass Watershed
- Conserved or Public Land
- Urban Area

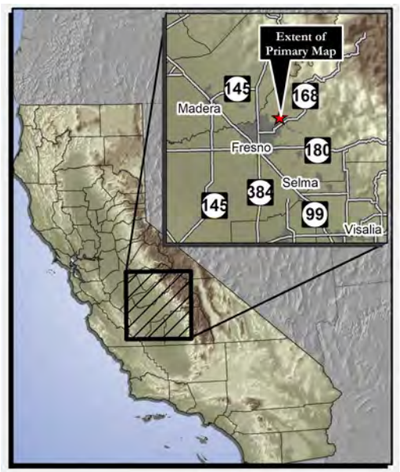


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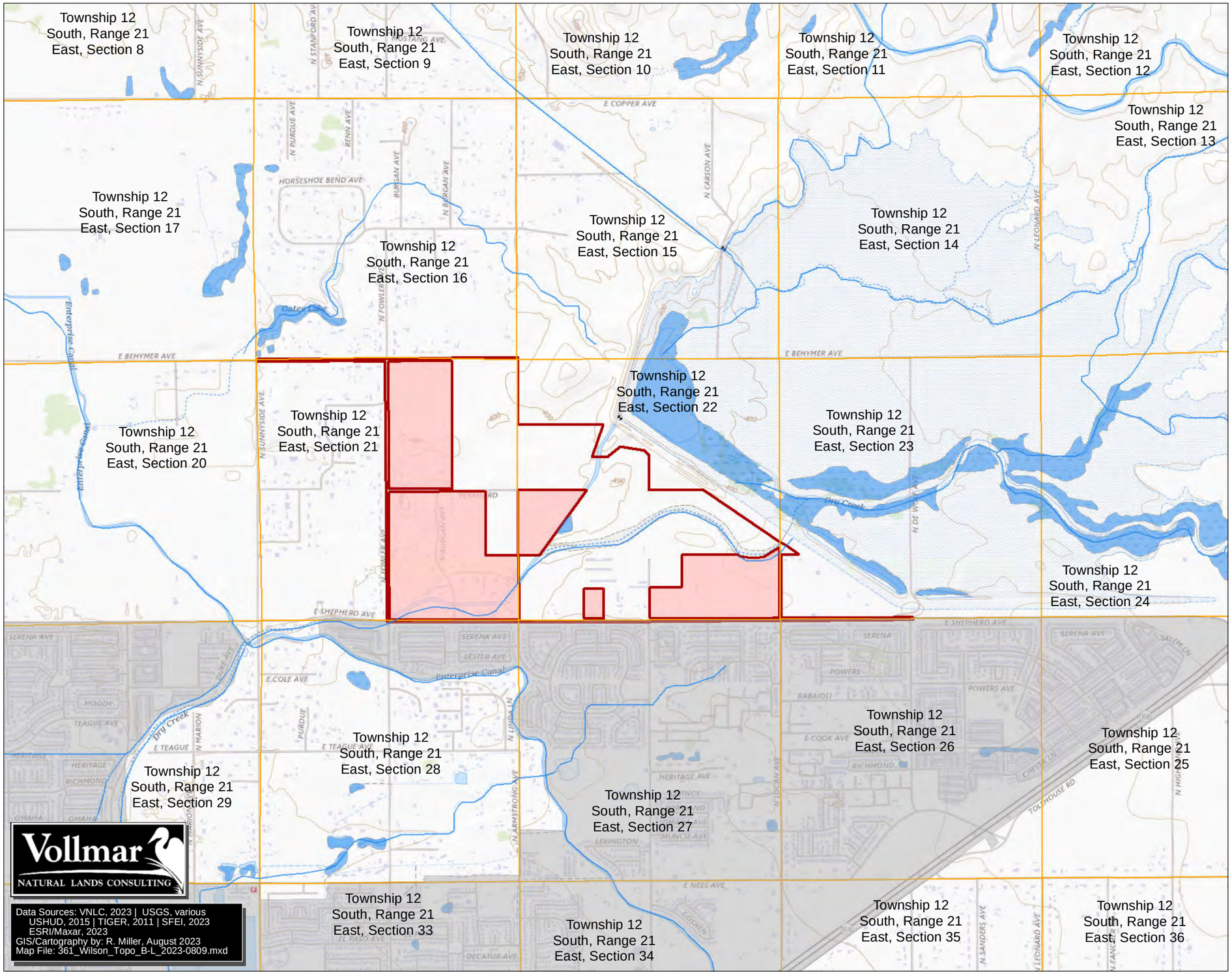
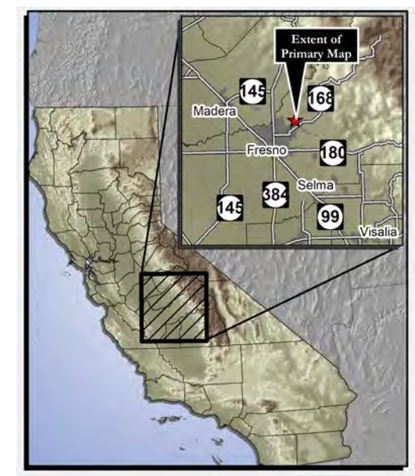
FIGURE 2
USGS Topographic Map

Vista Ranch Development
Fresno County, California



Legend

- Stream
- Study Area (397.5 ac.)
- Not Part of Study Area
- Wetland (CARI, SFEI 2023)
- Public Land Survey Boundary
- City of Clovis



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0 1,000 2,000 4,000 Feet

The site is located within Sections 21, 22, and 23 of Township 12 South, Range 21 East of the Mount Diablo Base & Meridian within the Friant and Clovis 7.5-minute U.S. Geological Survey (USGS) topographic quadrangles (**Figure 2**). The coordinates at the approximate center of the site are 36.873266, -119.670577. The nearest road intersection is East Shepherd Avenue and North Temperance Avenue along the central southern edge of the site.

The site is accessed from Highway 99 south by exiting at Highway 180 East (Exit 133B). After approximately 3.4 miles, take Exit 60A for Highway 168 East. After 1.3 miles, exit at Temperance Ave (Exit 9) and continue north for 2.2 miles. Access to the site is by a dirt road extending north from Temperance Avenue in the south and along East Behymer Road in the northwest.

2.2 General Setting of Study Area

The study area consists primarily of non-native annual grasslands, degraded pasture, and the Big Dry Creek Reservoir Spillway canal. An abandoned section of Dry Creek, a local seasonal creek, crosses the southeast portion of the site. This section was abandoned when the Big Dry Creek Reservoir was constructed in 1948 and the creek re-routed through the reservoir and current spillway canal which rejoins the original creek channel just off the site about 2,200 feet below the spillway. The abandoned creek channel is now an upland habitat that is part of the overall non-native grasslands in this portion of the site. There are some rural homes sites in the southeast of the site and a few dirt access roads. The site has mostly level to gentle terrain with the most pronounced topography in the northwest. Elevation ranges from about 380 to 413 feet with slopes generally running south and southwest in the south and east of the site and west in the northwest of the site.

Much of the northwest and southeast of the site consists of non-native annual grasslands. These areas appear to be minimally or not currently grazed and support a mix of mostly non-native annual grasses and herbs including invasive weeds. Scattered depressional wetlands occur within these grasslands, especially in the northeast within a series of apparently remnant floodplain swales on the north side of the abandoned channel of Dry Creek. There are also three created stockponds within the grasslands in the northwest of the site.

A roughly 30-acre area near the center of the site was graded and set up for flood irrigation several decades ago (prior to 1957) (see historical imagery in **Appendix F**). This area is located just northeast of the downstream intersection between the spillway canal and the abandoned Dry Creek channel. There are remnant irrigation stand pipes along the southern edge and check berms directing irrigation water south to north across the area. An approximately 1.129-acre triangular agricultural tailwater pond was excavated as part of the system in the southwest edge of the field, adjacent to the spillway canal. This pond was designed to recapture and recirculate irrigation tailwater. There is no active flood irrigation being practiced at this time. This area is now divided

into several pastures with cross fencing and was being grazed by horses and cattle at the time of the field work. This area supports degraded pasture with disturbed, ruderal vegetation dominated by non-native grasses and herbs including invasive weeds. The current grazing is light with a high build up of thatch and residual dry matter.

The Big Dry Creek Dam and Reservoir, constructed in 1948, are flood control structures located on Dry Creek, immediately northeast of the study area. The dam consists of a zoned earth fill embankment, which impounds flows from Dry Creek and its tributaries. Due to safety concerns regarding seepage, the reservoir is limited to approximately 1/3 of its total capacity and is limited to a 90-day duration of storage (BOR, CDWR & CBDA, 2003). Construction of the dam and reservoir involved a re-alignment of Dry Creek and abandonment of a section of the original channel. Dry Creek is now routed into the reservoir basin and then though the spillway and down a canal below the spillway, rejoining the original Dry Creek channel approximately 2,200 feet below the spillway. The abandoned channel traverses the southwest portion of the site. The spillway runs diagonally across the center of the site, from the northeast to southwest. Within the study area, it consists of a constructed earthen channel with raised berms along both sides. This channel supports a mix of wetland vegetation and open water channel areas as described in Results.

The study area is underlain by recent alluvial (stream) deposits in areas bordering the Dry Creek channel, and older sedimentary, metasedimentary, and igneous rocks in surrounding areas (**Figures 3** and **4**). Most soil units within the study area lack an intact claypan or hardpan. This characteristic appears to contribute to relatively quick infiltration throughout much of the site and a correspondingly low rate of wetland formation even within some depressional features.

At the time of the site visit, the delineated aquatic resources and surrounding upland grasslands were experiencing summer bloom. Some ponded water remained in the deeper features on the site such as one of the stockponds and some of the deepest depressional wetland basins. Water was also flowing along the spillway canal. Precipitation was high during the 2023 wet season. Fresno has an average annual rainfall of 10.99 inches (July 1-June 30). The rainfall during the 2022-2023 rain-year (July 1-June 30) totaled 17.83 inches, 162% of the average and within the top ten rainiest years recorded since the late 1800s (NOAA, 2023). March 2023 also had high rainfall compared to average (see **Table 1**, below). These conditions caused atypical extensive and prolonged flooding in some portions of the site as discussed under Results below.

3.0 REGULATORY BACKGROUND

3.1 Federal Regulatory Framework

The federal government, through Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act (RHA), has jurisdiction over all Waters of the United States. Waters of the United States are divided into four subsets – territorial seas and traditional navigable waters (TNWs); tributaries to TNWs; lakes, ponds, and impoundments of TNWs; and wetlands adjacent

to territorial seas and TNWs. Section 404 of the CWA regulates the discharge of dredged or fill material into Waters of the United States. The CWA grants dual regulatory authority of Section 404 to the U.S. Environmental Protection Agency (EPA) and USACE. The USACE is responsible for issuing and enforcing permits for activities in jurisdictional Waters in conjunction with prior permitting authorities in navigable Waters under the RHA of 1899. The EPA is responsible for providing oversight of the permit program. In this capacity, the EPA has developed guidelines for permit review (Section 404 [b][1] Guidelines) and has the authority to veto permits by designating certain sites as non-fill areas (Section 404[c] of the CWA). The EPA also has enforcement authority under Section 404. The USACE generally extends its jurisdiction to all areas meeting the criteria for Waters of the United States.

On August 30, 2021, the U.S. District Court for the District of Arizona issued a decision in *Pascua Yaqui Tribe v. U.S. Environmental Protection Agency* which vacated the then-current 2020 Navigable Waters Protection Rule. Following this decision, the EPA and USACE halted implementation of the Navigable Waters Protection Rule and are interpreting “waters of the United States” consistent with the pre-2015 regulatory regime as developed under *Rapanos* and *SWANCC* guidance. On May 25, 2023, the U.S. Supreme Court issued a decision in *Sackett v. EPA* which narrowed the jurisdiction of the CWA. The Sackett decision declared that, in order to be regulated by the CWA, wetlands adjacent to TNWs must be indistinguishably part of a body of water that itself constitutes “waters” under the CWA with a "continuous surface connection to those bodies" (Totenberg 2023). The USACE is in the process of revising its policies on the extent of federal jurisdiction over “waters”.

Projects which propose activities that fall under the jurisdiction of Section 404 of the CWA and/or Section 10 of the RHA must obtain approval from the USACE through the individual or nationwide permit (NWP) process. Individual permits entail a full public interest review that includes consultation with other federal and state agencies.

3.2 California State and Regional Regulatory Framework

California Department of Fish and Wildlife

The CDFW regulates river, stream, and lake habitats through Fish and Game Code section 1600 *et seq*. Fish and Game Code section 1602 requires an entity to notify the CDFW prior to commencing any activity that may do one or more of the following:

- Substantially divert or obstruct the natural flow of any river, stream, or lake;
- Substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or
- Deposit debris, waste, or other materials that could pass into any river, stream, or lake.

A “river, stream, or lake” includes those that are episodic (i.e., they are dry for periods of time) as well as those that are perennial. This definition includes ephemeral streams, desert washes, and

watercourses with a subsurface flow. It may also apply to work undertaken within the floodplain of a body of water, the boundary of which may be identified as a topographic feature or as riparian vegetation. In addition, the CDFW does not distinguish between a "pond" and a "lake," such that relatively small bodies of water, including both natural and artificial features, may be regulated under section 1600.

The CDFW requires a Lake and Streambed Alteration (LSA) Agreement when it determines that the activity, as described in a complete LSA Notification, may substantially adversely affect existing fish or wildlife resources (ibid). A LSA Agreement includes measures necessary to protect existing fish and wildlife resources. The CDFW may suggest ways to modify a project that would eliminate or reduce harmful impacts to fish and wildlife resources. Before issuing a LSA Agreement, CDFW must comply with the California Environmental Quality Act (CEQA).

Regional Water Quality Control Board

The study area is located within the Central Valley (Region 5) Regional Water Quality Control Board (RWQCB), which has authority to regulate projects that could potentially impact wetlands and/or other Waters. According to the California State Water Resources Control Board, this authority derives from the following:

- The state's Porter-Cologne Water Quality Control Act through Waste Discharge Requirements to protect Waters of the state;
- The CWA under Section 4013;
- Governor's Executive Order W-59-93 (i.e., the "California Wetland's Policy" which requires "No Net Loss of Wetlands");
- Senate Concurrent Resolution No. 28; and
- California Water Code Section 13142.5 (applies to coastal marine wetlands).

In addition to the state directives to protect wetlands, for individual permits (but not NWPs), the Basin Plan also directs the Water Board staff to use the EPA's CWA 404(b)(1) guidelines to determine circumstances under which the filling of wetlands may be permitted and requires that attempts be made to avoid, minimize, and only lastly to mitigate for adverse impacts (ibid).

California's jurisdiction to regulate its water resources is much broader than that of the federal government. While the U.S. Supreme Court's 2001 decision in SWANCC vs. U.S. Army Corps of Engineers (the "SWANCC" Decision) called into question the extent to which the federal government may regulate isolated, intrastate, non-navigable waters as "Waters of the United States" under the CWA, state law is unaffected by that decision. The State Water Resource Control Board's (State Water Board's) Executive Director issued a memorandum directing the Regional Water Boards to regulate such waters under Porter-Cologne authorities. Porter-Cologne extends to "Waters of the State," which is broadly defined as "any surface water or groundwater, including saline waters, within the boundaries of the state." This definition includes isolated wetlands and any action that may impact isolated wetlands is subject to the Water Board's jurisdiction, which

may include the issuance of Statewide General Waste Discharge Requirements (WDRs). For projects that will impact less than 0.2 acres of "isolated" wetlands, the State Water Board issues WDRs for Dredged or Fill Discharges to Waters Deemed by the U.S. Army Corps of Engineers to be Outside of Federal Jurisdiction (General WDRs). These General WDRs streamline the permitting process for low impact projects in isolated wetlands (ibid).

Activities or discharges from a project that could affect California's surface, coastal, or ground waters require a permit from the local RWQCB. Discharging pollutants (or proposing to) into surface water requires the applicant to file a National Pollutant Discharge Elimination System permit application with the RWQCB. Other types of discharges, such as those affecting groundwater or from diffused sources (e.g., erosion from soil disturbance or waste discharges to land) are handled by filing a Report of Waste Discharge with the RWQCB to obtain WDRs. For specified situations, some permits may be waived and some discharge activities can be handled through enrollment in an existing general permit (ibid). The State is currently in the process of adopting updated Dredge and Fill procedures, which became effective May 28, 2020. These changes modify the current State definition and jurisdictional determination of State wetlands.

4.0 METHODS

4.1 Preliminary Review and Field Preparation

Prior to conducting the field delineation, the project ecologists reviewed site aerial photography, topographic data, existing preliminary wetland, stream, and watershed mapping, geologic units, and soil survey maps of the study area and surrounding areas. This information was used to help characterize the site, identify any potential aquatic resources on a preliminary basis, and guide the on-site survey. Background imagery and the study area boundary were loaded on to a professional GPS (Trimble Geo 7x or GeoXH 6000) for use in navigation and mapping in the field.

The project ecologists also reviewed rainfall data for the Fresno area for the July 1-June 30 'rain-year' period. The 2022-2023 rain-year, at 17.83 inches, was 162% of average and among the ten highest-precipitation rain years recorded since the late 1800s (NOAA, 2023). In particular, the rainfall period from December 2022-March 2023 was 226% of normal for this period, and this period is typically responsible for 70% of the annual rainfall. These conditions resulted in atypical prolonged and extensive flooding within depressional areas on the site. These conditions were considered during the delineation field work and wetland mapping on the site.

Table 1 and **Table 2**, below, present WETS tables for the fieldwork dates (USDA-NRCS 2023). April, May, and June of 2023 had average or below-average precipitation. However, these months typically contribute less than 15% of the annual precipitation; the exceptionally high rainfall over the course of the winter exerted the greater effect on the site conditions during the delineation fieldwork.

Table 1. WETS Table Analysis for the June 2023 Survey (USDA-NRCS 2023)

Precipitation Data from the Last 30 Years (1993-2023)[1]			Recent Field Conditions Compared to Precipitation Data from the Last 30 Years, and Analysis[1]					
Date	**30th Percentile (inches)**	**70th Percentile (inches)**	**Date**	**Recorded Rainfall (inches)**	**Rainfall Condition Compared to Previous 30 Years[2]**	**Numeric Condition Value[3]**	**Weighting Factor[4]**	**Product of Condition Value and Weighting Factor[5]**
May	0.13	0.42	May 2023	0.35	Normal	2	3	6
Apr	0.43	1.16	Apr 2023	0	Dry	1	2	2
Mar	0.67	2.1	Mar 2023	4	Wet	3	1	3
[1] All precipitation data is obtained from the Fresno Yosemite International, CA Weather Station**.** Weather Station [2] Below 30th percentile = dry; between 30th and 70th percentile = normal; above 70th percentile = wet. [3] Relative rainfall conditions are then translated to a numeric condition value, as follows: dry = 1, normal = 2, wet = 3. [4] Greater weight is given to the most recent month as this would most likely influence what hydrologic or vegetative characteristics are observed. [5] The numeric condition value is then multiplied by the weighting factor, then the subtotals are added to get the total value. Total value equivalents: 6-9 = dry; 10-14 = normal; 15-18 = wet.							**TOTAL[5]**	11 or NORMAL

Table 2. WETS Table Analysis for the July 2023 Survey (USDA-NRCS 2023)

Precipitation Data from the Last 30 Years (1993-2023)[1]			Recent Field Conditions Compared to Precipitation Data from the Last 30 Years, and Analysis[1]					
Date	**30th Percentile (inches)**	**70th Percentile (inches)**	**Date**	**Recorded Rainfall (inches)**	**Rainfall Condition Compared to Previous 30 Years[2]**	**Numeric Condition Value[3]**	**Weighting Factor[4]**	**Product of Condition Value and Weighting Factor[5]**
Jun	0	0.07	Jun 2023	0.01	Normal	2	3	6
May	0.13	0.42	May 2023	0.35	Normal	2	2	4
Apr	0.43	1.16	Apr 2023	0	Dry	1	1	1
[1] All precipitation data is obtained from the Fresno Yosemite International, CA Weather Station**.** Weather Station [2] Below 30th percentile = dry; between 30th and 70th percentile = normal; above 70th percentile = wet. [3] Relative rainfall conditions are then translated to a numeric condition value, as follows: dry = 1, normal = 2, wet = 3. [4] Greater weight is given to the most recent month as this would most likely influence what hydrologic or vegetative characteristics are observed. [5] The numeric condition value is then multiplied by the weighting factor, then the subtotals are added to get the total value. Total value equivalents: 6-9 = dry; 10-14 = normal; 15-18 = wet.							**TOTAL[5]**	11 or NORMAL

4.2 Field Survey

VNLC Principal Ecologist John Vollmar conducted the delineation field work on June 21 and 22, and July 24, 2023. During the field work, Mr. Vollmar traversed the entire study area, established delineation data points, recorded additional notes on plant community and study area characteristics, and took representative photographs of habitats and features of interest.

At each delineation data point, data were collected on Version 2.0 of USACE's Arid West delineation data form. Data were collected on soils, hydrology, and vegetation cover following the Routine Wetland Determination Method developed by the USACE and described in the 1987 USACE Wetlands Delineation Manual (Environmental Laboratory 1987), as well as the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008) and USACE's more recent guides to identification of OHWM in the Arid West (USACE 2022). The boundaries of potential jurisdictional aquatic resources identified in the study area were mapped using a Trimble GeoXH 6000 or Geo 7x with nominal sub-foot precision. The specific methods for collecting data on soils, hydrology, and vegetation at delineation data points are described below.

4.2.1 Soils

Soil profiles were excavated at each data point using a tile spade shovel, and the profiles were examined for positive hydric soil indicators such as low matrix chromas, redox features, gleys, and iron and manganese concretions. The color and texture of the soil layers encountered were recorded on the delineation forms. Soil color was identified using a Munsell soil color chart (Kollmorgen 2000), and a standardized soil texture chart used by the California Native Plant Society (CNPS) for assessing soils (adapted from Brewer and McCann 1982) was used to determine texture (e.g., clay versus clay loam, etc.). All soil samples were moistened before determining the color and texture. Soil map units were cross-referenced with the California hydric soils list (USDA 1993) and the national hydric soils list (USDA 1991). Determination of whether or not the hydric soil criterion was met was based upon the criteria specified by the National Technical Committee for Hydric Soils (ibid), and informed by additional information provided by the US Department of Agriculture Natural Resource Conservation Service (USDA-NRCS 2018).

Prior to the survey, the project ecologists reviewed the U.S. Department of Agriculture-Soil Conservation Service (USDA-SCS) (2023) database to identify soil map units within the study area. **Table 3** summarizes the soil map units within the study area. **Figure 3** displays the soil units mapped within the study area. **Figure 4** displays the geologic units within the study area.

4.2.2 Hydrology

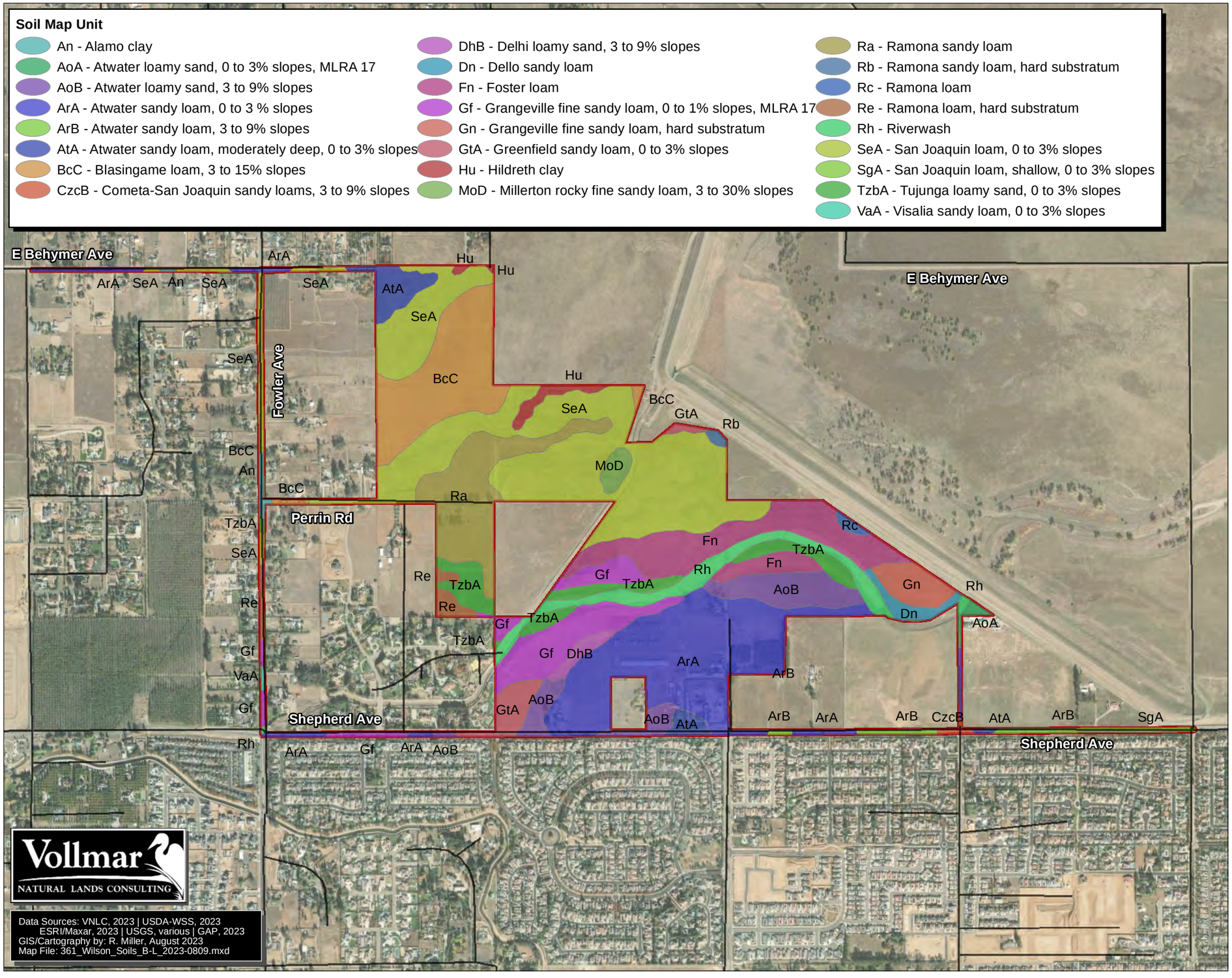
Indicators of wetland hydrology were noted, such as the presence of surface soil cracks, inundation visible on aerial imagery, the presence of a biotic crust, remnants of aquatic invertebrates, and oxidized rhizospheres along living roots. It should be noted that some wetlands in the Arid West

Table 3. Soil Map Units within the Vista Ranch Project Site, Fresno County, CA.

Soil Map Unit	Soil Map Unit Name	Acres in Study Area	Percent of Study Area
SeA	San Joaquin loam, 0 to 3% slopes	105.3	26.47%
ArA	Atwater sandy loam, 0 to 3 % slopes	66.9	16.84%
BcC	Blasingame loam, 3 to 15% slopes	35.9	9.02%
Fn	Foster loam	34.5	8.69%
Ra	Ramona sandy loam	28.1	7.06%
Gf	Grangeville fine sandy loam, 0 to 1% slopes, MLRA 17	24.8	6.25%
AoB	Atwater loamy sand, 3 to 9% slopes	19.6	4.93%
TzbA	Tujunga loamy sand, 0 to 3% slopes	16.3	4.10%
Rh	Riverwash	16.0	4.02%
AtA	Atwater sandy loam, moderately deep, 0 to 3% slopes	9.8	2.47%
Gn	Grangeville fine sandy loam, hard substratum	7.2	1.81%
GtA	Greenfield sandy loam, 0 to 3% slopes	6.7	1.67%
Re	Ramona loam, hard substratum	3.9	0.98%
Dn	Dello sandy loam	3.6	0.90%
ArB	Atwater sandy loam, 3 to 9% slopes	3.5	0.89%
Hu	Hildreth clay	3.3	0.83%
MoD	Millerton rocky fine sandy loam, 3 to 30% slopes	2.8	0.71%
DhB	Delhi loamy sand, 3 to 9% slopes	2.6	0.66%
An	Alamo clay	1.4	0.36%
SgA	San Joaquin loam, shallow, 0 to 3% slopes	1.4	0.34%
AoA	Atwater loamy sand, 0 to 3% slopes, MLRA 17	1.1	0.29%
Rc	Ramona loam	1.0	0.26%
Rb	Ramona sandy loam, hard substratum	0.7	0.19%
CzcB	Cometa-San Joaquin sandy loams, 3 to 9% slopes	0.7	0.17%
VaA	Visalia sandy loam, 0 to 3% slopes	0.3	0.09%

FIGURE 3
Soil Units Map

Vista Ranch Development
Fresno County, California



Legend

Selected Local Road

Study Area (397.5 ac.)

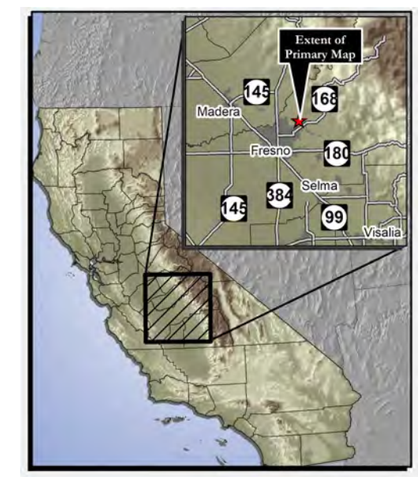


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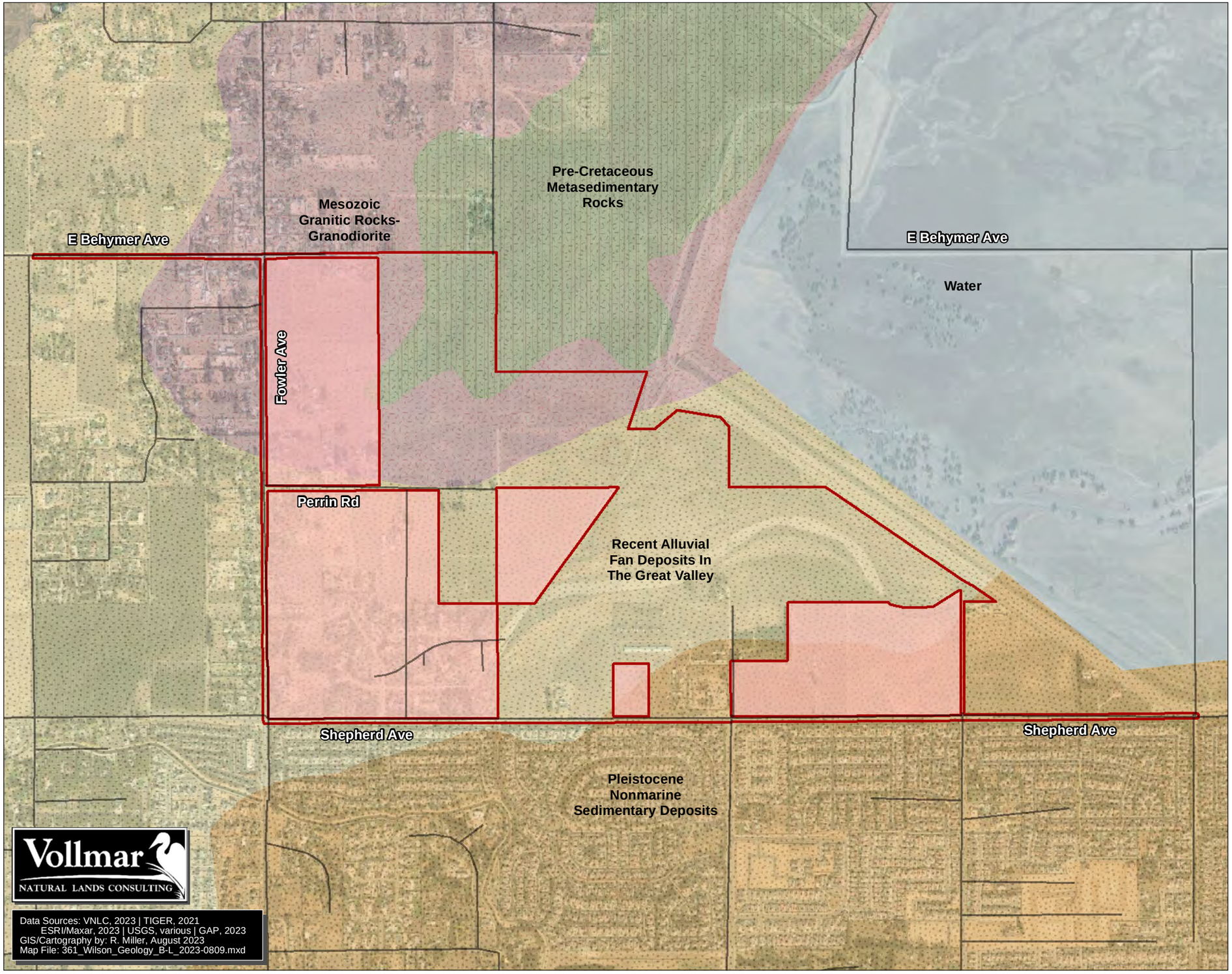
FIGURE 4
Geologic Units Map

Vista Ranch Development
Fresno County, California

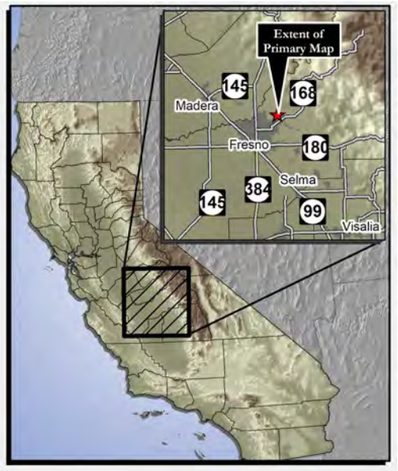


Legend

- Selected Local Road
- Study Area (397.5 ac.)
- Not Part of Study Area

Geological Map Unit

- Qf (Recent Alluvial Fan Deposits In The Great Valley)
- Qc (Pleistocene Nonmarine Sedimentary Deposits)
- gr^g (Mesozoic Granitic Rocks- Granodiorite)
- ms (Pre-Cretaceous Metasedimentary Rocks)
- Water



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Vollmar NATURAL LANDS CONSULTING

Data Sources: VNLC, 2023 | TIGER, 2021
ESRI/Maxar, 2023 | USGS, various | GAP, 2023
GIS/Cartography by: R. Miller, August 2023
Map File: 361_Wilson_Geology_B-L_2023-0809.mxd

region periodically lack indicators of wetland hydrology. If the site is in a geomorphic position where a wetland could occur, but the site visit was during the dry season (i.e., June to October) following a period of 2-3 months of below normal rainfall or was during a year of an unusually low winter snowpack, indicators of wetland hydrology might not be present. According to the Arid West Supplement, "under these conditions, a site that contains hydric soils and hydrophytic vegetation and no evidence of hydrologic manipulation should be considered a wetland" (USACE 2006). The delineation was conducted during the summer following an exceptionally rainy winter and spring as discussed above.

4.3.3 Vegetation

At each delineation data point, all herbaceous plant species within a five-foot radius were identified and a visual estimate of percent cover for each species was recorded. No trees or shrub species were present at any of the delineation data points. Plant species cover estimations were calibrated using CNPS percent cover templates (CNPS 2001).

The indicator status of each species was then checked using the most recent USACE National Wetland Plant List—Version 3.5 (Lichvar et al. 2020). Indicator status categories are as follows:

- OBL = obligate wetland; >99% probability of occurring in a wetland
- FACW = facultative wetland; 67%-99% probability of occurring in a wetland
- FAC = facultative; 33%-67% probability of occurring in a wetland
- FACU = facultative upland; 1%-33% probability of occurring in a wetland
- UPL = obligate upland; <1% probability of occurring in a wetland
- NL = not listed (plants not listed in Lichvar et al. [2020], including some known to occur occasionally or primarily in wetlands)

The wetland vegetation criterion is met when the vegetation passes the dominance test: greater than 50 percent of the dominant plants are designated as OBL, FACW, or FAC wetland indicators. The USACE defines dominant plant species as those that, when included in descending order of their percent cover, together sum up to 50 percent of the total cover in their stratum (tree, sapling/shrub/subshrub, herb, or woody vine). In addition, all species with at least 20 percent coverage of the relative cover within a given stratum are always counted as dominants. All scientific and common plant names correspond to Baldwin et al. (2023) and/or the Calflora database (2023). If the dominance test is not passed, vegetation can be considered hydrophytic if it meets the requirements of the prevalence index, morphological adaptations, or problematic wetland situations (USACE 2006).

4.3.4 Wetland Mapping

For features determined to be potential jurisdictional aquatic resources, Mr. Vollmar walked the boundaries and mapped them using a professional GPS unit with submeter accuracy (Trimble Geo

7x or GeoXH 6000). Data files were post-processed for increased accuracy and exported for analysis in a Geographic Information System (GIS).

5.0 RESULTS

5.1 Overview

The delineation identified a total of 1.924 acres of aquatic resources within the study area that may be subject to federal jurisdiction. These include 0.278 acre of potential jurisdictional Other Waters and 1.646 acres of potential jurisdictional Wetlands (**Table 4** and **Figures 5** and **5A-5H**, below). In addition, the delineation identified one 1.129-acre agricultural pond constructed entirely in uplands. This feature may not meet the criteria for a jurisdictional water of the U.S.

The potential federal jurisdictional Other Waters consist of the open water (unvegetated) areas within the Big Dry Creek Spillway canal and the culvert where Dry Creek crosses beneath the intersection of N Fowler Ave. and E Shepherd Ave. The unvegetated portion of the Big Dry Creek Spillway canal is concentrated in the central and southern portions of the canal within the site. The extent of open water likely changes from year to year and season to season. The mapping represents the extent of open water at the time of the field survey.

The potential federal jurisdictional Wetlands include three types: canal wetlands, depressional wetland basins, and stockponds. The canal wetlands consist of the vegetated portions of the spillway canal exhibiting wetland conditions (wetland soils, hydrology, and vegetation). As with the Other Waters, the extent of Wetlands within the canal likely changes from year to year and season to season. The mapping represents the extent of wetlands at the time of the field survey. The depressional wetland basins consist of basin features that exhibited wetland conditions (wetland soils, hydrology, and vegetation). A total of 22 individual features of this type were delineated within the study area. These features are concentrated in the northeast between the abandoned Dry Creek channel and the toe of the Big Dry Creek Reservoir berm but also in a few areas in the center and northwest of the site. The stockponds consist of three constructed features in a localized area in the northwest of the site.

The feature which may not be subject to federal jurisdiction is an agricultural tailwater pond. It is located immediately outside of the eastern berm confining the Big Dry Creek Spillway canal. This feature exhibited wetland conditions (wetland soils, hydrology, and vegetation) at the time of the 2023 field survey. However, earlier studies of the site that did not take place in such wet years found that the same feature lacked all three factors.

The delineated features are described in more detail below including characteristic soils, hydrology, and vegetation. **Table 4** provides a summary of the delineated features by type. **Figure 5** is a site overview map showing the locations of all delineated features. **Figures 5A-5H** are submaps of on different sections of the study area with delineated features. These figures show the boundaries of the delineated features as well as locations of delineation data points. **Appendix A**

Table 4. Potentially Jurisdictional Aquatic Resources, Vista Ranch Project Site, Fresno County, CA.

Feature ID	Classification and Location of Delineated Features			Acreage	Associated Delin. Data Points
	NWI Code	Latitude	Longitude		
Other Waters					
Canal/Culvert (Non-Wetland Channel)					
NWC-1	R4	36.869438	-119.67422	0.210	P18 (OW)
NWC-2	R4	36.866554	-119.68399	0.068	
Total Canal/Culvert (Non-Wetland Channel)				**0.278**	
Wetlands					
Canal (Wetland Channel & Fringing Margin)					
C-1-A	R4	36.874423	-119.669766	0.417	
C-1-B	R4	36.871462	-119.672261	0.004	
C-1-C	R4	36.869635	-119.67398	0.117	P31 (W); P30 (U)
C-1-D	R4	36.869425	-119.674238	0.003	
C-1-E	R4	36.869629	-119.67403	0.001	
Total Canal (Wetland Channel & Fringing Margin)				**0.542**	
Depressional Wetland Basin					
DWB-1	PEM2	36.8794	-119.678908	0.027	P29 (W); P28 (U)
DWB-2	PEM2	36.87593	-119.669705	0.060	P20 (W); P19 (U)
DWB-3	PEM2	36.873887	-119.66604	0.022	P14 (W); P13 (U)
DWB-4	PEM2	36.873014	-119.665824	0.018	
DWB-5	PEM2	36.873197	-119.665526	0.015	
DWB-6	PEM2	36.87354	-119.664022	0.050	
DWB-7	PEM2	36.873383	-119.663196	0.005	
DWB-8	PEM2	36.87335	-119.662709	0.045	P10 (W); P09 (U)
DWB-9	PEM2	36.873136	-119.662499	0.003	
DWB-10	PEM2	36.873092	-119.662369	0.012	
DWB-11	PEM2	36.872948	-119.662154	0.012	
DWB-12	PEM2	36.872587	-119.661504	0.042	
DWB-13	PEM2	36.872429	-119.660853	0.023	P04 (W); P01-03 (U)
DWB-14	PEM2	36.872512	-119.66020	0.023	
DWB-15	PEM2	36.872488	-119.660075	0.001	
DWB-16	PEM2	36.872437	-119.660113	0.005	
DWB-17	PEM2	36.871805	-119.659027	0.001	
DWB-18	PEM2	36.871748	-119.658791	0.014	P08 (W); P07 (U)
DWB-19	PEM2	36.87128	-119.658567	0.070	P06 (W); P05 (U)
DWB-20	PEM2	36.871193	-119.658211	0.050	
DWB-21	PEM2	36.875991	-119.674751	0.016	P33 (W); P32 (U)
DWB-22	PEM2	36.876146	-119.673879	0.045	P35 (W); P34 (U)
Total Depressional Wetland Basin				**0.559**	
Stockpond					
S-1	PEM2	36.879188	-119.679239	0.111	P26 (W); P25 (U)
S-2	PEM2	36.879948	-119.678203	0.390	P24 (W); P23 (U)

Feature ID	Classification and Location of Delineated Features			Acreage	Associated Delin. Data Points
	NWI Code	Latitude	Longitude		
S-3	PEM2	36.879661	-119.677304	0.044	
Total Stockpond				**0.545**	
Total Wetlands				**1.646**	

provides representative photographs of site habitats and features. **Appendix B** lists all plant species observed within the study area along with the wetland indicator status of each species. **Appendix C** provides copies of all wetland delineation data sheets. **Appendix D** provides the location of each delineation data point. **Appendix E** is an aquatic resources spreadsheet. **Appendix F** provides imagery of the flood irrigation area and pond described above.

5.2 Potential Jurisdictional Aquatic Resources

5.2.1 Other Waters: Canal (Non-wetland Channel)

The southern 0.210 acre of the Big Dry Creek Reservoir Spillway canal (NWC-1) and the culvert where Dry Creek passes beneath the intersection of N Fowler Ave. and E Shepherd Ave. (NWC-2) were delineated as non-wetland channel. These features are classified as Other Waters, with a Cowardin Code of R4, which designates intermittent, riverine features. Other Waters are either unvegetated or sparsely vegetated (<5% absolute cover) but display hydric soils and wetland hydrology indicators. NWC-2 is confined within a concrete box culvert, and lacks vegetation and soils. In total, 0.278 acre of Non-wetland channel were mapped in the study area.

Vegetation. NWC-1 conspicuously lacks any significant wetland vegetation. The steeply eroded sides of NWC-1 suggest that any previous vegetation that may have existed was blown out by recent heavy flows through the channel due to the high seasonal rains (see photo in **Appendix A**).

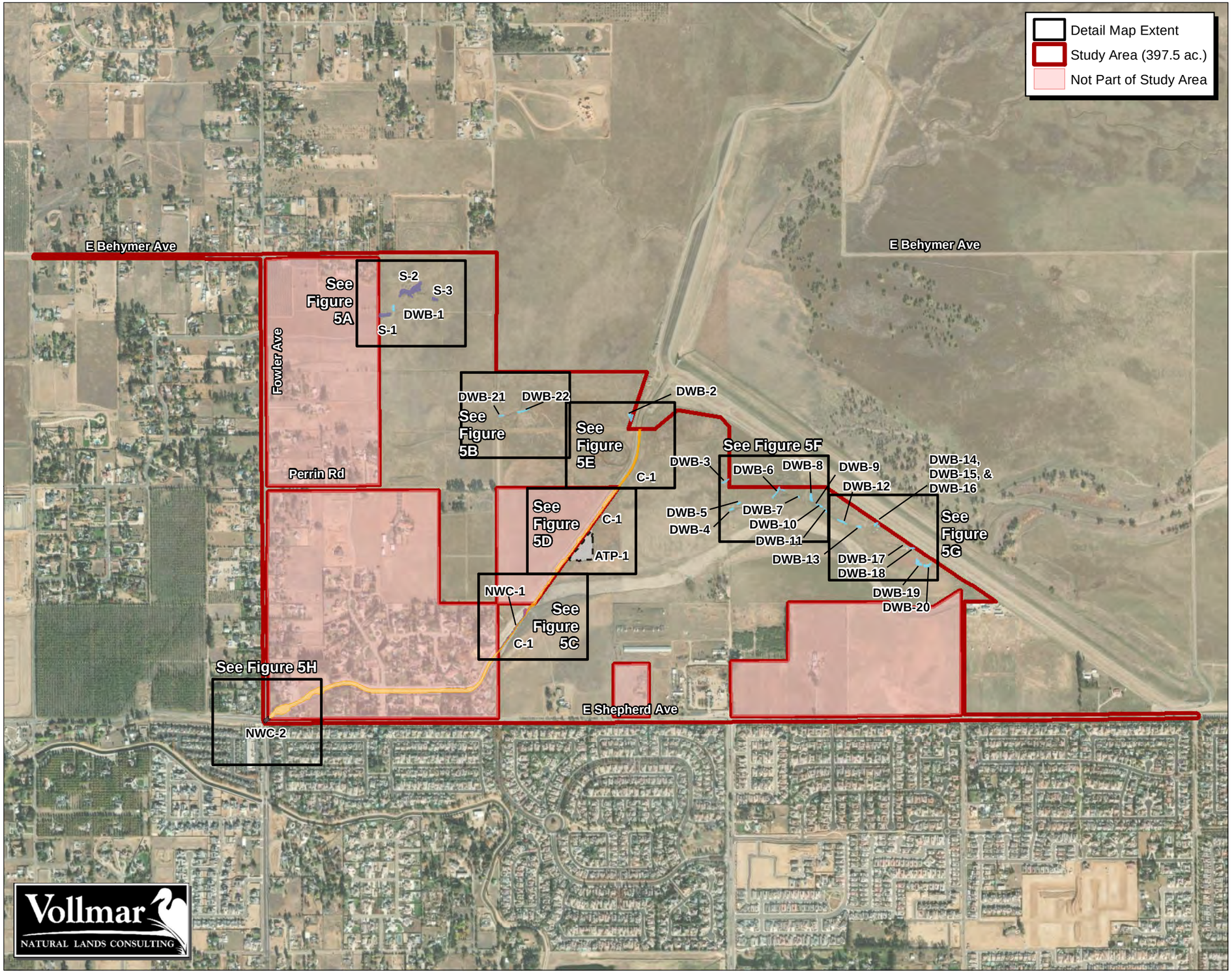
Soil. NWC-1 occurs within Riverwash and Tujunga loamy sand, 0-3% slopes, soil units. The soils were saturated to inundated within 12 inches of the surface at the time of the field survey indicating hydric soil conditions.

Hydrology. Wetland hydrology indicators observed within NWC-1 included the presence of open water. During a separate biological survey on May 10, 2023, VNLC Biologists Rachel Miller and Maria Vollmar observed the entire Big Dry Creek Reservoir Spillway, including the portion delineated as NWC-1, inundated with water to six inches below the top of bank.

Adjacent Upland. Uplands adjacent to NWC-1 are characterized by upland [UPL or NL] and facultative upland [FACU] vegetation dominated by prickly lettuce (*Lactuca serriola*) [FACU], common sunflower (*Helianthus annus*) [FACU], ripgut brome (*Bromus diandrus*) [NL], and soft chess (*Bromus hordeaceus*) [FACU]. The upland soils adjacent to feature NWC-1 were composed of coarse sand with a matrix of 10YR 4/4 and no redox features. No hydrology indicators were observed within the uplands adjacent to NWC-1.

FIGURE 5. Overview Map Potential Jurisdictional Aquatic Resources Map

Vista Ranch Development Fresno County, California



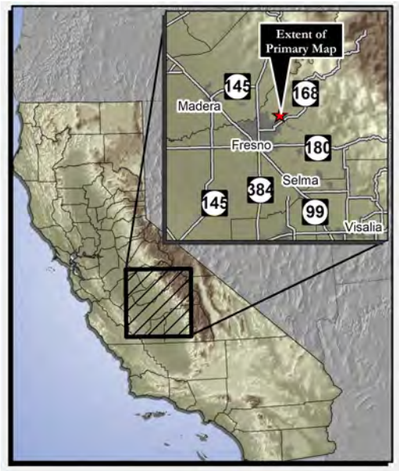
Legend

Potential Jurisdictional Aquatic Resources

- Other Waters; Canal (Non-Wetland Channel) (0.210 ac.)
- Wetland; Canal (Wetland Channel and Fringing Margin) (0.542 ac.)
- Wetland; Depressional Wetland Basin (0.559 ac.)
- Wetland; Stockpond (0.545 ac.)
- Canal (Outside Study Area) (0.858
- Other Waters; Culvert (Non-Wetland Channel) (0.068 ac.)

Features Which May Not be Jurisdictional

- Agricultural Tailwater Pond (1.129 ac.)



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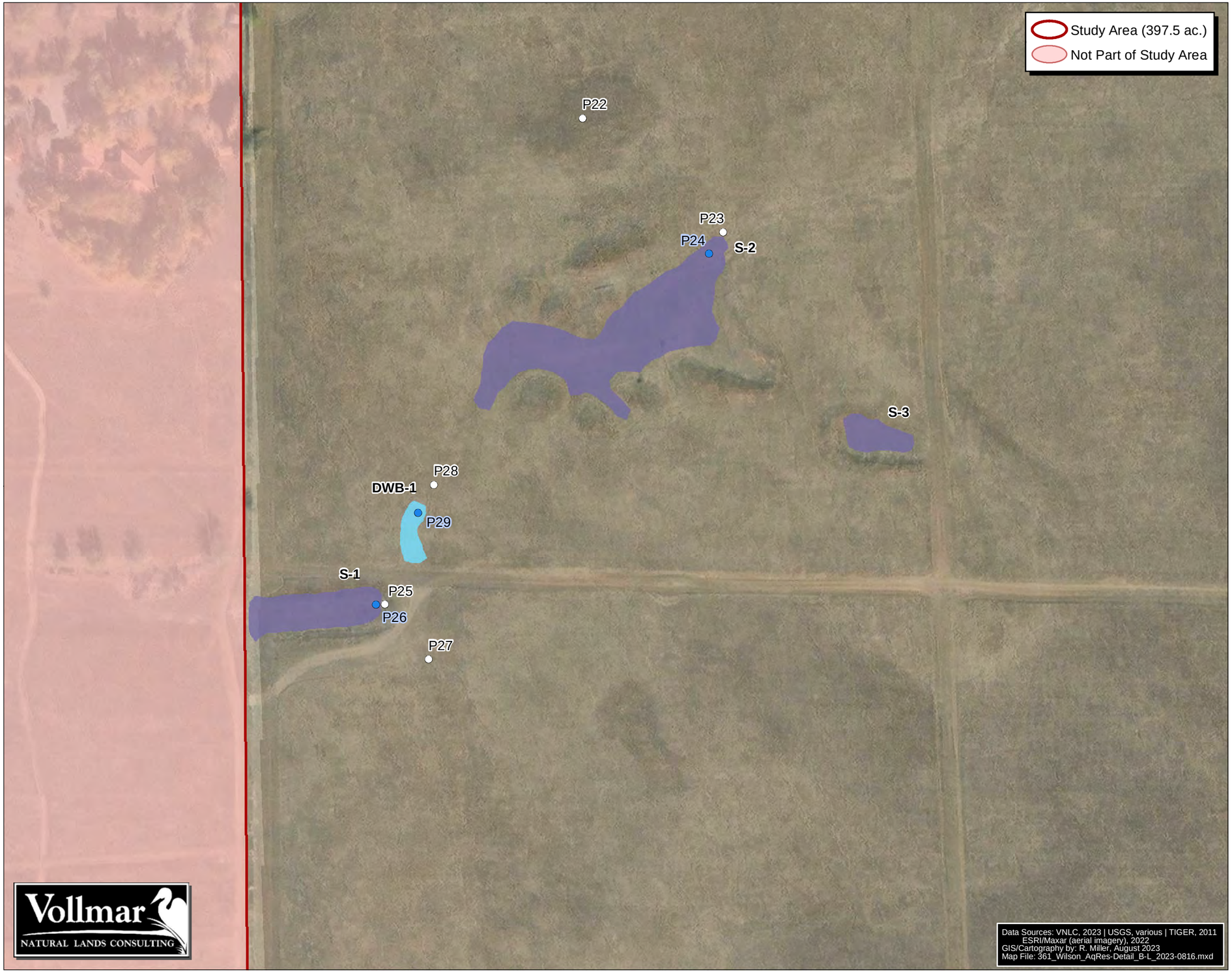
Data Sources: VNLC, 2023 | USGS, various | TIGER, 2011
ESRI/Maxar (aerial imagery), 2022
GIS/Cartography by: E. Smith and R. Miller, August 2023
Map File: 361_Wilson_AqRes-Over_B-L_2023-0816.mxd

FIGURE 5A. Detail Potential Jurisdictional Aquatic Resources Map

Vista Ranch Development
Fresno County, California



Legend

Wetland Delineation Data Point

- Delineation Data Point (Upland)
- Delineation Data Point (Wetland)

Potential Jurisdictional Aquatic Resources*

- Wetland; Depressional Wetland Basin (0.559 ac.)
- Wetland; Stockpond (0.545 ac.)

*Note: acreages shown are for entire study area

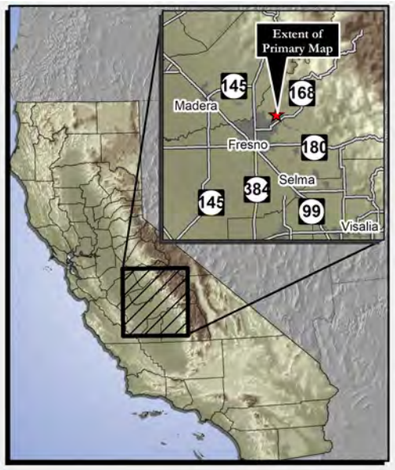


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FIGURE 5B. Detail Potential Jurisdictional Aquatic Resources Map

Vista Ranch Development
Fresno County, California

Legend

Wetland Delineation Data Point

- Delineation Data Point (Upland)
- Delineation Data Point (Wetland)

Potential Jurisdictional Aquatic Resources*

- Wetland; Depressional Wetland Basin (0.559 ac.)

*Note: acreages shown are for entire study area

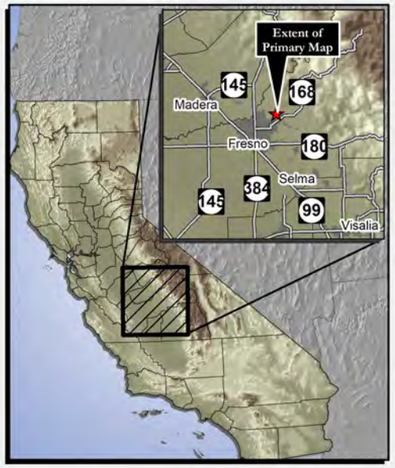

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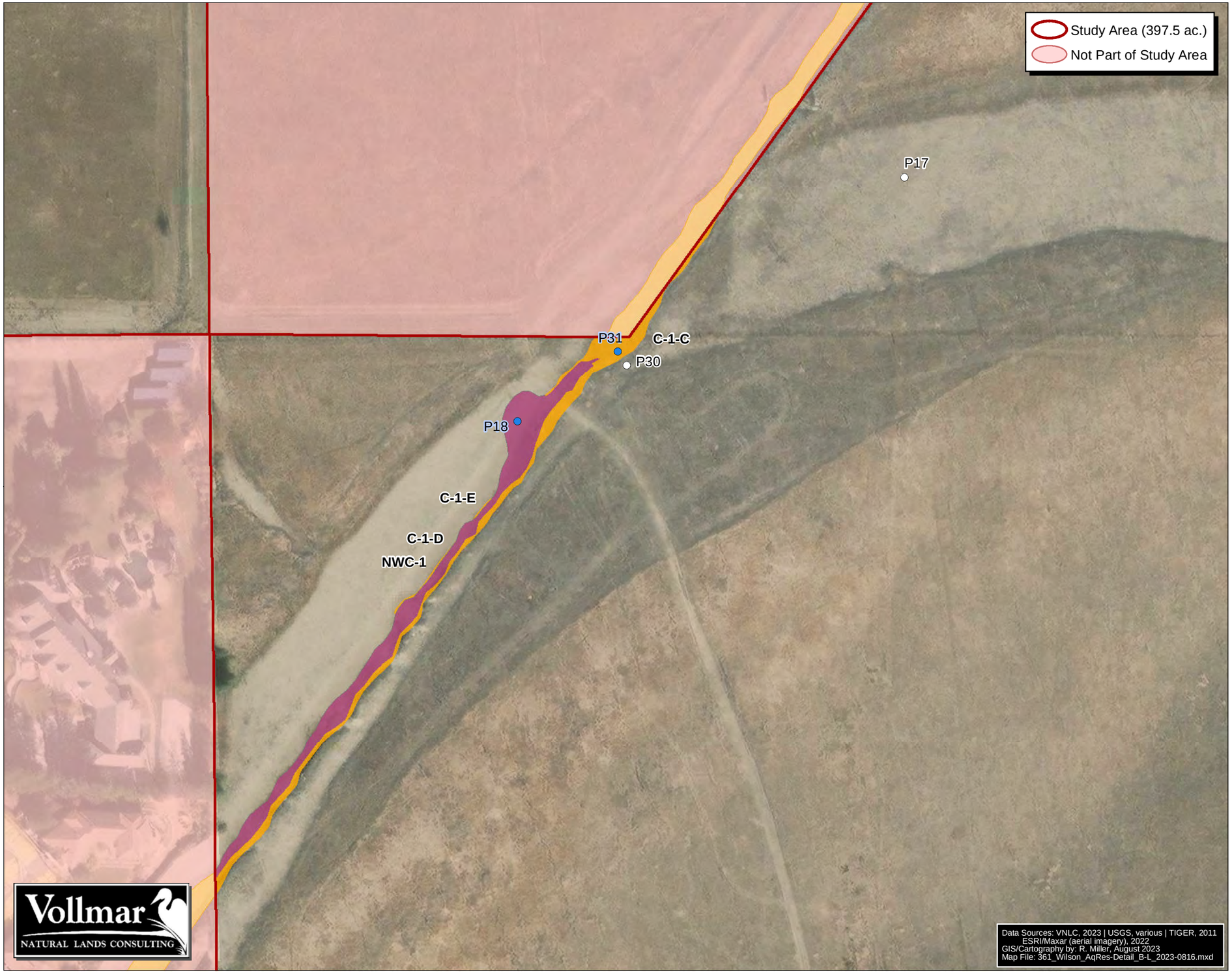
FIGURE 5C. Detail Potential Jurisdictional Aquatic Resources Map

Vista Ranch Development
Fresno County, California



Legend

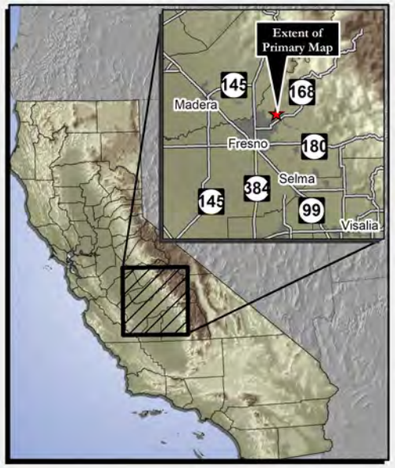
Wetland Delineation Data Point

- Delineation Data Point (Upland)
- Delineation Data Point (Wetland)

Potential Jurisdictional Aquatic Resources*

- Other Waters; Canal (Non-Wetland Channel) (0.210 ac.)
- Wetland; Canal (Wetland Channel and Fringing Margin) (0.542 ac.)
- Canal (Outside Study Area) (0.858 ac.)

*Note: acreages shown are for entire study area



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0 50 100 200 Feet

FIGURE 5D. Detail Potential Jurisdictional Aquatic Resources Map

Vista Ranch Development
Fresno County, California

Legend

Wetland Delineation Data Point

- Delineation Data Point (Upland)
- Delineation Data Point (Wetland)
- Culvert

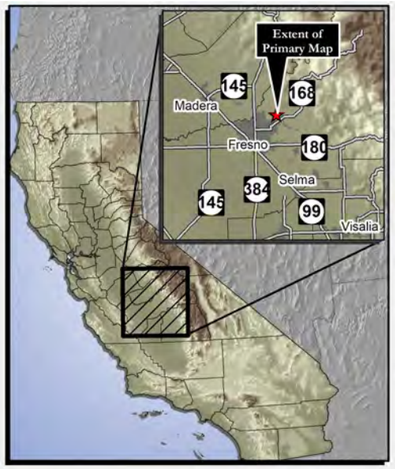
Potential Jurisdictional Aquatic Resources*

- Wetland; Canal (Wetland Channel and Fringing Margin) (0.542 ac.)
- Canal (Outside Study Area) (0.858 ac.)

Features Which May Not be Jurisdictional

- Agricultural Tailwater Pond (1.129 ac.)

*Note: acreages shown are for entire study area



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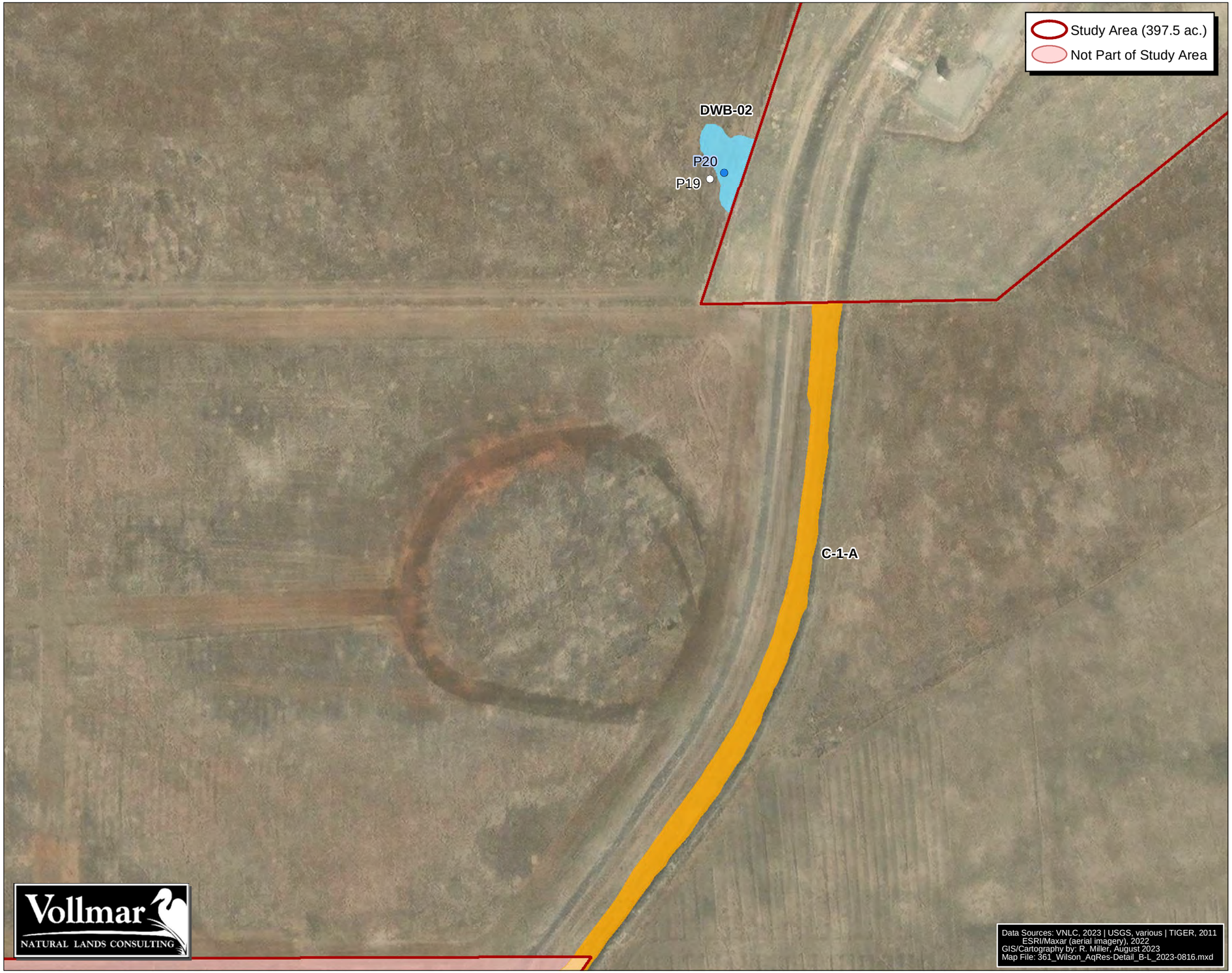
(1 in. = 125 ft. at Tabloid Layout)

0 12.5 25 50 Meters
0 50 100 200 Feet

FIGURE 5E. Detail Potential Jurisdictional Aquatic Resources Map

Vista Ranch Development
Fresno County, California



Legend

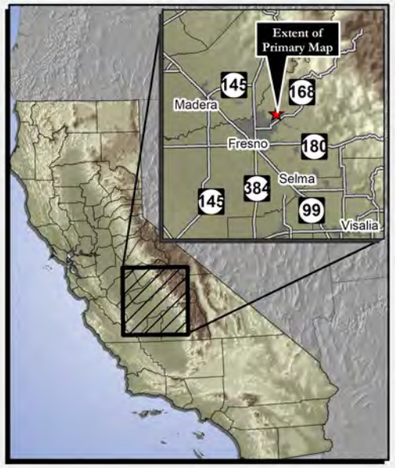
Wetland Delineation Data Point

- Delineation Data Point (Upland)
- Delineation Data Point (Wetland)

Potential Jurisdictional Aquatic Resources*

- Wetland; Canal (Wetland Channel and Fringing Margin) (0.542 ac.)
- Wetland; Depressional Wetland Basin (0.559 ac.)
- Canal (Outside Study Area) (0.858 ac.)

*Note: acreages shown are for entire study area



N
W E
S

1:1,500
(1 in. = 125 ft. at Tabloid Layout)

0 12.5 25 50 Meters
0 50 100 200 Feet

FIGURE 5F. Detail Potential Jurisdictional Aquatic Resources Map

Vista Ranch Development
Fresno County, California

Legend

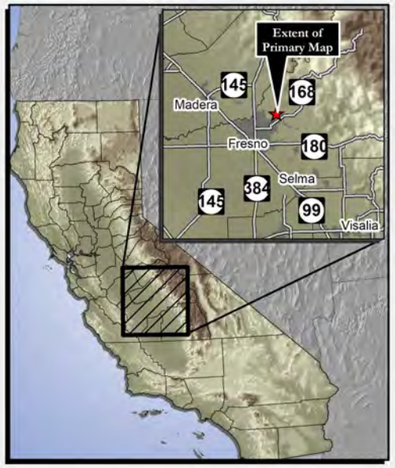
Wetland Delineation Data Point

- Delineation Data Point (Upland)
- Delineation Data Point (Wetland)

Potential Jurisdictional Aquatic Resources*

- Wetland; Depressional Wetland Basin (0.559 ac.)

*Note: acreages shown are for entire study area



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1:1,500
(1 in. = 125 ft. at Tabloid Layout)

0 12.5 25 50 Meters
0 50 100 200 Feet

FIGURE 5G. Detail Potential Jurisdictional Aquatic Resources Map

Vista Ranch Development
Fresno County, California

Legend

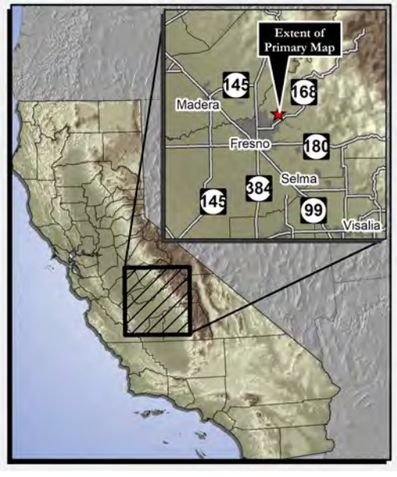
Wetland Delineation Data Point

- Delineation Data Point (Upland)
- Delineation Data Point (Wetland)

Potential Jurisdictional Aquatic Resources*

- Wetland; Depressional Wetland Basin (0.559 ac.)

*Note: acreages shown are for entire study area



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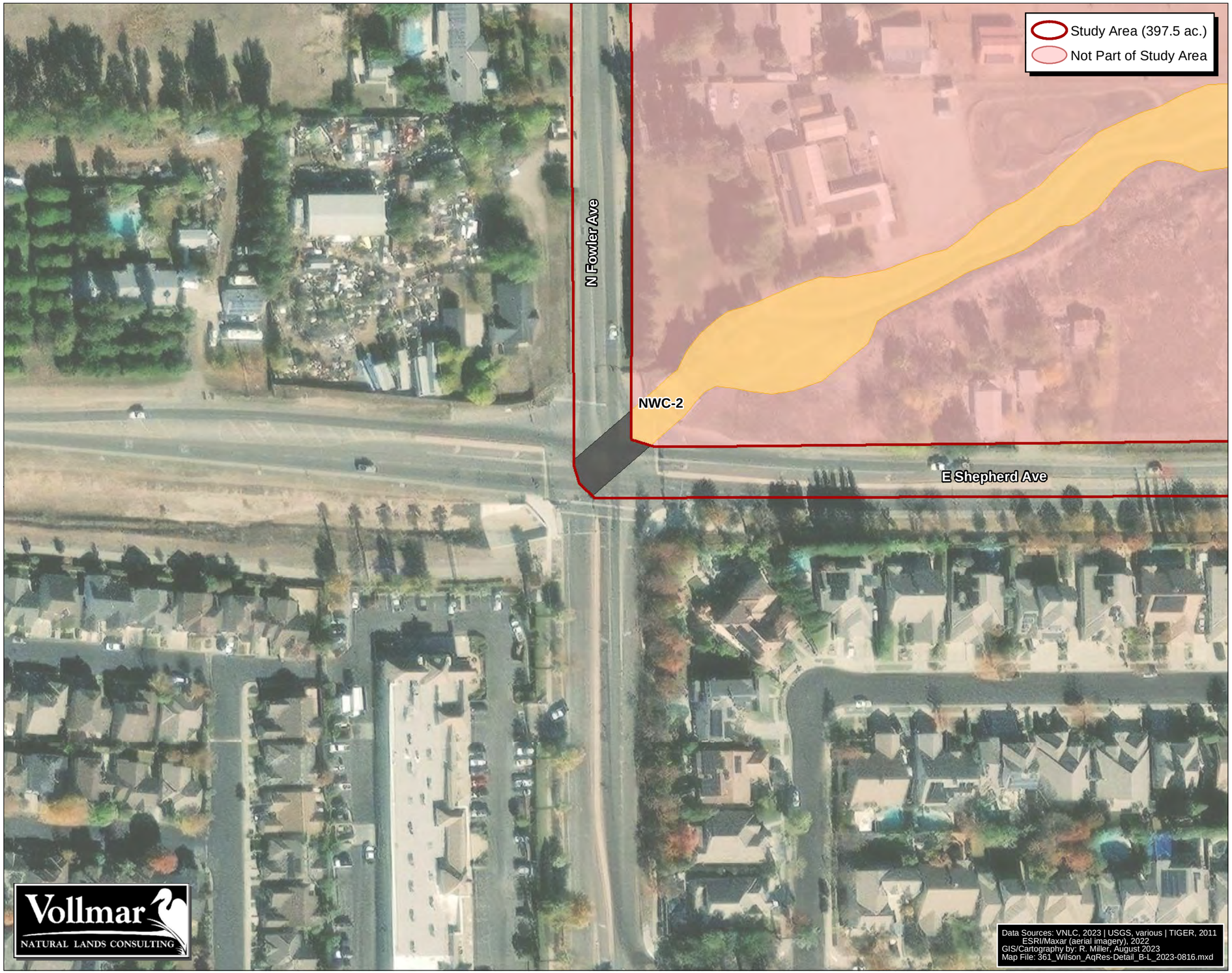
1:1,500
(1 in. = 125 ft. at Tabloid Layout)

0 12.5 25 50 Meters
0 50 100 200 Feet

FIGURE 5H. Detail Potential Jurisdictional Aquatic Resources Map

Vista Ranch Development
Fresno County, California

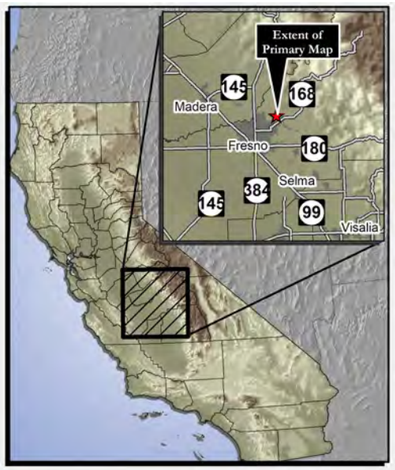


Legend

Potential Jurisdictional Aquatic Resources*

- Canal (Outside Study Area) (0.858 ac.)
- Other Waters; Culvert (Non-Wetland Channel) (0.068 ac.)

*Note: acreages shown are for entire study area



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1:1,500
(1 in. = 125 ft. at Tabloid Layout)

0 12.5 25 50 Meters
0 50 100 200 Feet

5.2.2 Wetland: Canal (Wetland Channel and Fringing Wetland Margin)

A total of 0.542 acre of canal wetlands (wetland channel and fringing wetland margin) were delineated within the Big Dry Creek Reservoir Spillway canal within the study area. This feature is classified as NWI Code R4SB7, which designates a riverine feature with intermittent flows and a vegetated streambed. The study area boundary along the central section of the canal runs along the eastern bank (with areas to the west outside the study area). As a result, the canal wetland habitat within the study area is synthetically split into subsections as it crosses in and out of the study area along this boundary. Five different polygons were mapped (C-1-A though C-1-E) with a combined area of 0.542 acre within the study (as shown on the figures and in **Table 4**).

Vegetation. Vegetation within feature C-1 was dominated by wetland plants including burhead (*Echinodorus berteroi*) [OBL], rough cocklebur (*Xanthium strumarium*) [FAC], tall flatsedge (*Cyperus eragrostris*) [FACW] and common spikerush (*Eleocharis macrostachya*) [OBL].

Soil. Feature C-1 occurs within several mapped soil units. These include San Joaquin loam, 0-3% slopes, Grangeville fine sandy loam, 0-1% slopes, Riverwash, and Tujunga loamy sand, 0-3% slopes. Soils examined within C-1 were composed of sandy loam with a matrix of 10YR 4/2 with 10% distinct redox manganese (Mn) concentrations (10YR 2/1) occurring in the matrix. This soil qualifies as a hydric soil as F3 Depleted Matrix.

Hydrology. Wetland hydrology indicators observed within C-1 included surface soil cracks (B6), a biotic crust (B12), water-stained leaves (B9), and observed inundation and saturation.

Adjacent Upland. The uplands adjacent to feature C-1 had soil, hydrology, and vegetation characteristics similar to those recorded for uplands adjacent to the NWC-1.

5.2.3 Wetland: Depressional Wetland Basins

A total of 0.559 acre of depressional wetland basins were delineated within the study area. These features (DWB-1 through DWB-22) are classified as NWI Code PEM2, which designates nonpersistent (seasonal) palustrine features with emergent vegetation. Most of these delineated features are located in the northeast of the site between the abandoned Dry Creek channel and the toe of the Big Dry Creek Reservoir berm. One additional feature (DWB-2) is located near the spillway on the west side of the canal. Two additional features are located near the center of the site (DWB-21 and 22) and another is located in the northwest near the stockponds (DWB-1).

The delineated depressional wetland basins in the northeast (DWB-3 through DWB-20) are situated within a series of apparently remnant swales on the historic floodplain of Dry Creek. The soils in this area are primarily Grangeville fine sandy loam and Foster loam (**Figure 3**) both of which are floodplain soils lacking a subsurface hardpan. The soils in the northwest of this area and some areas further to the west are primarily San Joaquin loam which has a subsurface hardpan. These soils differences appear to influence the water-holding capacity of depressional basins and

the extent of wetland habitat within the swales in this area. The swales and associated depressional basins on the Grangeville and Foster soils appear prone to relatively rapid draining after rain events. The heavy rains in the winter and spring of 2023 caused extensive and prolonged flooding of the swales that was considered atypical. During an April 17, 2023 site visit (following heavy March rains) by Mr. Vollmar, the swales were all flooded with some features ponded in excess of two feet. During a follow up site visit on May 16, 2023, nearly all of the swales were drained with water remaining in only the lowest portion of some of the swales – most of which were later delineated as depressional wetland basins. This quick drawdown reflects the underlying soils that lack a subsurface hardpan and are thus moderately to well drained.

The extensive flooding seems to have increased the extent of wetland vegetation observed within the swales during the delineation field work. Careful examination of the soils within the swales showed that many areas dominated by moderate wetland vegetation (FAC and FACW species) lacked hydric soils and were thus delineated as upland (non-wetland) habitats since they didn't exhibit all three wetland parameters (wetland soils, hydrology, and vegetation). It is assumed that during a more typical (average) rain year, these swales would be prone to only temporary inundation or saturation following rain events and would generally lack clear wetland vegetation except in the deepest basins within the swales. Also, during heavy rain years that fill the Big Dry Creek Reservoir, water tends to seep from the foot of the levee bordering the site, also enhancing the extent and duration of ponding within the swales during heavy rain years. The soil, hydrology, and vegetation conditions observed during the field surveys are discussed in more detail below, including within delineated depressional wetland basins as well as areas around the margins of the delineated features with moderate wetland vegetation and hydrology but lacking hydric soils.

Vegetation. Common dominant vegetation within the delineated depressional wetland basins included common lippia (*Phyla nodiflora*) [FACW], swamp pricklegrass (*Crypsis schoenoides*) [FACW] and saltgrass (*Distichlis spicata*) [FAC]. Common subdominant species included Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*) [FAC], common vernal pool allocarya (*Plagiobothrys stipitatus* var. *micranthus*) [FACW], great valley button celery (*Eryngium castrense*) [OBL], hyssop loosestrife (*Lythrum hyssopifolia*), and Italian rye grass (*Festuca perennis*) [FAC]. Many of the basins had a low cover of vegetation and became colonized by a upland species once they dried down such as pigweed amaranth (*Amaranthus albus*) [FACU], common sunflower (*Helianthus annuus*) [FACU], seaside heliotrope (*Heliotropium curassavicum*) [FACU], lamb's quarter's (*Chenopodium album*) [FACU], alkali mallow (*Malvella leprosa*), and puncture vine (*Tribilus terrestris*) [NL].

Soil. Depressional wetland basins occur within the following soil units: San Joaquin loam, 0-3% slopes, Hildreth clay, Foster loam, Riverwash, and Grangeville fine sandy loam, hard substratum. Soils examined within depressional wetland basins consisted of loamy clay, clay loam, and some sandy clay. Matrix colors in depressional wetland basin soil pits ranged from 10YR 3/2 to 10YR

2/1, 10YR 2/2, or 10YR 4/3. Distinct and prominent redox features are present at 2% to 30%, with colors ranging from 7.5YR 4/6 to 7.5YR 3/4. Redox features occur as concentrations and depressions within the matrix and occur at the surface or occur between 4 to 9 inches below the surface. All soils within delineated depressional wetland basins qualify for F3 Depleted Matrix.

Hydrology. Hydrology indicators observed within depressional wetland basins included sediment deposits, surface soil cracks, the presence of water table and soil saturation, and inundation visible on aerial imagery.

Adjacent Upland. Common dominant plant species at upland delineation points located along the swales adjacent to mapped depressional wetland basins included most of the same plant species documented in the depressional wetland basins though the FACW and OBL species tended to have a moderately lower cover and the FAC and FACU species tended to have a moderately higher cover. In general, these areas supported a dominance of wetland plant species and met the criteria for supporting wetland vegetation.

The soils at upland delineation points in adjacent swales areas were composed of clay loam, silty clay loam, and sandy clay loam. Matrix colors of upland soils include 100% 10YR 3/2 or 10YR 4/3 without redox features (or less than 2%). These soils do not qualify for any hydric soil indicators. Point P03 (adjacent to DWB-13 and paired with wetland delineation data point P04) displayed 15% prominent (7.5YR 3/4) depressions in the matrix, starting below 16 inches. Due to the depth of the redox features, this point does not qualify for any hydric soil indicators.

Wetland hydrology indicators were observed within many points mapped as uplands along the swales adjacent to delineated depressional wetland basins. Common hydrology indicators included surface soil cracks, sediment deposits, and the presence of inundation observed during separate biological surveys conducted in April 2023 by Mr. Vollmar. As with the vegetation, these wetland hydrology indicators were likely enhanced by the extensive and prolonged atypical flooding earlier in the year.

5.2.4 Wetland: Stockponds

A total of 0.545 acre of stockponds were delineated within the study area, with three ponds (S-1, S-2, and S-3) located in the northwest of the site. These stockponds are classified as NWI Code PEM2, which designates nonpersistent (seasonal) palustrine features with emergent vegetation.

Vegetation. The stockponds were dominated by obligate [OBL] and facultative wetland [FACW] plant species, including common spikerush [OBL], burhead [OBL], and curly dock [FAC]. The upper rim of Stockpond S-2 also supported some additional wetland plant species such as Great Valley button celery (*Eryngium castrense*) [OBL], hyssop loosestrife (*Lythrum hyssopifolia*) [OBL], and Mediterranean barley [FAC].

Soil. The stockponds occur within the following soil units: San Joaquin loam, 0-3% slopes and Atwater sandy loam, moderately deep, 0-3% slopes. Soils within the stockponds consist of clay loam, clay, and silty clay loam. The most common matrix colors observed in soil pits were 7.5YR 3/2, with some matrices of 7.5YR 2.5/3, 7.5YR 2.5/2, or 7.5YR 3/1. Distinct (5YR 3/4 or 5YR 4/6) redox features occur at densities of 5%-30%, and layers with higher densities of redox features occur at 3-8 inches below the surface. All of these soils qualify for indicator F3 Depleted Matrix.

Hydrology. Wetland hydrology indicators observed within the stockponds included sediment deposits, surface soil cracks, and observed ponding by Mr. Vollmar during a separate biological survey in April 2023.

Adjacent Upland. At upland delineation points adjacent to stockponds, vegetation was dominated by a mix of upland and facultative vegetation. Common dominant species included curly dock [FAC], summer mustard (*Hirschfeldia incana*) [NL], slender wild oat (*Avena barbata*) [NL], hood canary grass (*Phalaris paradoxa*) [FAC], soft chess [FACU], common sunflower [FACU], and seaside heliotrope [FACU]. The elevated cover of facultative [FAC] species such as curly dock is likely due to excess ponding from the heavier-than-normal 2023 wet season. Such vegetation is likely not present or as prominent in a normal rain year in upland areas around the stock ponds.

Soil pits in uplands adjacent to the stockponds are composed of clay and clay loam with matrix values ranging from 7.5YR 3/3 to 7.5YR 3/2. A low density (2%) of distinct (5YR 4/4 or 5YR 3/4) redox features is present in some areas. These redox features begin 4-10 inches below the surface and occur as depletions in the matrix. All soils at upland soil pits contained redox features at densities which are too low to qualify for any hydric soil indicator.

Upland areas adjacent to the stockponds generally lacked wetland hydrology indicators. In some areas, such as swales leading into stockponds, sediment deposits were observed. These deposits were likely caused by high seasonal flooding due to atypically high rain conditions during the 2023 wet season. As with the depressional wetland basins described above, the lack of hydric soil indicators within upland delineation points indicates that, during typical rain years, surrounding uplands and non-wetland swales would not remain inundated for at least 5% of the growing season (14 consecutive days).

5.3 Uplands and Other Non-jurisdictional Areas

The areas within the site that were not delineated as potential jurisdictional Wetlands or Other Waters of the US are considered uplands or otherwise non-jurisdictional habitats. As discussed above, some of these areas (swales) had wetland vegetation and indicators of wetland hydrology but did not exhibit indicators of hydric soils. This was likely due to the effects of the heavy rains during the preceding winter and spring that caused extensive and prolonged atypical flooding in low areas on the site. Since these areas lacked hydric soil indicators, they were delineated as upland

habitats. Delineation data points P01, P02, P03, P05, P07, P09, P12, P13, P19, P22, P23, P25, P27, P28, P32, and P34 exhibit these characteristics.

As described above, there is a roughly 30-acre pasture in the central portion of the site that was graded and set-up for flood irrigation in the 1950s (see historical aerial imagery in **Appendix F**). A large (1.129-acre) triangular agricultural tailwater pond was constructed as part of this system. It is located in the southwest of the field adjacent to the outer toe of the berm bordering the Big Dry Creek Reservoir Spillway canal. Delineation data points P15 and P16 are located at the northern edge of this pond. The pond is mapped in **Figure 5D**. It appears that the system was set up such that the stand pipes released irrigation water along the south end of the field, the water flowed across the field to the north, and excess tailwater passively flowed back and into the tailwater pond through a ditch that ran along the north end of the field to the west and then south along the outer toe of the spillway channel berm. Flood irrigation is no longer conducted in this area but the remnant standpipes, flood berms, and pond remain. There is a culvert at the north end of the pond (location shown on **Figure 5D**) that appears to have been installed to allow excess water in the pond to drain into the adjacent spillway canal. This culvert may allow communication between the tailwater pond and the spillway channel. The pond likely still receives sheet flow from the graded field via remnant tailwater ditch during storms. The pond was fully inundated in 2023, and remained ponded at least four feet deep at the time of the June field work. This prolonged ponding caused the establishment of a narrow band (average three-feet wide) of habitat with wetland vegetation and soils around the upper rim of the pond. This area is documented in delineation data point P16 and shown in the photograph in **Appendix A**. An earlier investigation of the site conducted in August 2022 found that the pond lacked wetland vegetation, soils, or hydrology (ECORP 2023). This pond is an artificial feature that was originally constructed in an upland area as part of an agricultural operation. Based on these characteristics, it appears that this feature qualifies as non-jurisdictional under current federal regulations.

The abandoned Dry Creek channel section on the site exhibited strictly upland habitat characteristics including soils, hydrology, and vegetation. This channel section was cut-off from flow along Dry Creek in 1948 when the Big Dry Creek Dam and Reservoir were constructed and the creek re-routed through the reservoir and down the newly-created channel below the spillway. This is visible in the 1937, 1946, and 1950 historical aerial images presented in **Appendix F**. The soils in the abandoned channel are highly permeable coarse sands, and there were no indications, even with the heavy rains of the past winter and spring, that any water flows in this channel. Delineation data points P21 and P17 are located in the upper and lower ends of the abandoned channel on the site, respectively.

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APPENDIX A

Representative Site Photographs

Photo 1. Representative depressional wetland basin (DWB-13), showing typical low basin within adjacent non-wetland swale. Facing northwest. (6/21/23)

Photo 2. Depressional wetland basin DWB-18, showing typical low basin within adjacent non-wetland swale. Facing northwest. (6/10/23)

Photo 3. Upland delineation point P12, within a non-wetland swale dominated by alkali mallow (*Malvella leprosa*) [FACU] and saltgrass (*Cynodon dactylon*) [FAC]. Facing east. (6/10/23)

Photo 4. Agricultural tailwater pond with upland grassland on right and sparsely vegetated wetland margin in foreground. Facing south. (6/10/23)

Photo 5. Upland delineation point P17, within west end of abandoned channel of Dry Creek. Facing east. (6/10/23)

Photo 6. Stockpond S-2 dominated by curly dock (*Rumex crispus*) [FAC] and common spikerush and (*Eleocharis macrostachya*) [OBL]. Facing northeast. (6/10/23)

Photo 7. Representative photo of canal (wetland channel and fringing wetland margin) feature C-1, showing wetland vegetation dominated by burhead (*Echinodorus berteroi*). Facing southwest. (6/29/23)

Photo 8. Non-wetland channel NWC-1, showing steep, eroded sides of the channel with unvegetated bottom. Facing southwest. (6/29/23).

Photo 9. Upland berm adjacent to Big Dry Creek Reservoir Spillway (feature C-1), showing upland vegetation dominated by non-native annual grasses and weeds. Facing northeast. (6/29/23)

APPENDIX B

Plant List

The indicator status of each species was checked using the most recent ACOE National Wetland Plant List—Version 3.5 (Lichvar et al. 2020). Indicator status categories are as follows:

- OBL = obligate wetland; >99% probability of occurring in a wetland
- FACW = facultative wetland; 67%-99% probability of occurring in a wetland
- FAC = facultative; 33%-67% probability of occurring in a wetland
- FACU = facultative upland; 1%-33% probability of occurring in a wetland
- UPL = obligate upland; <1% probability of occurring in a wetland
- NL = not listed (plants not listed in Lichvar et al. [2020], including some known to occur occasionally or primarily in wetlands)

Table B-1. Plant List

Scientific Name	Common Name	WIS
Alisma triviale	Northern water plantain	OBL
Alopecurus saccatus	Pacific foxtail	OBL
Amaranthus albus	Pigweed amaranth	FACU
Amsinckia menziesii	Small flowered fiddleneck	NL
Avena barbata	Slender oat	NL
Brassica nigra	Black mustard	NL
Bromus diandrus	Ripgut brome	NL
Bromus hordeaceus	Soft chess	FACU
Bromus madritensis	Spanish brome	UPL
Centaurea solstitialis	Yellow star thistle	NL
Centromadia pungens	Common tarweed	FAC
Chenopodium album	Lamb's quarters	FACU
Croton setiger	Turkey-mullein	NL
Crypsis schoenoides	Swamp picklegrass	FACW
Cynodon dactylon	Bermuda grass	FACU
Cyperus eragrostis	Tall flatsedge	FACW
Distichlis spicata	Saltgrass	FAC
Echinodorus berteroi	Burhead	OBL
Eleocharis macrostachya	Common spikerush	OBL
Eriogonum gracile	Slender buckwheat	NL
Erodium moschatum	Musky stork's bill	NL
Eryngium castrense	Great valley button celery	OBL
Festuca bromoides	Brome fescue	FACU
Festuca myuros	Rattail sixweeks grass	FACU
Festuca perennis	Italian rye grass	FAC
Helianthus annuus	Common sunflower	FACU
Heliotropium curassavicum	Seaside heliotrope	FACU
Hirschfeldia incana	Summer mustard	NL
Hordeum marinum ssp. *gussoneanum*	Mediterranean barley	FAC
Lactuca serriola	Prickly lettuce	FACU

Scientific Name	Common Name	WIS
Layia platyglossa	Coastal tidytips	NL
Lupinus formosus	Western lupine	NL
Lythrum hyssopifolia	Hyssop loosestrife	OBL
Malvella leprosa	Alkali mallow	FACU
Marsilea vestita	Hairy waterclover	OBL
Medicago polymorpha	California burclover	FACU
Phalaris paradoxa	Hood canary grass	FAC
Phyla nodiflora	Common lippia	FACW
Plagiobothrys stipitatus var. *micranthus*	Common vernal pool allocarya	FACW
Polypogon monspeliensis	Annual beard grass	FACW
Rumex crispus	Curly dock	FAC
Rumex dentatus	Toothed dock	FACW
Sonchus oleraceus	Common sowthistle	UPL
Spergularia rubra	Ruby sandspurry	FAC
Tribulus terrestris	Puncture vine	NL
Triglochin scilloides	Flowering-quillwort	OBL
Typha angustifolia	Narrow leaf cattail	OBL
Vicia villosa	Hairy vetch	NL
Xanthium strumarium	Rough cocklebur	FAC

APPENDIX C

Wetland Delineation Data Sheets

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P01

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.872372 Long: -119.660584 Datum: NAD83

Soil Map Unit Name: Foster Loam NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◯ No ◉

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ◉	No ◯	
Hydric Soil Present?	Yes ◯	No ◉	**Is the Sampled Area within a Wetland?** Yes ◯ No ◉
Wetland Hydrology Present?	Yes ◉	No ◯	

Remarks:

Point is along a remnant swale on the historic floodplain of Dry Creek with P02, P03, and P04. High winter rains caused atypical seasonal flooding but point lacks hydric soils.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Phyla nodiflora*	15	Yes	FACW
2. *Hordeum marinum ssp. gussoneanum*	10	Yes	FAC
3. *Festuca perennis*	10	Yes	FAC
4. *Amaranthus albus*	5	No	FACU
5. *Lythrum hyssopifolia*	2	No	OBL
6. *Centromadia pungens*	1	No	FAC
7.			
8.			
Total Cover:	43 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 57 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	x 1 =	2
FACW species	15	x 2 =	30
FAC species	21	x 3 =	63
FACU species	5	x 4 =	20
UPL species		x 5 =	0
Column Totals:	43 (A)		115 (B)

Prevalence Index = B/A = 2.67

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ◉ No ◯

Remarks:

Wetland vegetation enhanced this season by atypical prolonged flooding from heavy winter rains.

SOIL

Sampling Point: P01

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12+	10YR 4/3	100					silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils non-hydric, indicate non-hydric conditions during normal rain years

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Area inundated during winter due to unusual heavy rains causing sediment deposits, but no other surface indicators of wetland hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P02

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.872369 Long: -119.660695 Datum: NAD83

Soil Map Unit Name: Foster Loam NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Point is along a remnant swale on the historic floodplain of Dry Creek with P01, P03, and P04. High winter rains caused atypical seasonal flooding but point lacks hydric soils.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Phyla nodiflora*	45	Yes	FACW
2. *Hordeum marinum ssp. gussoneanum*	5	No	FAC
3. *Festuca perennis*	1	No	FAC
4. *Amaranthus albus*	5	No	FACU
5. *Lythrum hyssopifolia*	1	No	OBL
6. *Tribulus terrestris*	1	No	FAC
7. *Helianthus annuus*	1	No	
8.			
Total Cover:	59 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 41 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species	45	x 2 =	90
FAC species	7	x 3 =	21
FACU species	5	x 4 =	20
UPL species		x 5 =	0
Column Totals:	58 (A)		132 (B)

Prevalence Index = B/A = 2.28

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

Wetland vegetation enhanced this season by atypical prolonged flooding from heavy winter rains.

SOIL

Sampling Point: P02

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

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

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils non-hydric, indicate non-hydric conditions during normal rain years

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Area inundated during winter due to unusual heavy rains causing sediment deposits, but no other surface indicators of wetland hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P03

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

Landform (hillslope, terrace, etc.): Remnant Floodplain Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR): C - Mediterranean California Lat: 36.872384 Long: -119.660759 Datum: NAD83

Soil Map Unit Name: Foster Loam NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Point is along a remnant swale on the historic floodplain of Dry Creek with P01, P02, and P04. High winter rains caused atypical seasonal flooding but point lacks hydric soils.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Phyla nodiflora*	50	Yes	FACW
2. *Crypsis schoenoides*	30	Yes	FACW
3. *Tribulus terrestris*	5	No	Not Listed
4. *Amaranthus albus*	5	No	FACU
5.			
6.			
7.			
8.			
Total Cover:	90 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 10 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	80	x 2 =	160
FAC species		x 3 =	0
FACU species	5	x 4 =	20
UPL species		x 5 =	0
Column Totals:	85 (A)		180 (B)

Prevalence Index = B/A = 2.12

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

Wetland vegetation enhanced this season by atypical prolonged flooding from heavy winter rains.

SOIL

Sampling Point: P03

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-16	10YR 3/2	100					sandy clay loam	
16-20+	10YR 3/2	85	7.5YR3/4	15	D	M	sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

Soils non-hydric, indicate non-hydric conditions during normal rain years

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ● No ○

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

Remarks:

Area inundated during winter due to unusual heavy rains causing sediment deposits and surface soil cracks, but no other surface indicators of wetland hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P04

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

Landform (hillslope, terrace, etc.): Remnant Floodplain Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 36.872408 Long: -119.660814 Datum: NAD83

Soil Map Unit Name: Foster Loam NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ●	No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Low basin area along swale system - likely pends or becomes saturated for prolonged periods during normal or even drought years.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Phyla nodiflora*	5	Yes	FACW
2. *Crypsis schoenoides*	15	Yes	FACW
3. *Tribulus terrestris*	1	No	Not Listed
4. *Amaranthus albus*	1	No	FACU
5.			
6.			
7.			
8.			
Total Cover:	22 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 78 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	20	x 2 =	40
FAC species		x 3 =	0
FACU species	1	x 4 =	4
UPL species		x 5 =	0
Column Totals:	21 (A)		44 (B)

Prevalence Index = B/A = 2.10

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: P04

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-4	10YR 3/2	100					loamy clay	
4-12+	10YR 3/2	70	7.5YR3/4	30	D	M	sandy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils moist at time of survey

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Deeply ponded (24+") during April 17 site visit for other surveys.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P05

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

Landform (hillslope, terrace, etc.): Remnant Floodplain Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR): C - Mediterranean California Lat: 36.872408 Long: -119.660814 Datum: NAD83

Soil Map Unit Name: Grangeville fine sandy loam, hard substratum NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ○	No ●	

Remarks:

Upland slope adjacent to shallow basin at P06, wetland vegetation enhanced by heavy seasonal flooding.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Distichlis spicata*	5	No	FAC
2. *Festuca perennis*	15	Yes	FAC
3. *Hordeum marinum ssp. gussoneanum*	5	No	FAC
4. *Phyla nodiflora*	25	Yes	FACW
5. *Heliotropium curassavicum*	1	No	FACU
6. *Lythrum hyssopifolia*	1	No	OBL
7. *Malvella leprosa*	8	No	Not Listed
8.			
Total Cover:	60 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 40 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species	25	x 2 =	50
FAC species	25	x 3 =	75
FACU species	1	x 4 =	4
UPL species		x 5 =	0
Column Totals:	52 (A)		130 (B)

Prevalence Index = B/A = 2.50

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: P05

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

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

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ○	No ●	Depth (inches): 0
Water Table Present?	Yes ○	No ●	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ●	Depth (inches): 0

Wetland Hydrology Present? Yes ○ No ●

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

Remarks:

No surface indicators of wetland hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P06

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

Landform (hillslope, terrace, etc.): Remnant Floodplain Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 36.871217 Long: -119.658458 Datum: NAD83

Soil Map Unit Name: Grangeville fine sandy loam, hard substratum NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ●	No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Shallow basin along swale system. A typical heavy winter rains likely enhanced wetland conditions.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Crypsis schoenoides*	12	Yes	FACW
2. *Amaranthus albus*	2	No	FACU
3. *Heliotropium curassavicum*	1	No	FACU
4. *Phyla nodiflora*	1	No	FACW
5.			
6.			
7.			
8.			
Total Cover:	16 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 84 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	13	x 2 =	26
FAC species		x 3 =	0
FACU species	3	x 4 =	12
UPL species		x 5 =	0
Column Totals:	16 (A)		38 (B)

Prevalence Index = B/A = 2.38

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: P06

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-8	10YR 3/2	100					sandy clay loam	
8-12+	10YR 3/2	90	7.5YR3/4	10	D	M	loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes (●) No ( )

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [x] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [x] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes (●) No ( )

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

Remarks:

Ponded 12+" deep during April 17 site visit for other surveys.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P07

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.871745 Long: -119.658927 Datum: NAD83

Soil Map Unit Name: Foster loam NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Swale connected to basin at P08. Wetland vegetation likely enhanced by heavy winter rains causing atypical prolonged site flooding, but non-hydric soils.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Centromadia pungens*	20	Yes	FAC
2. *Hordeum marinum ssp. gussoneanum*	9	Yes	FAC
3. *Bromus hordeaceus*	1	No	FACU
4. *Lythrum hyssopifolia*	1	No	OBL
5.			
6.			
7.			
8.			
Total Cover:	31 %		

Woody Vine Stratum Plot size: _____			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 69 % % Cover of Biotic Crust _____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species		x 2 =	0
FAC species	29	x 3 =	87
FACU species	1	x 4 =	4
UPL species		x 5 =	0
Column Totals:	31 (A)		92 (B)

Prevalence Index = B/A = 2.97

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: P07

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-16+	10YR4/2						silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ○	No ●	Depth (inches): 0
Water Table Present?	Yes ○	No ●	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ●	Depth (inches): 0

Wetland Hydrology Present? Yes ● No ○

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

Remarks:

Ponded during April 17 site visit for other surveys. Sediment deposits/surface soil cracks due to flooding from atypical heavy season rains.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P08

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

Landform (hillslope, terrace, etc.): Remnant Floodplain Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 36.871764 Long: -119.658877 Datum: NAD83

Soil Map Unit Name: Foster loam NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Hydric Soil Present?	Yes ●	No ○	
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Small, shallow basin within swale system..

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Distichlis spicata*	10	Yes	FAC
2. *Centromadia pungens*	3	No	FAC
3. *Hordeum marinum ssp. gussoneanum*	5	Yes	FAC
4. *Chenopodium album*	1	No	FACU
5. *Typha angustifolia*	1	No	OBL
6.			
7.			
8.			
Total Cover:	20 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 80 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species		x 2 =	0
FAC species	18	x 3 =	54
FACU species	1	x 4 =	4
UPL species		x 5 =	0
Column Totals:	20 (A)		59 (B)

Prevalence Index = B/A = 2.95

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: P08

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-9	10YR4/2	100					silty clay	
9-12+	10YR3/2	80	7.5YR3/4	20			silty clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches): 0
Water Table Present?	Yes ○	No ◉	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches): 0

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P09

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

Landform (hillslope, terrace, etc.): Remnant Floodplain Local relief (concave, convex, none): none - flat Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 36.873506 Long: -119.662731 Datum: NAD83

Soil Map Unit Name: Foster loam NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Flat adjacent to basin at P10, along swale. Wetland conditions likely enhanced by prolonged flooding from atypical heavy winter rains.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Amaranthus albus*	30	Yes	FACU
2. *Heliotropium curassavicum*	10	No	FACU
3. *Crypsis schoenoides*	25	Yes	FACW
4. *Tribulus terrestris*	5	No	Not Listed
5. *Chenopodium album*	1	No	FACU
6.			
7.			
8.			
Total Cover:	71 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 29 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	25	x 2 =	50
FAC species		x 3 =	0
FACU species	41	x 4 =	164
UPL species		x 5 =	0
Column Totals:	66 (A)		214 (B)

Prevalence Index = B/A = 3.24

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ○ No ●

Remarks:

SOIL

Sampling Point: P09

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-16+	10YR3/2	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ○	No ●	Depth (inches): 0
Water Table Present?	Yes ○	No ●	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ○	No ●	Depth (inches): 0

Wetland Hydrology Present? Yes ● No ○

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

Remarks:

Flooded at time of April 17 site visit for other surveys, sediment deposits due to high seasonal flooding from atypical heavy rains, surface soil cracks from high clay component in soil.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P10

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

Landform (hillslope, terrace, etc.): Remnant Floodplain Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): C - Mediterranean California Lat: 36.873469 Long: -119.662726 Datum: NAD83

Soil Map Unit Name: Foster loam NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ●	No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Deep basin, unvegetated except under upper rim. 6" ponding max depth at time of survey.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Crypsis schoenoides*	5	Yes	FACW
2. *Phyla nodiflora*	4	Yes	FACW
3. *Helianthus annuus*	1	No	FACU
4. *Amaranthus albus*	1	No	FACU
5.			
6.			
7.			
8.			
Total Cover:	11 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 89 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	9	x 2 =	18
FAC species		x 3 =	0
FACU species	2	x 4 =	8
UPL species		x 5 =	0
Column Totals:	11 (A)		26 (B)

Prevalence Index = B/A = 2.36

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: P10

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-6	10YR2/2	100					loamy clay	
6-12	10YR2/1	100					loamy lay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches): 0
Water Table Present?	Yes ○	No ◉	Depth (inches): 10
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches): 6

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P11

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

Landform (hillslope, terrace, etc.): Remnant Floodplain Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 36.873372 Long: -119.663191 Datum: NAD83

Soil Map Unit Name: Foster loam NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ●	No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Small basin with mix VP/seasonal marsh vegetation.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Plagiobothrys stipitatus var. micranthus*	5	Yes	FACW
2. *Alopecurus saccatus*	2	No	OBL
3. *Crypsis schoenoides*	5	Yes	FACW
4. *Amaranthus albus*	5	Yes	FACU
5. *Hordeum marinum ssp. gussoneanum*	3	No	FAC
6. *Triglochin scilloides*	2	No	OBL
7.			
8.			
Total Cover:	22 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 78 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	66.7 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	4	x 1 =	4
FACW species	10	x 2 =	20
FAC species	3	x 3 =	9
FACU species	5	x 4 =	20
UPL species		x 5 =	0
Column Totals:	22 (A)		53 (B)

Prevalence Index = B/A = 2.41

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: P11

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-9	10YR3/2	100					loamy clay	
9-12+	10YR3/2	90	75YR4/6	10	C	PL	clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches): 0
Water Table Present?	Yes ○	No ◉	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches): 0

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P12

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.873063 Long: -119.665044 Datum: NAD83

Soil Map Unit Name: Foster loam NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Deep basin along swale but no wetland characteristics. Soils have poor water-holding capacity and lack claypan or hardpan.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Cynodon dactylon*	10		FACU
2. *Malvella leprosa*	15		FACU
3. *Centromadia pungens*	3		FAC
4. *Croton setiger*	2		Not Listed
5. *Hordeum marinum ssp. gussoneanum*	5		FAC
6. *Amaranthus Albus*	1		FACU
7.			
8.			
Total Cover:	36 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 64 % % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	0	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	8	x 3 =	24
FACU species	26	x 4 =	104
UPL species		x 5 =	0
Column Totals:	34 (A)		128 (B)

Prevalence Index = B/A = 3.76

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ○ No ●

Remarks:

SOIL

Sampling Point: P12

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-16+	10YR4/3	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ● No ○

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

Remarks:

Ponded at time of April 17 site visit for other surveys due to heavy winter rains, but quickly drained after rains subsided.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P13

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.873877 Long: -119.666214 Datum: NAD83

Soil Map Unit Name: Foster loam NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Shallow swale/flat connected to VP at P14.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Cynodon dactylon*	2	No	FACU
2. *Croton setiger*	10	Yes	Not Listed
3. *Hordeum marinum ssp. gussoneanum*	10	Yes	FAC
4. *Bromus hordeaceus*	1	No	FACU
5. *Eryngium castrense*	2	No	OBL
6. *Festuca bromoides*	20	Yes	FACU
7.			
8.			
Total Cover:	45 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 55 % % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33.3 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	x 1 =	2
FACW species		x 2 =	0
FAC species	10	x 3 =	30
FACU species	23	x 4 =	92
UPL species		x 5 =	0
Column Totals:	35 (A)		124 (B)

Prevalence Index = B/A = 3.54

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ○ No ●

Remarks:

SOIL

Sampling Point: P13

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-8	10YR4/3	100					clay loam	
8-16+	10YR3/2	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ● No ○

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

Remarks:

Ponded during April 17 site visit for other surveys due to flooding from atypical heavy winter rains, remnant sediment deposits. No other indicators of wetland hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P14

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

Landform (hillslope, terrace, etc.): Remnant Floodplain Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 36.873836 Long: -119.666166 Datum: NAD83

Soil Map Unit Name: San Joaquin loam, 0-3% slopes NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ●	No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Upper end of basin along swale, vernal pool wetland; connects to much deeper feature on adjacent BR land to the east.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Eryngium castrense*	10	Yes	OBL
2. *Lythrum hyssopifolia*	1	No	OBL
3. *Hordeum marinum ssp. gussoneanum*	3	Yes	FAC
4. *Plagiobothrys stipitatus var. micranthus*	1	No	FACW
5.			
6.			
7.			
8.			
Total Cover:	15 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 85 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	11	x 1 =	11
FACW species	1	x 2 =	2
FAC species	3	x 3 =	9
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	15 (A)		22 (B)

Prevalence Index = B/A = 1.47

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: P14

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-4	10YR3/2	98	7.5YR4/6	2	C	PL	clay loam	
4-10	10YR3/2	90	7.5YR4/6	10	C	PL	clay loam	
10-12+	10YR3/2	85	7.5YR4/6	15	C	PL	loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes (●) No ( )

Remarks:

Soil develops increasing redox concentrations with depth.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [x] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [x] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [x] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ( )	No (●)	Depth (inches): 0
Water Table Present?	Yes ( )	No (●)	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ( )	No (●)	Depth (inches): 0

Wetland Hydrology Present? Yes (●) No ( )

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

Remarks:

Ponded during April 17 site visit for other surveys, hydrology directly connected to deeper swale/basin feature to east on adjacent BOR land.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P15

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.872346 Long: -119.671208 Datum: NAD83

Soil Map Unit Name: Foster loam NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Hydric Soil Present?	Yes ○	No ●	
Wetland Hydrology Present?	Yes ○	No ●	

Remarks:

Upland grassland adjacent to agricultural tailwater pond at P16

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Bromus diandrus*	40	Yes	Not Listed
2. *Bromus hordeaceus*	20	Yes	FACU
3. *Avena barbata*	10	No	Not Listed
4. *Centaurea solstitialis*	5	No	Not Listed
5. *Vicia villosa*	2	No	Not Listed
6. *Medicago polymorpha*	3	No	FACU
7.			
8.			
Total Cover:	80 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 20 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	23	x 4 =	92
UPL species		x 5 =	0
Column Totals:	23 (A)		92 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ○ No ●

Remarks:

SOIL

Sampling Point: P15

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-16+	10YR4/3	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ○ No ●

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

Remarks:

No indicators of wetland hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P16

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

Landform (hillslope, terrace, etc.): Remnant Floodplain Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): C - Mediterranean California Lat: 36.872342 Long: -119.671241 Datum: NAD83

Soil Map Unit Name: Foster loam NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ●	No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Edge of agricultural tailwater pond. Inundated 4+ feet deep at time of survey. Rainwater directed to pond by check berms, ditches in adjacent field. Depth and persistence of inundation enhanced by atypical heavy seasonal rains.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Alisma triviale*	4	Yes	OBL
2. *Eleocharis macrostachya*	1	No	OBL
3. *Lythrum hyssopifolia*	1	No	OBL
4.			
5.			
6.			
7.			
8.			
Total Cover:	6 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 94 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	6	x 1 =	6
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	6 (A)		6 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

Wetland vegetation is restricted to an approximately 3 foot wide strip along the pond upper rim. Otherwise, it has unvegetated open water.

SOIL

Sampling Point: P16

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-6	10YR2/1	100					coarse sandy clay	
6-12+	10YR2/1	70	7.5YR3/3	30	D	M	sandy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes (●) No ( )

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ( )	No (●)	Depth (inches): 0
Water Table Present?	Yes ( )	No (●)	Depth (inches): 4
Saturation Present? (includes capillary fringe)	Yes ( )	No (●)	Depth (inches): 2

Wetland Hydrology Present? Yes (●) No ( )

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

Remarks:

Data Point is at edge of pond. Inundation is 3 feet out from data point location.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P17

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

Landform (hillslope, terrace, etc.): Abandoned creek channel Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 36.870678 Long: -119.672572 Datum: NAD83

Soil Map Unit Name: Riverwash NWI classification: Riverine (historical)

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ○	No ●	

Remarks:

West end of abandoned Dry Creek channel. No indications of wetland conditions in spite of heavy winter rains. Coarse sandy soils are highly permeable.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Festuca myuros*	2	No	FACU
2. *Erodium moschatum*	10	Yes	Not Listed
3. *Eriogonum gracile*	3	No	Not Listed
4. *Bromus madritensis*	1	No	UPL
5.			
6.			
7.			
8.			
Total Cover:	16 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 84 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	2	x 4 =	8
UPL species	1	x 5 =	5
Column Totals:	3 (A)		13 (B)

Prevalence Index = B/A = 4.33

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ○ No ●

Remarks:

SOIL

Sampling Point: P17

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-16+	10YR4/4	100					coarse sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

No indicators of wetland hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P18

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

Landform (hillslope, terrace, etc.): Reservoir outflow channel Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 36.870678 Long: -119.672572 Datum: NAD83

Soil Map Unit Name: Riverwash NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ●	No ○	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Point within open water area of outflow channel below Big Dry Creek Reservoir spillway. Channel flowing at time of survey, with 2' maximum water depth. Appears to be a perennial waters feature.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 100% % Cover of Biotic Crust %

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 0 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	(A)		0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ○ No ●

Remarks:

Unvegetated area within outflow channel below reservoir spillway.

SOIL

Sampling Point: P18

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-16+	10YR3/1						silty clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches): 12
Water Table Present?	Yes ◉	No ○	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches): 0

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P19

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.875877 Long: -119.669762 Datum: NAD83

Soil Map Unit Name: San Joaquin loam, 0-3% slopes NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ○	No ●	

Remarks:

Upland habitat adjacent to wetland at P20. Marginal wetland vegetation likely due to extensive flooding due to atypical heavy winter rains.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Centaurea solstitialis*	25	Yes	Not Listed
2. *Festuca perennis*	30	Yes	FAC
3. *Centromadia pungens*	10	No	FAC
4. *Avena barbata*	2	No	Not Listed
5. *Bromus hordeaceus*	2	No	FACU
6. *Hordeum marinum ssp. gussoneanum*	15	No	FAC
7. *Lactuca serriola*	1	No	FACU
8.			
Total Cover:	85 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 15 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	55	x 3 =	165
FACU species	3	x 4 =	12
UPL species		x 5 =	0
Column Totals:	58 (A)		177 (B)

Prevalence Index = B/A = 3.05

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: P19

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-12+	10YR3/2	100					clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ○ No ●

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

Remarks:

No indicators of wetland hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P20

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.875894 Long: -119.669712 Datum: NAD83

Soil Map Unit Name: San Joaquin loam, 0-3% slopes NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ● No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ●	No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Basin along swale formed adjacent to reservoir outflow channel berm.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Lythrum hyssopifolia*	30	Yes	OBL
2. *Rumex crispus*	5	No	FAC
3. *Festuca perennis*	15	Yes	FAC
4. *Plagiobothrys stipitatus var. micranthus*	3	No	FACW
5. *Triglochin scilloides*	2	No	OBL
6. *Eleocharis macrostachya*	3	No	OBL
7. *Polypogon monspeliensis*	2	No	FACW
8.			
Total Cover:	60 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 40 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	35	x 1 =	35
FACW species	5	x 2 =	10
FAC species	20	x 3 =	60
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	60 (A)		105 (B)

Prevalence Index = B/A = 1.75

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: P20

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-16+	10YR3/2	80	7.5YR4/6	20	D	M	loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P21

Investigator(s): John Vollmar Section, Township, Range: S22, T12S, R21E

Landform (hillslope, terrace, etc.): Creek Channel (abandoned) Local relief (concave, convex, none): None: flat Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 36.872269 Long: -119.661903 Datum: NAD83

Soil Map Unit Name: Riverwash NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ○	No ●	

Remarks:

Abandoned remnant Dry Creek channel. No indications of wetlands or other waters in spite of heavy winter rains this season.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Lupinus formosus*	12	Yes	Not Listed
2. *Bromus madritensis*	8	Yes	UPL
3. *Eriogonum gracile*	2	No	Not Listed
4. *Festuca myuros*	5	No	FACU
5. *Erodium moschatum*	5	No	Not Listed
6. *Layia platyglossa*	1	No	Not Listed
7. *Amsinckia menziesii*	1	No	Not Listed
8.			
Total Cover:	34 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 66 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	5	x 4 =	20
UPL species	8	x 5 =	40
Column Totals:	13 (A)		60 (B)

Prevalence Index = B/A = 4.62

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ○ No ●

Remarks:

SOIL

Sampling Point: P21

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-16+	10YR4/4	100					Coarse sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ○ No ●

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

Remarks:

No indicators of wetland hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P22

Investigator(s): John Vollmar Section, Township, Range: S21, T12S, R21E

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None: flat Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 36.880550 Long: -119.678306 Datum: NAD83

Soil Map Unit Name: Atwater sandy loam, moderately deep, 0-3% slopes NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Broad, flat, shallow depression. Presence/cover of wetland plants likely enhanced by high seasonal flooding. Non-hydric soils indicate not a wetland habitat.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Phalaris paradoxa*	4	No	FAC
2. *Hirschfeldia incana*	9	Yes	Not Listed
3. *Avena barbata*	5	No	Not Listed
4. *Lactuca serriola*	1	No	FACU
5. *Festuca myuros*	1	No	FACU
6. *Hordeum marinum ssp. gussoneanum*	1	No	FAC
7. *Rumex crispus*	8	Yes	FAC
8. *Lythrum hyssopifolia*	2	No	OBL
Total Cover:	31 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 69 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	x 1 =	2
FACW species		x 2 =	0
FAC species	13	x 3 =	39
FACU species	2	x 4 =	8
UPL species		x 5 =	0
Column Totals:	17 (A)		49 (B)

Prevalence Index = B/A = 2.88

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

Heavy thatch of upland annual grasses, likely due to previous years without unusual flooding.

SOIL

Sampling Point: P22

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-4	7.5YR3/3	100					Loamy clay	
4-12+	7.5YR3/3	98	5YR4/4	2	D	M	Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

High seasonal flooding caused atypical sediment deposits.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P23

Investigator(s): John Vollmar Section, Township, Range: S21, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.880229 Long: -119.677822 Datum: NAD83

Soil Map Unit Name: Atwater sandy loam, moderately deep, 0-3% slopes NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Upland habitat along swale leading into stockpond at P24. Wetland conditions likely enhanced by atypical heavy winter rains, non-hydric soils indicate non-wetland.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Phalaris paradoxa*	10	Yes	FAC
2. *Rumex crispus*	5	No	FAC
3. *Lythrum hyssopifolia*	5	No	OBL
4. *Bromus hordeaceus*	10	Yes	FACU
5. *Avena barbata*	1	No	Not Listed
6. *Croton setiger*	1	No	Not Listed
7. *Sonchus oleraceus*	1	No	UPL
8. *Vicia villosa*	1	No	Not Listed
Total Cover:	34 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 66 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species		x 2 =	0
FAC species	15	x 3 =	45
FACU species	10	x 4 =	40
UPL species	1	x 5 =	5
Column Totals:	31 (A)		95 (B)

Prevalence Index = B/A = 3.06

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ○ No ●

Remarks:

SOIL

Sampling Point: P23

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-8	7.5YR3/3	100					Clay loam	
8	7.5YR3/3	98	5YR3/4	2	D	M	Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ● No ○

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

Remarks:

Area subject to flooding due to unusual heavy seasonal rains. This accounts for sediment deposits, atypical.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P24

Investigator(s): John Vollmar Section, Township, Range: S21, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.880170 Long: -119.677872 Datum: NAD83

Soil Map Unit Name: Atwater sandy loam, moderately deep, 0-3% slopes NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ●	No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:
Upper margin of stockpond excavated in upland area.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Eleocharis macrostachya*	7	Yes	OBL
2. *Phalaris paradoxa*	6	Yes	FAC
3. *Rumex crispus*	10	Yes	FAC
4. *Hordeum marinum ssp. gussoneanum*	3	No	FAC
5. *Lythrm hyssopifolia*	1	No	OBL
6. *Eryngium castrense*	1	No	OBL
7. *Amaranthus albus*	1	No	FACU
8.			
Total Cover:	29 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 71 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	9	x 1 =	9
FACW species		x 2 =	0
FAC species	19	x 3 =	57
FACU species	1	x 4 =	4
UPL species		x 5 =	0
Column Totals:	29 (A)		70 (B)

Prevalence Index = B/A = 2.41

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:
Heavy thatch cover.

SOIL

Sampling Point: P24

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-6	7.5YR2.5/3	95	5YR3/4	5	D	M	Clay loam	
6-10	7.5YR2.5/3	70	5YR3/4	30	D	M	Clay	
10-16+	7.5YR2.5/3	90	5YR4/6	10	D	M	Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Flooded at time of April 17 site visit for other surveys. Within OHWM of stock pond.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P25

Investigator(s): John Vollmar Section, Township, Range: S21, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.879202 Long: -119.679005 Datum: NAD83

Soil Map Unit Name: Atwater sandy loam, moderately deep, 0 to 3% slopes NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Upland habitat adjacent to upper margin of constructed stockpond, just above stockpond OHWM. Presence/cover of wetland plants likely enhanced this season by atypical heavy winter rains.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Helianthus annuus*	50	Yes	FACU
2. *Eleocharis macrostachya*	10	No	OBL
3. *Amaranthus albus*	10	No	FACU
4. *Rumex crispus*	2	No	FAC
5. *Sonchus oleraceus*	1	No	UPL
6. *Lythrum hyssopifolia*	1	No	OBL
7. *Brassica nigra*	1	No	Not Listed
8. *Vicia villosa*	1	No	Not Listed
Total Cover:	76 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 24 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	11	x 1 =	11
FACW species		x 2 =	0
FAC species	2	x 3 =	6
FACU species	60	x 4 =	240
UPL species	1	x 5 =	5
Column Totals:	74 (A)		262 (B)

Prevalence Index = B/A = 3.54

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

High cover of ELEMAC likely due to excess ponding from heavy rains, atypical.

SOIL

Sampling Point: P25

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-4	7.5YR3/3						Clay loam	
4-16+	7.5YR3/2	98	5YR3/4	2	D	M	Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ● No ○

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

Remarks:

Above pond OHWM. Just above ponded area during winter survey. Sediment deposits and surface soil cracks likely due to excess atypical flooding from heavy winter rains.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P26

Investigator(s): John Vollmar Section, Township, Range: S21, T12S, R21E

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR): C - Mediterranean California Lat: 36.879201 Long: -119.679036 Datum: NAD83

Soil Map Unit Name: Atwater sandy loam, moderately deep, 0 to 3% slopes NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ●	No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Upper margin of stockpond within OHWM. 12+ deep ponded water at time of survey in pond basin.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Eleocharis macrostachya*	40	Yes	OBL
2. *Echinodorus berteroi*	20	Yes	OBL
3. *Helianthus annuus*	5	No	FACU
4.	1	No	
5.			
6.			
7.			
8.			
Total Cover:	66 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 34 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	5	x 4 =	20
UPL species		x 5 =	0
Column Totals:	65 (A)		80 (B)

Prevalence Index = B/A = 1.23

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: P26

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-8	7.5YR3/2	95	5YR4/6	5	D	M	Silty clay loam	
8-10	7.5YR3/2	80	5YR4/6	20	D	M	Silty clay	
10-14+	7.5YR3/1	100					Silty clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

With OHWM of man-made stockpond.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P27

Investigator(s): John Vollmar Section, Township, Range: S21, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.879201 Long: -119.679036 Datum: NAD83

Soil Map Unit Name: San Joaquin loam, 0-3% slopes NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:
Shallow, broad swale, likely subject to unusual flooding this season due to heavy rains.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Rumex crispus*	15	Yes	FAC
2. *Bromus hordeaceus*	5	No	FACU
3. *Bromus diandrus*	2	No	Not Listed
4. *Avena barbata*	10	Yes	Not Listed
5. *Centromadia pungens*	1	No	FAC
6. *Helianthus annuus*	1	No	FACU
7. *Lythrum hyssopifolia*	1	No	OBL
8. *Centaurea solstitialis*	1	No	Not Listed
Total Cover:	36 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 64 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species		x 2 =	0
FAC species	16	x 3 =	48
FACU species	6	x 4 =	24
UPL species		x 5 =	0
Column Totals:	23 (A)		73 (B)

Prevalence Index = B/A = 3.17

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:
Elevated cover of RUMCRI likely due to flooding from atypical heavy seasonal rains.
Heavy thatch cover from upland annual grasses indicates likely upland vegetation during normal rain years.

SOIL

Sampling Point: P27

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-10	7.5YR3/3	100					Clay loam	
10-14+	7.5YR3/2	98	5YR3/4	2			Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Sediment deposits due to unusual flooding this season from heavy rains. No other wetland hydrology indicators.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P28

Investigator(s): John Vollmar Section, Township, Range: S21, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.879534 Long: -119.678832 Datum: NAD83

Soil Map Unit Name: Atwater sandy loam, moderately deep, 0 to 3% slopes NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Broad, shallow swale between stockponds to north and south. Presence/cover of wetland plants likely enhanced by atypical heavy seasonal rains.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Rumex crispus*	20	Yes	FAC
2. *Bromus diandrus*	5	No	Not Listed
3. *Avena barbata*	3	No	Not Listed
4. *Lythrum hyssopifolia*	1	No	OBL
5. *Croton setiger*	3	No	Not Listed
6. *Centromadia pungens*	1	No	FAC
7. *Phalaris paradoxa*	4	No	FAC
8. *Bromus hordeaceus*	5	No	FACU
Total Cover:	42 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 58 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species		x 2 =	0
FAC species	25	x 3 =	75
FACU species	5	x 4 =	20
UPL species		x 5 =	0
Column Totals:	31 (A)		96 (B)

Prevalence Index = B/A = 3.10

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

RUMCRI cover likely enhanced this season by heavy rains. Heavy thatch cover from upland annual grasses indicates high cover during typical rain years.

SOIL

Sampling Point: P28

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-10	7.5YR3/3	100					Clay loam	
10-14+	7.5YR3/2	98	5YR3/4	2			Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ● No ○

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

Remarks:

Sediment deposits atypical, from flooding this season due to heavy rains. No other wetland hydrology indicators.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P29

Investigator(s): John Vollmar Section, Township, Range: S21, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.879456 Long: -119.678887 Datum: NAD83

Soil Map Unit Name: Atwater sandy loam, moderately deep, 0 to 3% slopes NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ●	No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Small, shallow basin/depression with wetland characteristics along non-wetland swale.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Eleocharis macrostachya*	30	Yes	OBL
2. *Eryngium castrense*	5	No	OBL
3. *Rumex crispus*	15	Yes	FAC
4. *Hordeum marinum ssp. gussoneanum*	5	No	FAC
5. *Bromus hordeaceus*	3	No	FACU
6. *Lythrum hyssopifolia*	1	No	OBL
7. *Phalaris paradoxa*	5	No	FAC
8.			
Total Cover:	64 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 36 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	36	x 1 =	36
FACW species		x 2 =	0
FAC species	25	x 3 =	75
FACU species	3	x 4 =	12
UPL species		x 5 =	0
Column Totals:	64 (A)		123 (B)

Prevalence Index = B/A = 1.92

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: P29

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-3	7.5YR3/2	95	5YR3/4	5	D	M	Clay loam	
3-14+	7.5YR3/2	80	5YR4/6	20	D	M	Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P30

Investigator(s): John Vollmar Section, Township, Range: S21, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.870751 Long: -119.672963 Datum: NAD83

Soil Map Unit Name: Foster loam NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ○	No ●	

Remarks:

Upland habitat on berm adjacent to reservoir outflow channel.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Bromus hordeaceus*	15	Yes	FACU
2. *Bromus diandrus*	20	Yes	Not Listed
3. *Lactuca serriola*	7	No	FACU
4. *Helianthus annuus*	5	No	FACU
5.			
6.			
7.			
8.			
Total Cover:	47 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 53 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	27	x 4 =	108
UPL species		x 5 =	0
Column Totals:	27 (A)		108 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ○ No ●

Remarks:

SOIL

Sampling Point: P30

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-14+	7.5YR3/3	100					Clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ○ No ●

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 6/21/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P31

Investigator(s): John Vollmar Section, Township, Range: S21, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.870719 Long: -119.672928 Datum: NAD83

Soil Map Unit Name: Riverwash NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ●	No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Perennial wetland habitat along vegetated section of reservoir spillway outflow channel. Flowing at time of site visit with 2' maximum water depth.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Echinodorus bertoroi*	10	Yes	OBL
2. *Xanthium strumarium*	15	Yes	FAC
3. *Cyperus eragrostis*	10	Yes	FACW
4. *Eleocharis macrostachya*	5	No	OBL
5.			
6.			
7.			
8.			
Total Cover:	40 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 60 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	10	x 2 =	20
FAC species	15	x 3 =	45
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	40 (A)		80 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: P31

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-14+	7.5YR3/1	100					Silty clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ◯

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ◉	No ◯	Depth (inches): 2
Water Table Present?	Yes ◉	No ◯	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ◉	No ◯	Depth (inches): 0

Wetland Hydrology Present? Yes ◉ No ◯

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 7/24/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P32

Investigator(s): John Vollmar Section, Township, Range: S21, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.879534 Long: -119.678832 Datum: NAD83

Soil Map Unit Name: Ramona loam, hard substratum NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Upland habitat along swale with undulating bottom, adjacent to depressional wetland basin at P32. Wetland conditions likely enhanced by winter flooding from atypical heavy rains.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Malvella leprosa*	30	Yes	FACU
2. *Chenopodium album*	10	Yes	FACU
3. *Eryngium castrense*	2	No	OBL
4. *Plagiobothrys stipitatus var. micranthus*	2	No	FACW
5. *Eleocharis macrostachya*	2	No	OBL
6.			
7.			
8.			
Total Cover:	46 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 54 % % Cover of Biotic Crust %

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	4	x 1 =	4
FACW species	2	x 2 =	4
FAC species		x 3 =	0
FACU species	40	x 4 =	160
UPL species		x 5 =	0
Column Totals:	46 (A)		168 (B)

Prevalence Index = B/A = 3.65

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ○ No ●

Remarks:

SOIL

Sampling Point: P32

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-6	7.5YR3/2	100					Sandy loam	
6-14+	7.5YR3/2	98	5YR4/4	3	D	M	Sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ● No ○

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

Remarks:

Sediment deposits likely from winter flow due to atypical heavy rains. No other surface indicators of wetland hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 7/24/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P33

Investigator(s): John Vollmar Section, Township, Range: S21, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.879534 Long: -119.678832 Datum: NAD83

Soil Map Unit Name: Ramona loam, hard substratum NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ●	No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Basin area along swale with undulating bottom. Low area likely is ponded or saturated from prolonged periods during average or even drought years. Wetland conditions likely enhanced by winter flooding from atypical heavy rains.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Malvella leprosa*	10	Yes	FACU
2. *Chenopodium album*	3	No	FACU
3. *Marsilea vestita*	2	No	OBL
4. *Plagiobothrys stipitatus var. micranthus*	5	No	FACW
5. *Eleocharis macrostachya*	15	Yes	OBL
6. *Xanthium strumarium*	10	Yes	FAC
7. *Hordeum marinum ssp. gussoneanum*	5	No	FAC
8.			
Total Cover:	50 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 50 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	66.7 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	17	x 1 =	17
FACW species	5	x 2 =	10
FAC species	15	x 3 =	45
FACU species	13	x 4 =	52
UPL species		x 5 =	0
Column Totals:	50 (A)		124 (B)

Prevalence Index = B/A = 2.48

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: P33

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-9	7.5YR3/2	85	5YR4/6	15	D	M	silty clay	
9-14+	7.5YR3/1	90	5YR4/6	10	D	M	silty clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 7/24/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P34

Investigator(s): John Vollmar Section, Township, Range: S21, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.879534 Long: -119.678832 Datum: NAD83

Soil Map Unit Name: Ramona loam, hard substratum NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Upland habitat along swale with undulating bottom, adjacent to depressional wetland basin at P32. Wetland conditions likely enhanced by winter flooding from atypical heavy rains.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Malvella leprosa*	20	Yes	FACU
2. *Chenopodium album*	7	Yes	FACU
3. *Eryngium castrense*	4	No	OBL
4. *Plagiobothrys stipitatus var. micranthus*	2	No	FACW
5. *Eleocharis macrostachya*	3	No	OBL
6.			
7.			
8.			
Total Cover:	36 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 64 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	7	x 1 =	7
FACW species	2	x 2 =	4
FAC species		x 3 =	0
FACU species	27	x 4 =	108
UPL species		x 5 =	0
Column Totals:	36 (A)		119 (B)

Prevalence Index = B/A = 3.31

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ○ No ●

Remarks:

SOIL

Sampling Point: P34

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture[3]	Remarks
0-8	7.5YR3/2	100					Sandy loam	
8-14+	7.5YR3/2	98	5YR4/4	3	D	M	Sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ●

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ● No ○

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

Remarks:

Sediment deposits likely from winter flow due to atypical heavy rains. No other surface indicators of wetland hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Vista Ranch City/County: Fresno County, CA Sampling Date: 7/24/23

Applicant/Owner: Wilson Premier Homes State: CA Sampling Point: P35

Investigator(s): John Vollmar Section, Township, Range: S21, T12S, R21E

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

Subregion (LRR): C - Mediterranean California Lat: 36.879534 Long: -119.678832 Datum: NAD83

Soil Map Unit Name: Ramona loam, hard substratum NWI classification: N/A

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

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ●

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ●	No ○	
Hydric Soil Present?	Yes ●	No ○	**Is the Sampled Area within a Wetland?** Yes ● No ○
Wetland Hydrology Present?	Yes ●	No ○	

Remarks:

Basin area along swale with undulating bottom. Low area likely is ponded or saturated from prolonged periods during average or even drought years. Wetland conditions likely enhanced by winter flooding from atypical heavy rains.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	%		

Sapling/Shrub Stratum Plot size: 15 feet			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		

Herb Stratum Plot size: 5 feet			
1. *Malvella leprosa*	7	No	FACU
2. *Hordeum marinum ssp. gussoneanum*	10	Yes	FAC
3. *Marsilea vestita*	5	No	OBL
4. *Plagiobothrys stipitatus var. micranthus*	5	No	FACW
5. *Eleocharis macrostachya*	10	Yes	OBL
6. *Xanthium strumarium*	12	Yes	FAC
7.			
8.			
Total Cover:	49 %		

Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 51 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 %	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	5	x 2 =	10
FAC species	22	x 3 =	66
FACU species	7	x 4 =	28
UPL species		x 5 =	0
Column Totals:	49 (A)		119 (B)

Prevalence Index = B/A = 2.43

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ● No ○

Remarks:

SOIL

Sampling Point: P35

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-8	7.5YR3/2	80	5YR4/6	20	D	M	silty clay	
8-14+	7.5YR3/1	85	5YR4/6	15	D	M	silty clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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

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

Indicators for Problematic Hydric Soils

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

APPENDIX D

Delineation Data Point Locations

Table D-1. Delineation Data Point Locations

Delineation Point	Habitat Type	Latitude	Longitude
P01	Upland	36.872372	-119.660584
P02	Upland	36.872369	-119.660695
P03	Upland	36.872384	-119.660759
P04	Wetland	36.872408	-119.660814
P05	Upland	36.871172	-119.658451
P06	Wetland	36.871217	-119.658458
P07	Upland	36.871745	-119.658927
P08	Wetland	36.871764	-119.658877
P09	Upland	36.873506	-119.662731
P10	Wetland	36.873469	-119.662726
P11	Wetland	36.873372	-119.663191
P12	Upland	36.873063	-119.665044
P13	Upland	36.873877	-119.666214
P14	Wetland	36.873836	-119.666166
P15	Upland	36.872346	-119.671208
P16	Wetland	36.872342	-119.671241
P17	Upland	36.870678	-119.672572
P18	Other Waters	36.870678	-119.672572
P19	Upland	36.875877	-119.669762
P20	Wetland	36.875894	-119.669712
P21	Upland	36.872269	-119.661903
P22	Upland	36.880550	-119.678306
P23	Upland	36.880229	-119.677822
P24	Wetland	36.880170	-119.677872
P25	Upland	36.879202	-119.679005
P26	Wetland	36.879201	-119.679036
P27	Upland	36.879048	-119.678855
P28	Upland	36.879534	-119.678832
P29	Wetland	36.879456	-119.678887
P30	Upland	36.870751	-119.672963
P31	Wetland	36.870719	-119.672928
P32	Upland	36.879534	-119.678832
P33	Wetland	36.879456	-119.678887
P34	Upland	36.870751	-119.672963
P35	Wetland	36.870719	-119.672928

APPENDIX E

Aquatic Resources Excel Sheet

APPENDIX E. AQUATIC RESOURCES SHEET, VISTA RANCH PROJECT, FRESNO COUNTY, CA.

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway
ATP-1	CALIFORNIA	PEM2	DEPRESS	Area	1.129	ACRE	B5-EXCL-ART.LK	36.87177500	-119.67155000	
C-1-A	CALIFORNIA	R4	RIVERINE	Area	0.417256	ACRE	DELIN.PJD-404	36.87442300	-119.66976600	Dry Creek
C-1-B	CALIFORNIA	R4	RIVERINE	Area	0.00424	ACRE	DELIN.PJD-404	36.87146200	-119.67226100	Dry Creek
C-1-C	CALIFORNIA	R4	RIVERINE	Area	0.116749	ACRE	DELIN.PJD-404	36.86963500	-119.67398000	Dry Creek
C-1-D	CALIFORNIA	R4	RIVERINE	Area	0.002408	ACRE	DELIN.PJD-404	36.86942500	-119.67423800	Dry Creek
C-1-E	CALIFORNIA	R4	RIVERINE	Area	0.000903	ACRE	DELIN.PJD-404	36.86962900	-119.67403000	Dry Creek
DWB-01	CALIFORNIA	PEM2	DEPRESS	Area	0.027249	ACRE	DELIN.PJD-404	36.87940000	-119.67890800	
DWB-10	CALIFORNIA	PEM2	DEPRESS	Area	0.01154	ACRE	DELIN.PJD-404	36.87309200	-119.66236900	
DWB-11	CALIFORNIA	PEM2	DEPRESS	Area	0.01231	ACRE	DELIN.PJD-404	36.87294800	-119.66215400	
DWB-12	CALIFORNIA	PEM2	DEPRESS	Area	0.042028	ACRE	DELIN.PJD-404	36.87258700	-119.66150400	
DWB-13	CALIFORNIA	PEM2	DEPRESS	Area	0.023114	ACRE	DELIN.PJD-404	36.87242900	-119.66085300	
DWB-14	CALIFORNIA	PEM2	DEPRESS	Area	0.023057	ACRE	DELIN.PJD-404	36.87251200	-119.66020000	
DWB-15	CALIFORNIA	PEM2	DEPRESS	Area	0.000674	ACRE	DELIN.PJD-404	36.87248800	-119.66007500	
DWB-16	CALIFORNIA	PEM2	DEPRESS	Area	0.005144	ACRE	DELIN.PJD-404	36.87243700	-119.66011300	
DWB-17	CALIFORNIA	PEM2	DEPRESS	Area	0.001306	ACRE	DELIN.PJD-404	36.87180500	-119.65902700	
DWB-18	CALIFORNIA	PEM2	DEPRESS	Area	0.014453	ACRE	DELIN.PJD-404	36.87174800	-119.65879100	
DWB-19	CALIFORNIA	PEM2	DEPRESS	Area	0.070283	ACRE	DELIN.PJD-404	36.87128000	-119.65856700	
DWB-02	CALIFORNIA	PEM2	DEPRESS	Area	0.059523	ACRE	DELIN.PJD-404	36.87593000	-119.66970500	
DWB-20	CALIFORNIA	PEM2	DEPRESS	Area	0.050102	ACRE	DELIN.PJD-404	36.87119300	-119.65821100	
DWB-21	CALIFORNIA	PEM2	DEPRESS	Area	0.016471	ACRE	DELIN.PJD-404	36.87599100	-119.67475100	
DWB-22	CALIFORNIA	PEM2	DEPRESS	Area	0.044639	ACRE	DELIN.PJD-404	36.87614600	-119.67387900	
DWB-03	CALIFORNIA	PEM2	DEPRESS	Area	0.021965	ACRE	DELIN.PJD-404	36.87388700	-119.66604000	
DWB-04	CALIFORNIA	PEM2	DEPRESS	Area	0.017695	ACRE	DELIN.PJD-404	36.87301400	-119.66582400	
DWB-05	CALIFORNIA	PEM2	DEPRESS	Area	0.014818	ACRE	DELIN.PJD-404	36.87319700	-119.66552600	
DWB-06	CALIFORNIA	PEM2	DEPRESS	Area	0.049726	ACRE	DELIN.PJD-404	36.87354000	-119.66402200	
DWB-07	CALIFORNIA	PEM2	DEPRESS	Area	0.004885	ACRE	DELIN.PJD-404	36.87338300	-119.66319600	
DWB-08	CALIFORNIA	PEM2	DEPRESS	Area	0.045267	ACRE	DELIN.PJD-404	36.87335000	-119.66270900	
DWB-09	CALIFORNIA	PEM2	DEPRESS	Area	0.002983	ACRE	DELIN.PJD-404	36.87313600	-119.66249900	
NWC-1	CALIFORNIA	R4	RIVERINE	Area	0.210474	ACRE	DELIN.PJD-404	36.86943800	-119.67422000	Dry Creek
NWC-2	CALIFORNIA	R4	RIVERINE	Area	0.067642	ACRE	DELIN.PJD-404	36.86655400	-119.68399000	Dry Creek
S-1	CALIFORNIA	PEM2	DEPRESS	Area	0.110742	ACRE	DELIN.PJD-404	36.87918800	-119.67923900	
S-2	CALIFORNIA	PEM2	DEPRESS	Area	0.390489	ACRE	DELIN.PJD-404	36.87994800	-119.67820300	
S-3	CALIFORNIA	PEM2	DEPRESS	Area	0.043639	ACRE	DELIN.PJD-404	36.87966100	-119.67730400	

APPENDIX F

Historical Aerial Imagery of Flood Irrigation Field and Irrigation Tailwater Pond

(along left side of imagery, outside of red line)

EDR Aerial Photo Decade Package

12/20/22

Site Name:	Client Name:
Triangle Property	Krazan & Associates, Inc.
East Shepherd Avenue/North T	215 West Dakota
Clovis, CA 93619	Clovis, CA 93612
EDR Inquiry # 7208868.8	Contact: Dulcinea Deleon

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	*Scale*	*Details*	*Source*
2020	1"=625'	Flight Year: 2020	USDA/NAIP
2016	1"=625'	Flight Year: 2016	USDA/NAIP
2012	1"=625'	Flight Year: 2012	USDA/NAIP
2009	1"=625'	Flight Year: 2009	USDA/NAIP
2005	1"=625'	Flight Year: 2005	USDA/NAIP
1998	1"=625'	Acquisition Date: January 01, 1998	USGS/DOQQ
1987	1"=625'	Flight Date: June 17, 1987	USDA
1984	1"=625'	Flight Date: June 09, 1984	USDA
1979	1"=625'	Flight Date: September 04, 1979	USDA
1973	1"=625'	Flight Date: May 08, 1973	USDA
1967	1"=625'	Flight Date: May 03, 1967	USDA
1962	1"=625'	Flight Date: August 09, 1962	USGS
1957	1"=625'	Flight Date: August 15, 1957	USDA
1950	1"=625'	Flight Date: January 31, 1950	USDA
1946	1"=625'	Flight Date: April 22, 1946	USGS
1937	1"=625'	Flight Date: October 05, 1937	USDA

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INQUIRY #: 7208868.8
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= 625'
N
EDR

INQUIRY #: 7208868.8
YEAR: 2016
= 625'
N
EDR

INQUIRY #: 7208868.8
YEAR: 2012
= 625'
N
EDR

INQUIRY #: 7208868.8
YEAR: 2009
= 625'
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EDR

INQUIRY #: 7208868.8
YEAR: 2005
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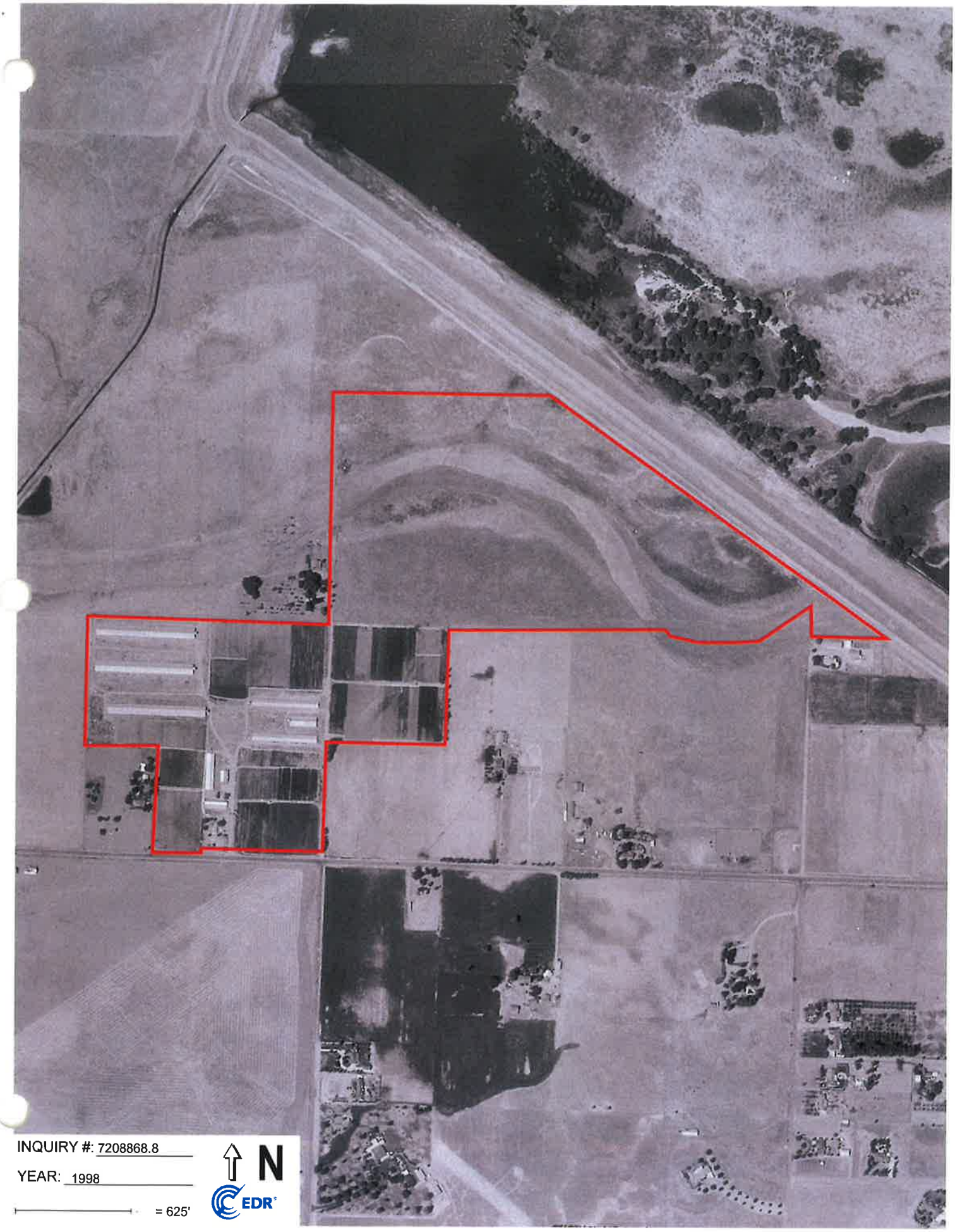
EDR



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YEAR: 1998

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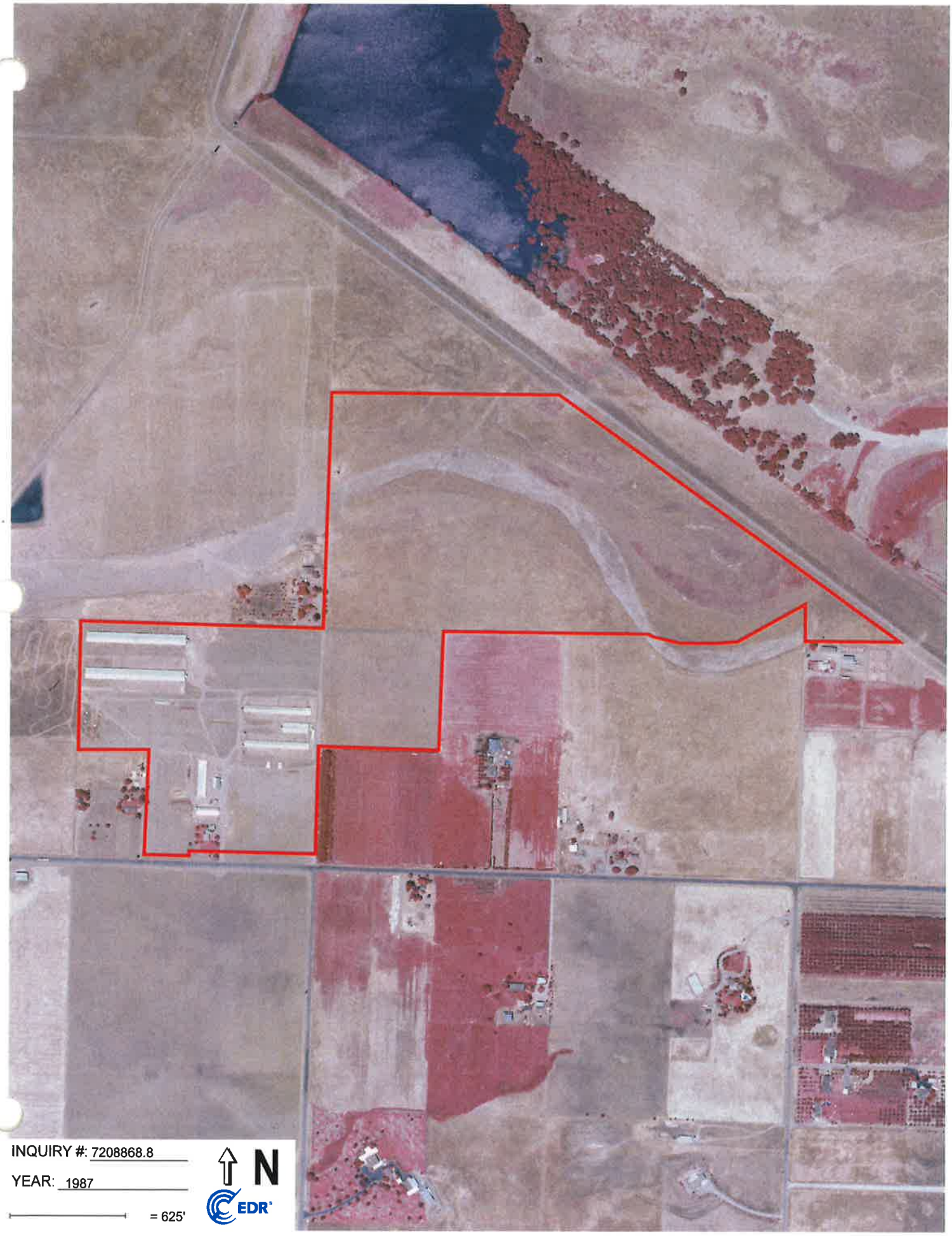
N

EDR



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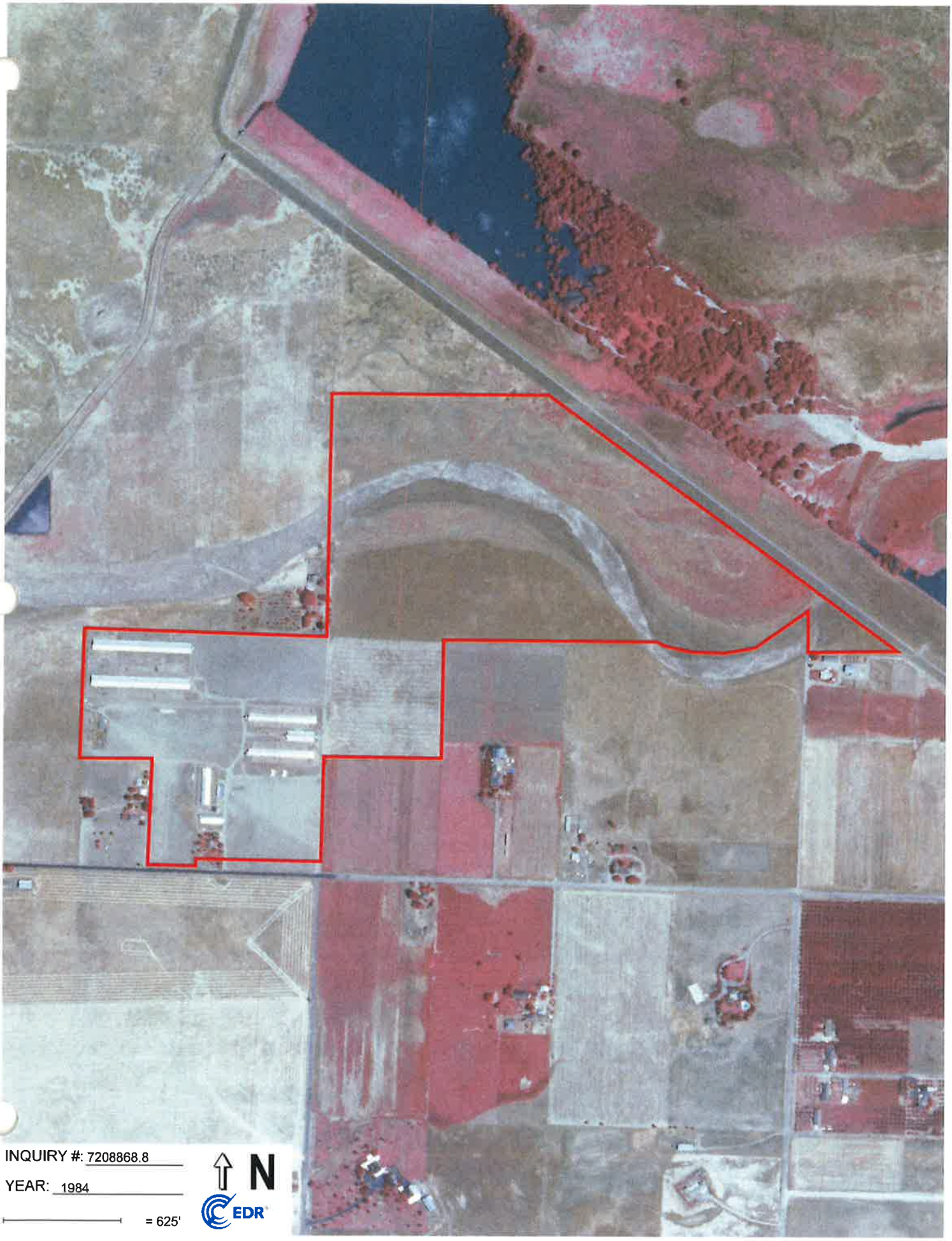

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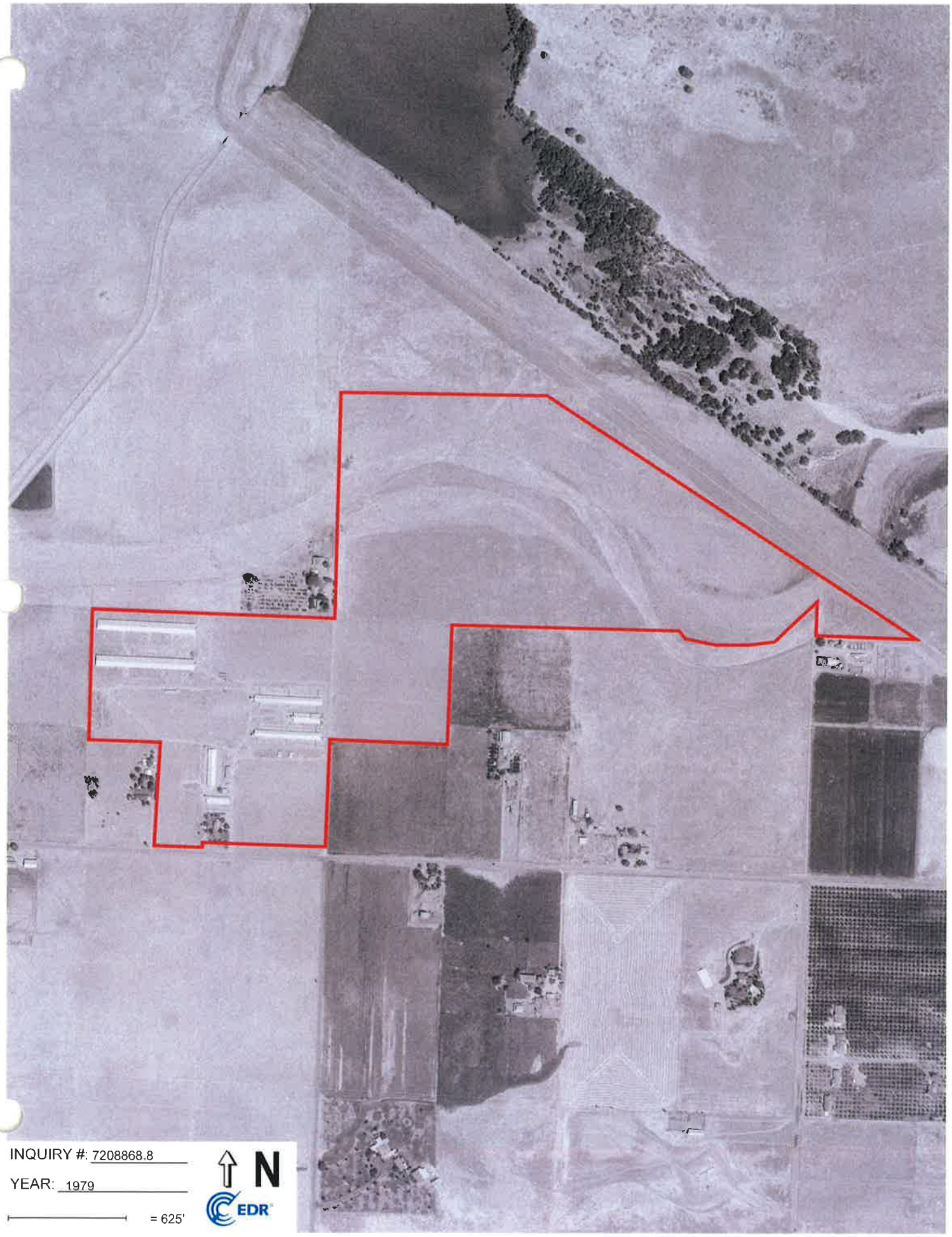

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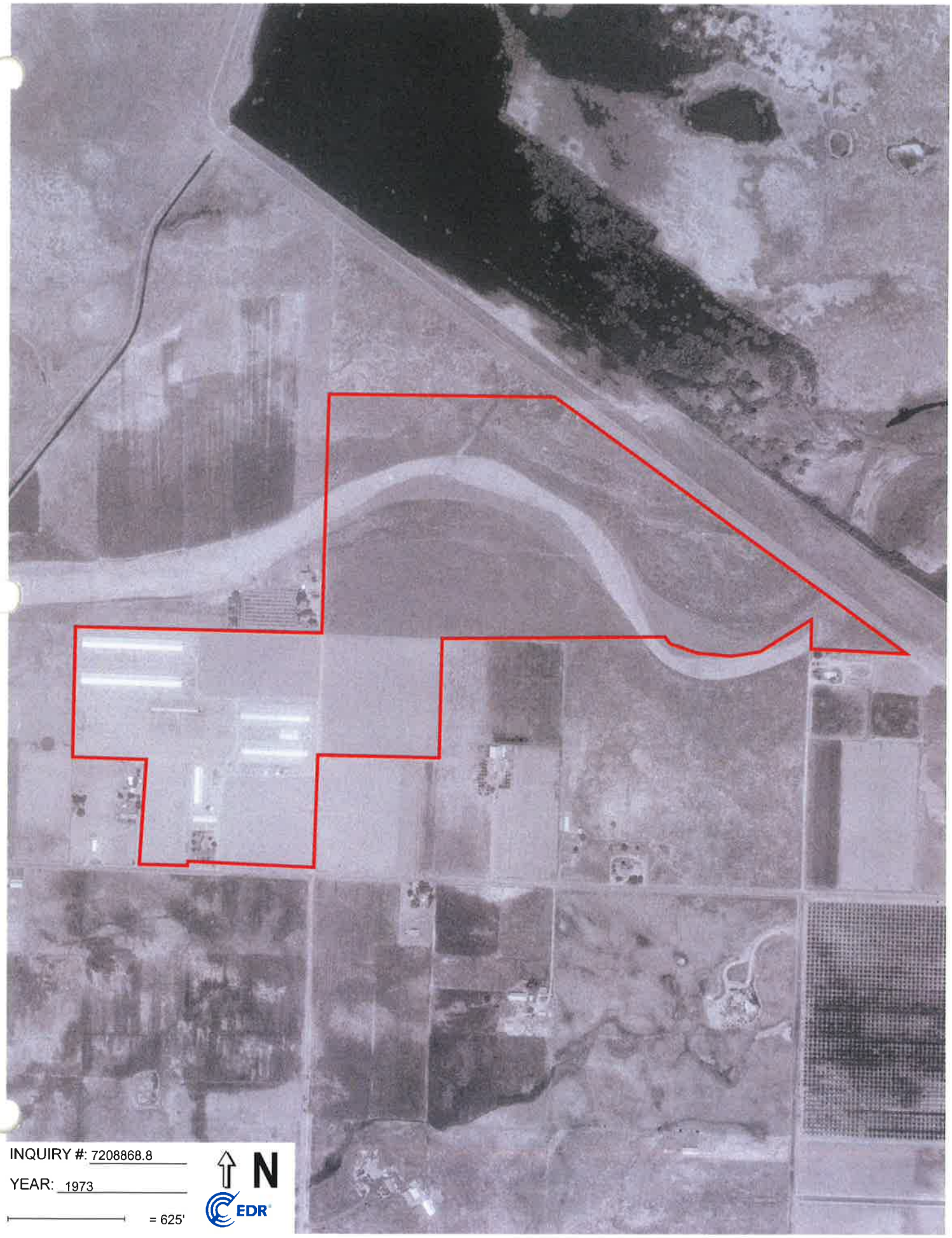
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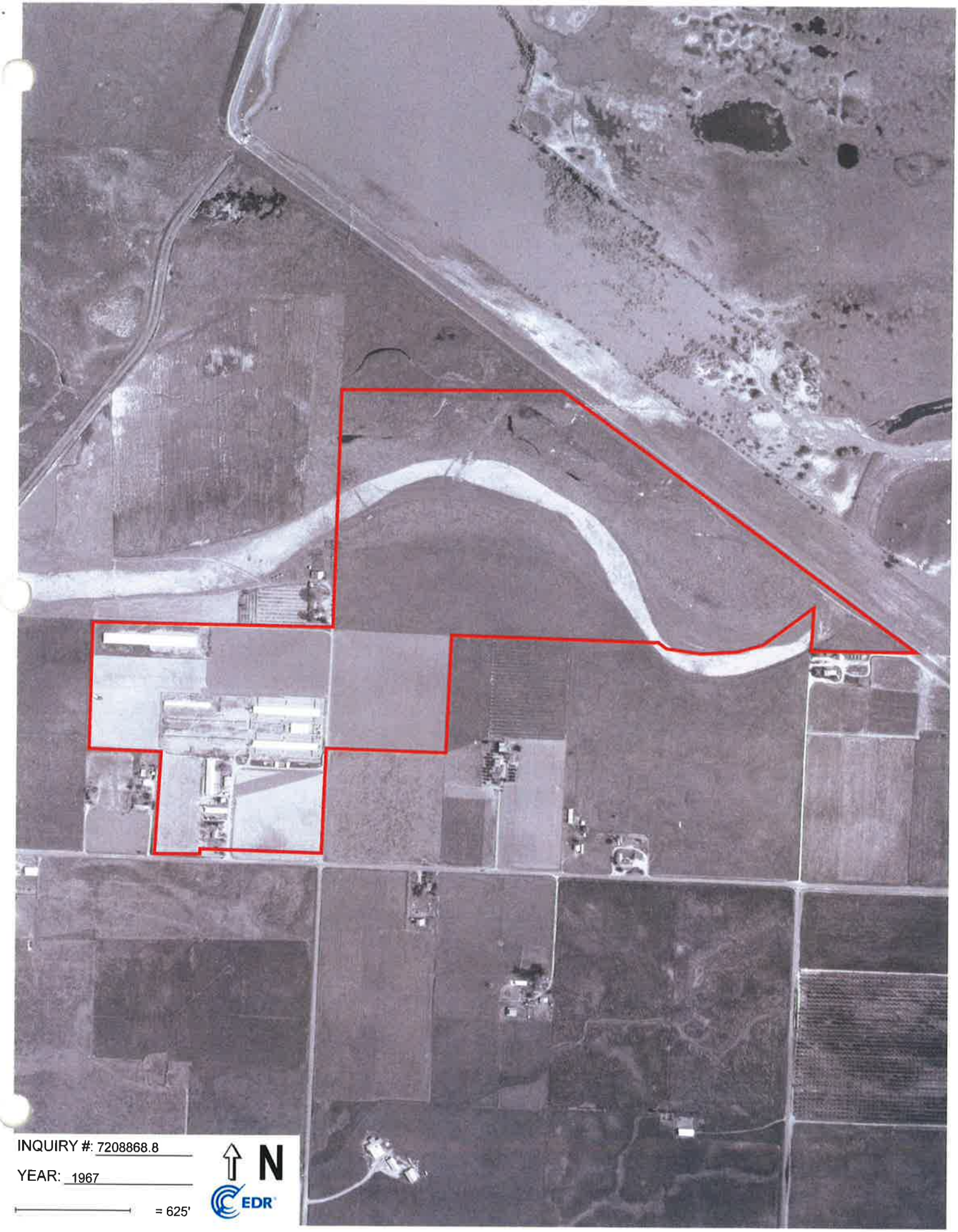
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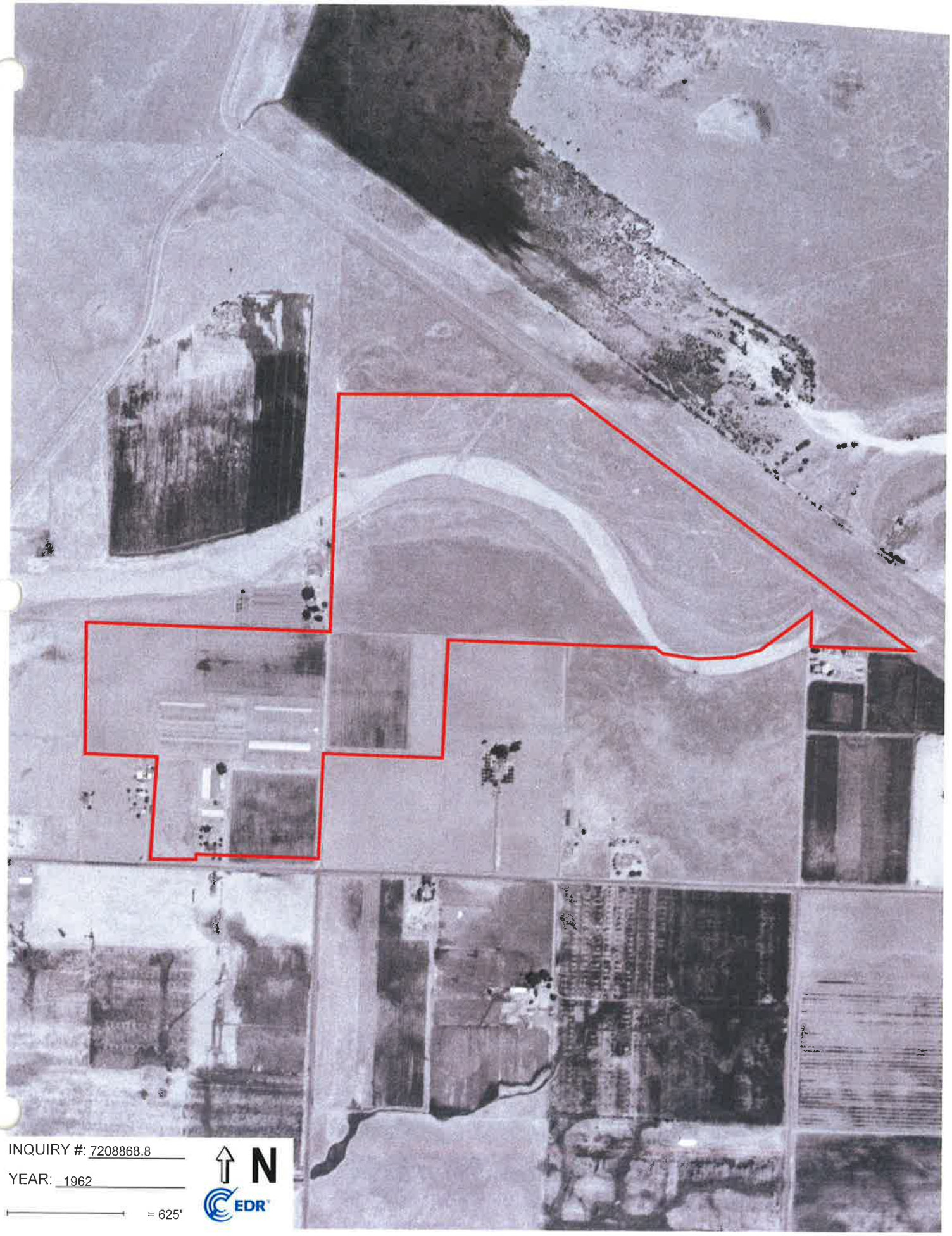

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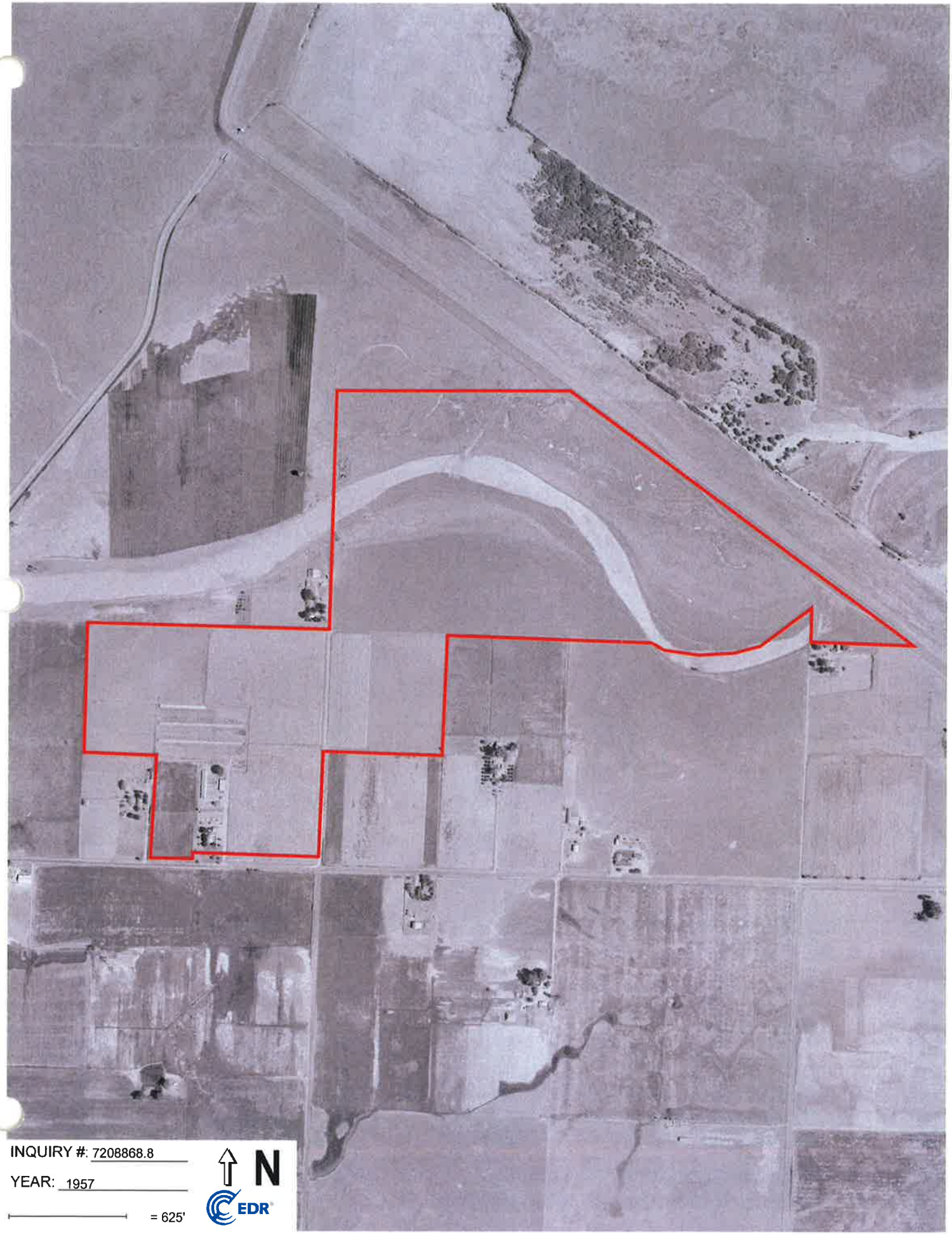
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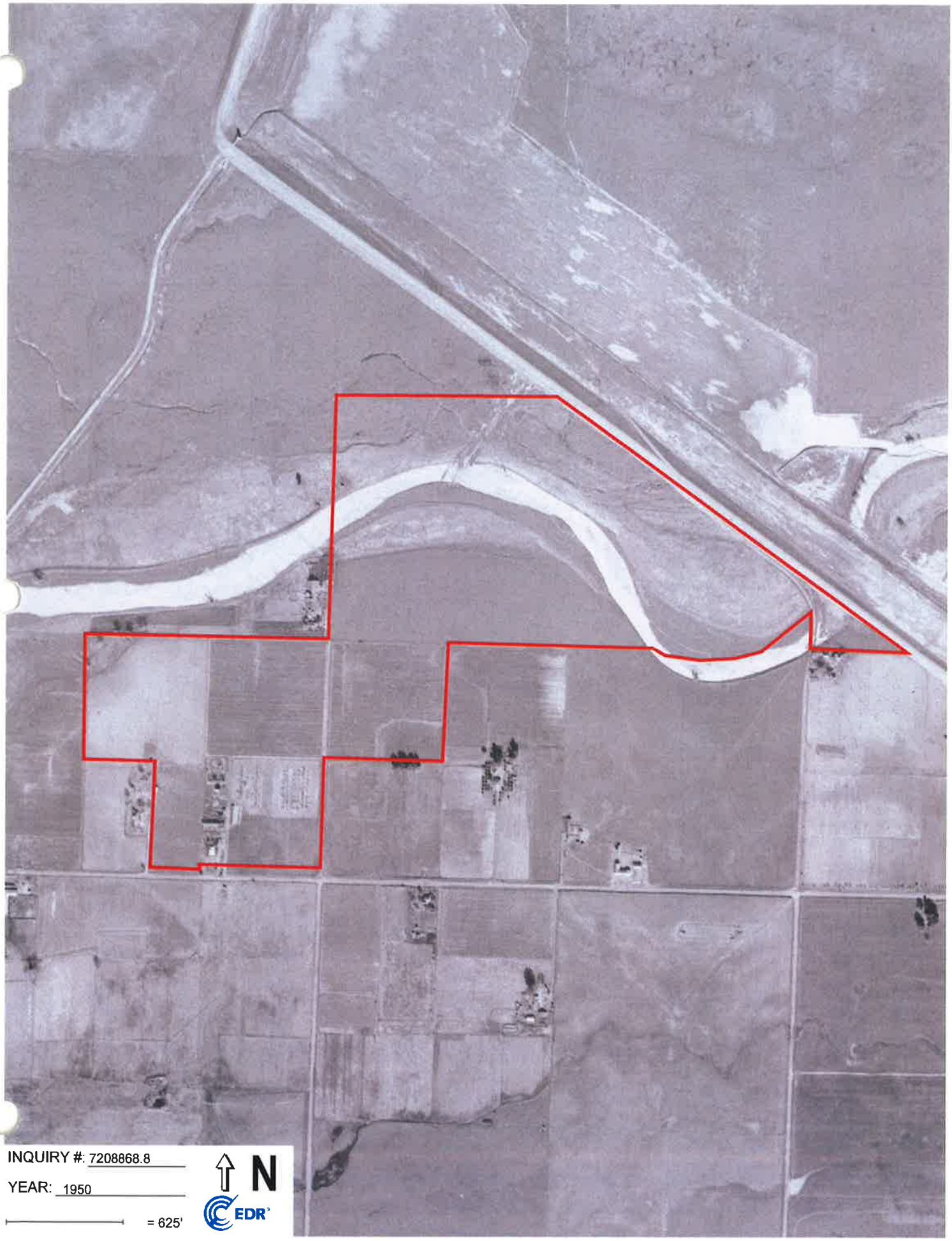
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EDR

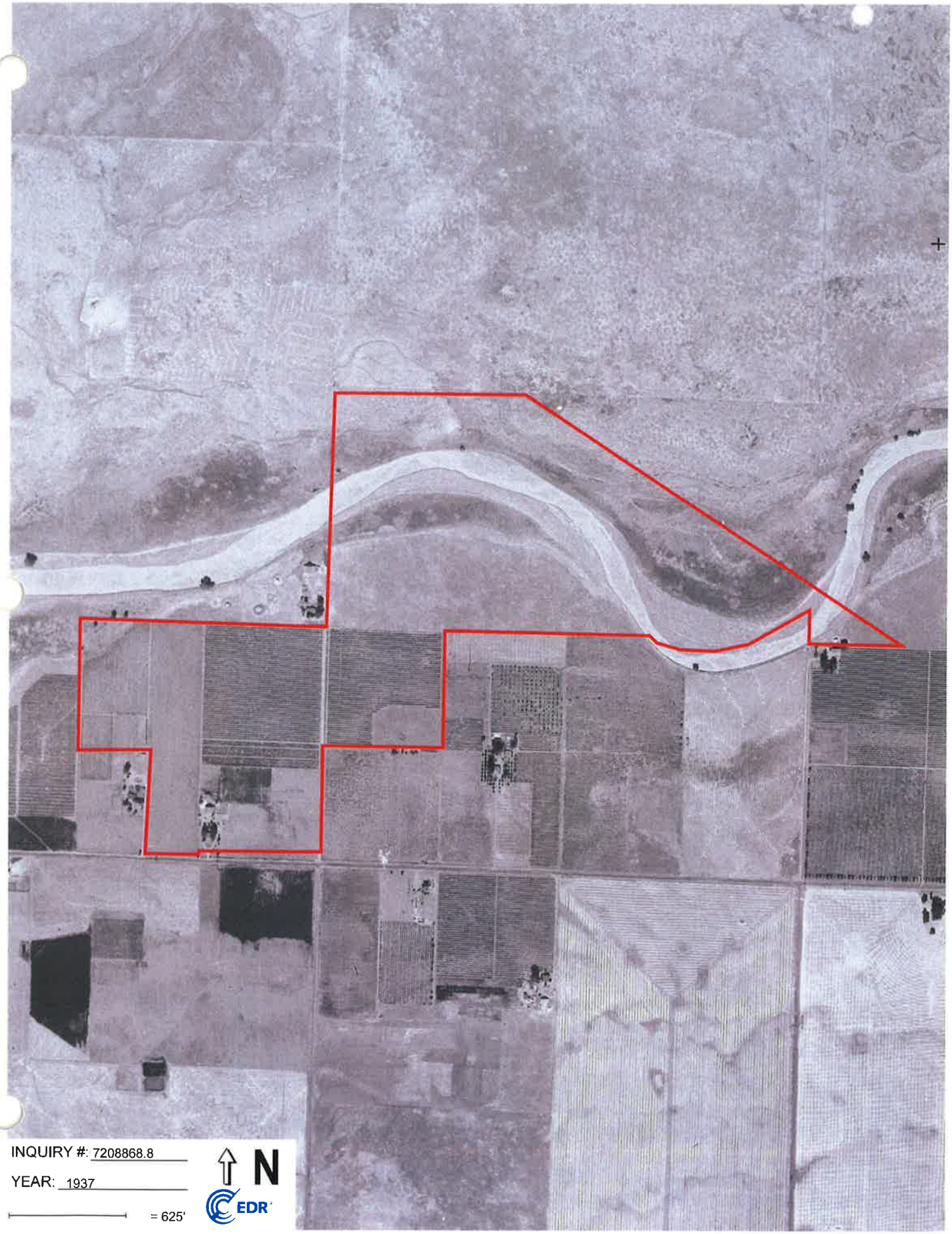
INQUIRY #: 7208868.8

YEAR: 1946

= 625'

N

EDR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YEAR: 1937
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EDR

Wilson Premier Homes – Vista Ranch

Mitigation Overview

Introduction

This document briefly describes the mitigation approach proposed to compensate for impacts on special-status species habitat and jurisdictional wetlands and waters as a result of constructing the proposed Vista Ranch mixed-use development (Project). It contains the following information.

- An overview of existing habitat at the Project site
- A brief discussion of the measures incorporated into the Project to avoid and reduce impacts on wetlands/waters and listed species habitat
- An overview of unavoidable impacts on wetlands/waters and listed species habitat
- A description of the proposed mitigation approach for permanent impacts, including
    - an overview of the proposed mitigation site and its regional conservation context
    - brief discussion of planning for long-term management of the mitigation site
- A description of the proposed mitigation approach for temporary impacts
- A list of references cited

Existing Habitat at Project Site

The Project site is bordered to the south and west by suburban residential development and to the northwest by more open rural residential development. To the northeast, the site abuts open rangeland and the Big Dry Creek Dam and Reservoir, which are flood control structures operated by the Fresno Metropolitan Flood Control District (FMFCD). The site is bisected by a constructed canal fed by the Big Dry Creek Dam spillway. When the dam was constructed, the natural Dry Creek drainage was re-routed into the reservoir basin; flow now exits via the spillway and is conveyed via the canal to rejoin the Creek about 2,500 feet below the spillway. The truncated and abandoned channel of Dry Creek remains a conspicuous feature in the east-central portion of the site, but no longer conveys flow, all of which has been re-routed via the Reservoir, Dam, spillway, and canal (Vollmar Natural Lands Consulting 2023a) (Figure 5). The remnant Creek channel exhibits intermittent stream geomorphology but lacks an ordinary high water mark (OHWM). It does not have hydric soils and supports only upland vegetation (Vollmar pers. comms., Vollmar Natural Lands Consulting 2023a).

Site topography is level to gently rolling, with elevations ranging from about 380 to 413 feet above mean sea level. The most pronounced slopes are in the northwest portion of the site. Site soils appear to lack intact claypan or hardpan, which likely contributes to relatively rapid infiltration throughout much of the site, with a

correspondingly low rate of wetland formation even within some depressional features (Vollmar Natural Lands Consulting 2023a).

The majority of the site is non-native annual grassland and degraded pasture land. The northeast and southeast portions of the site appear not to be grazed at present, and grasslands there support a mixture of primarily non-native annual grasses and herbs including invasive weeds. Scattered depressional wetlands are present within the grasslands, especially along the northeast edge of the site, where they occupy a series of what appear to be remnant floodplain swales north of the abandoned Dry Creek channel and are apparently fed in part by seepage from the Big Dry Creek Dam/Reservoir in heavy rain years. Three created stockponds and small depressional wetlands are also present within the grasslands in the northwest portion of the site (Vollmar Natural Lands Consulting 2023a).

The central portion of the site was graded for flood irrigation several decades ago, although flood irrigation is not practiced at this time. This area is divided into several pastures with cross fencing and is at least intermittently used for grazing. It supports degraded pasture with ruderal vegetation dominated by non-native grasses and herbs including invasive weeds. Scattered rural/agricultural development features are also present. Current grazing use appears to be light, leading to build-up of thatch and residual dry matter. A triangular pond located adjacent to the canal was apparently constructed in uplands to capture and allow reuse of irrigation water although it also has a culverted connection to the canal downstream of the Big Dry Creek Dam spillway (Vollmar Natural Lands Consulting 2023a).

A total of 3.053 acres of potentially jurisdictional waters has been mapped on the Project site (Figure 1). This includes 1.646 acres of wetlands and 0.278 acre of other waters (canal) (Vollmar Natural Lands Consulting 2023a). The agricultural tailwater pond mentioned above (1.129 acres; Vollmar Natural Lands Consulting 2023a) was also treated as a potentially jurisdictional feature for project planning purposes. The project wetland delineation was verified by the U.S. Army Corps of Engineers (Corps) in November 2023 (Norton 2023).

Impact Avoidance & Unavoidable Impacts

As noted above, the Project development layout has been configured to avoid and reduce impacts on wetlands/waters and listed species habitat to the extent feasible while still achieving Project objectives (Figure 2). This includes the following.

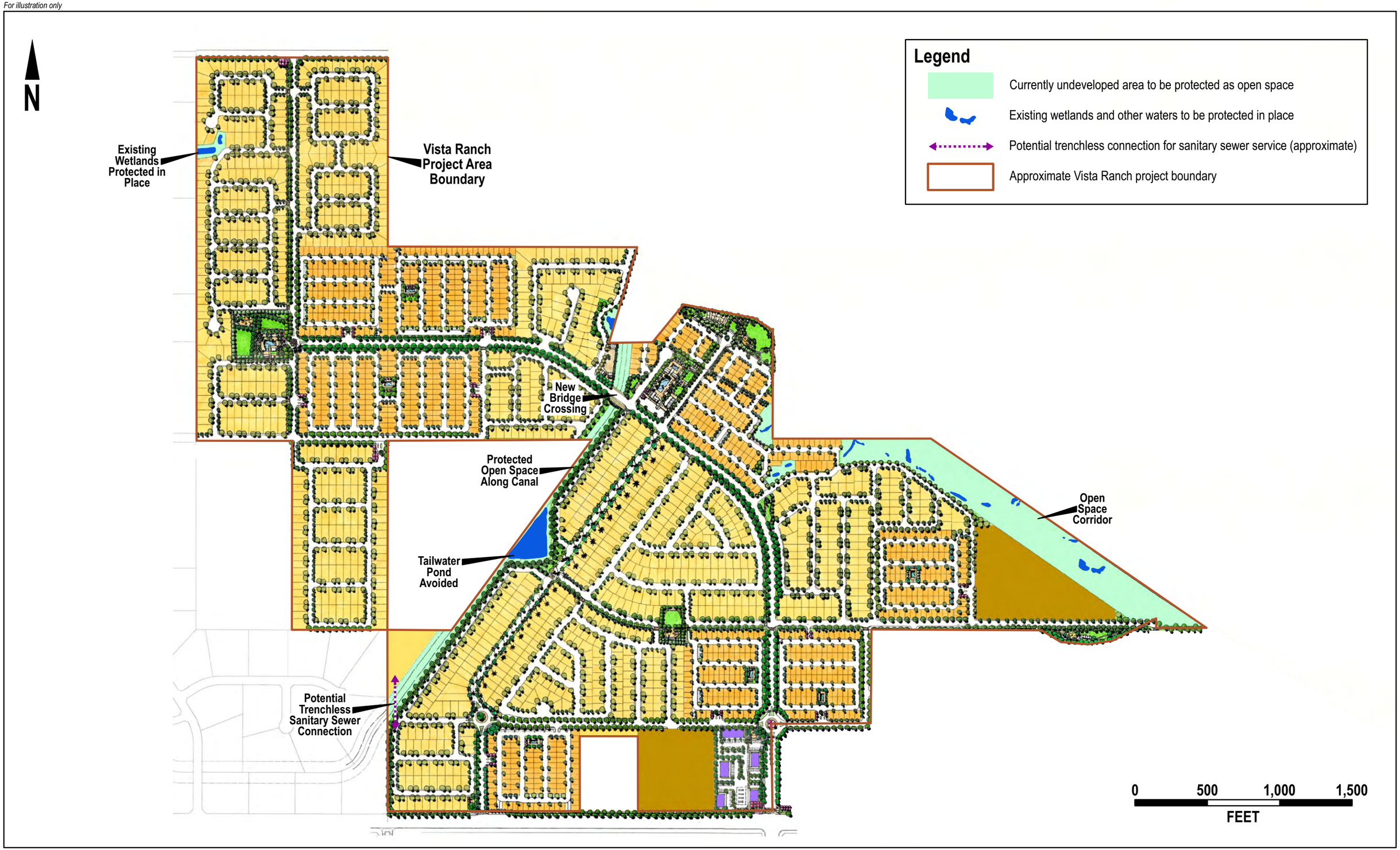
- Leaving a belt of open space along the northeast Project boundary undeveloped, protecting the chain of depressional wetlands within remnant floodplain swales in this area
- Protecting additional wetlands in smaller open space areas throughout the development
- Avoiding and protecting the agricultural tailwater pond in the central portion of the Project site
- Establishing a protected open space corridor along the FMFCD canal where it bisects the Project site; the “canal corridor” open space boundaries would coincide with FMFCD’s existing easement limits where an easement is in place
- Using a clearspan bridge to link the east and west portions of the new development across the canal. A clearspan bridge is substantially more expensive to construct than the City-standard box culvert bridge, but was selected because it will enable meaningful reduction of impacts on the canal. Wet and dry utilities would connect between the east and west portions of the development via the new bridge and/or via trenchless installation beneath the spillway canal

Source: *modified from* Vollmar Natural Lands Consulting 2023a

Redtail Consulting
Environment & Community

Figure 1. Aquatic Resources on Project Site
Vista Ranch Mitigation Overview
Wilson Premier Homes

Source: *modified from* Wilson Premier Homes 2023
For illustration only



Redtail Consulting
Environment & Community

Figure 2. Vista Ranch Schematic Development Layout
Vista Ranch Mitigation Overview
Wilson Premier Homes

- Connecting sanitary sewer service across the canal to existing City of Clovis infrastructure via a trenchless installation

The open space belt at the northeast Project boundary would be approximately 250 feet wide for most of its length, which provides an approximately 25-foot-wide buffer between the most westerly wetlands and the closest developed feature. Other open space areas have also been configured to provide a minimum 25-foot-wide buffer around depressional wetlands and the agricultural tailwater pond. Post-and-cable fencing and informational signage is planned to discourage entry into the open space areas.

The total footprint of unavoidable impacts on wetlands and other waters of the United States, including known and potential special-status species habitat, is expected to be 0.498 acre. A total of 0.495 acre of wetlands would be removed (graded and/or filled) for Project construction. An additional ~0.003 acre of wetland channel in the FMFCD canal would be temporarily impacted for construction of the new bridge connecting the east and west portions of Vista Ranch across the canal.[1]

Table 1 itemizes these unavoidable Project impacts in more detail. Impacts are broken down two ways in the table: first by type of aquatic resource, and second by the federally listed species affected. Unless noted otherwise in the table, impact acreages reflect direct impacts as a result of development construction. Acreages are rounded to three decimal places/four significant figures for simplicity.

Table 1. Vista Ranch Project Impacts

Impact	Acres Impacted	
	Permanent Loss	Temporary Disturbance
Impacts by Aquatic Resource Type		
Wetlands (total)	0.495	0
Canal, wetland channel and fringing wetland margin	0	0.003
Depressional wetland basin	0.061	0
Stockpond	0.434	0
Other waters (canal, non-wetland channel)	0	0
Impacts by Species		
California tiger salamander, total	332.0*	0
Documented breeding habitat	0.390	0
Documented breeding habitat (avoided and protected in place; long-term indirect habitat impact due to surrounding development and loss of overall connectivity)	0.369	0
Suitable breeding habitat, presumed occupied	0.105	0
Low-suitability breeding habitat (avoided and protected in place; long-term indirect habitat impact due to surrounding development and loss of overall connectivity)	1.129	0
Suitable upland habitat, presumed occupied	189.7	0
Low-suitability upland habitat	140.3	0
Vernal pool fairy shrimp, total	0.806	0

[1] Because of the cost differential between a clearspan structure and the standard box culvert crossing, the length of the bridge must be minimized to render it practicable. Thus, although the abutments would be located outside the OHWM limit and there would thus be no permanent loss of wetlands or waters at the bridge crossing, minor temporary disturbance below OHWM is expected to be necessary to restore the canal banks to their pre-project configuration following construction.

Impact	Acres Impacted	
	Permanent Loss	Temporary Disturbance
Suitable wetland habitat, presumed occupied (direct loss)	0.061	0
Suitable wetland habitat, presumed occupied (avoided and protected in place; long-term indirect habitat impact due to surrounding development and loss of overall connectivity)	0.745	0

Note:
* Total reflects rounded acreages below; when unrounded figures are used, impacts on California tiger salamander habitat total 331.93 acres (see Vollmar Natural Lands Consulting 2023b). Impacts on California tiger salamander breeding habitat include acreages within the Vista Ranch project site as well as suitable aquatic (breeding) habitat within the standard 250-foot U.S. Fish and Wildlife Service indirect impacts buffer.

Source: Vollmar Natural Lands Consulting 2023b

Proposed Compensation for Permanent Impacts

The Project proposes to provide compensatory mitigation for permanent losses of jurisdictional and special-status species habitat through in-perpetuity conservation on a privately owned ranch property (hereafter, Property) located in Madera County about 15 miles northwest of the Project site.

Mitigation Property Overview

The Property consists almost entirely of undeveloped rangeland. It was previously identified as a potential conservation bank site planned to offer credits for purchase (e.g., Vollmar Natural Lands Consulting 2021), and the landowner is amenable to establishment of a conservation easement on the property. Extensive studies were conducted at the Property from 2017 through 2023, beginning in conjunction with the landowner's initial planning to create a commercial mitigation bank at the site. Based on these studies, the site appears to be an excellent candidate for conservation.

Overall, the Property provides a robust network of vernal pool/swale complexes and upland annual grassland habitat, crosscut by a southwest-flowing seasonal stream channel. As identified above, preliminary mapping identified a high density of naturally occurring wetlands (roughly 6.8% cover), estimated to comprise approximately 130 acres of vernal pools, vernal swales, and ephemeral streams as well as approximately 2.7 acres (approximately 12,166 linear feet) of seasonal stream habitat. The remainder of the Property (some 1,700 acres) supports upland annual grassland (Vollmar Natural Lands Consulting 2021, Smith pers. comm.[b]).

Mean annual precipitation at the Property is approximately 13.4 inches, with the majority falling as rain during the winter months (December – March). Pools generally begin to fill with the onset of heavy rains in the late fall and winter and dry down during the spring. The pools vary in size and depth; the larger and deeper pools typically have a longer hydroperiods while the smaller and shallower pools typically have shorter hydroperiods. There is also high degree of hydrologic connectivity between pools, either via surface swales or subsurface flow (Vollmar Natural Lands Consulting 2021).

Both aquatic and upland habitat at the Property is in good condition, and unlike many vacant Central Valley lands the Property has not been cultivated (Vollmar Natural Lands Consulting 2021). California Rapid Assessment Method (CRAM) evaluations conducted on the Property and at the Project site in September 2023 demonstrate that wetland and stream function/value are consistently higher on the Property than at the Project site (Redtail Consulting 2023). Historically, the Property supported low- to moderate-intensity cattle grazing and except for the immediate corral area has not been developed or subjected to other ground disturbance. Past grazing use is not considered a deficit in this context; moderate cattle grazing is generally beneficial for the management of vernal pool grasslands, since it reduces thatch and controls invasive weeds, helping to maintain

vernal pool hydrology and facilitating the establishment and persistence of native forbs—and vegetation observed within the vernal pools and other wetlands on the Property is indeed reflective of healthy conditions, featuring a moderate cover of predominantly native forbs and grasses. Like most San Joaquin Valley grassland habitats, the Property's uplands are dominated by introduced annual grasses, but invasive weeds were generally found to be absent (Vollmar Natural Lands Consulting 2021).

Conservation of lands on the Property is thus expected to create a substantial preserve offering a connective mosaic of high-quality vernal pool/swale, seasonal stream, and annual grassland habitat that is currently documented as supporting at least thirteen special-status species, including those affected by the Project (Vollmar Natural Lands Consulting 2021, Smith pers. comm.).

Regional Conservation Context

As noted above, the Property is located south of the Fresno River and thus is appropriately situated to compensate for California tiger salamander and western spadefoot impacts at the Vista Ranch site. The Property also lies within the Madera Core Recovery Area defined in the U.S. Fish and Wildlife Service's (Service's) 2005 *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* and also within Service-designated Critical Habitat for vernal pool fairy shrimp, which is known to be present at the site.[2] It is also in close proximity to designated Critical Habitat for California tiger salamander. At the same time, located near the intersection of SR 145 and SR 41, it is central to Madera County's Four Corners area, which supports an approximately 33,000-acre block of contiguous vernal pool habitat but is under intensive development pressure from numerous proposed and approved projects. With only about 4,200 acres of the Four Corners vernal pool habitat conserved to date, conservation on the Property has the potential to make a significant contribution to vernal pool recovery in this area (Vollmar Natural Lands Consulting 2021).

Although the proposed mitigation site is located in a different subwatershed from the Project site (USGS HUC-8 18040007, Upper Chowchilla – Upper Fresno vs. USGS HUC-8 18030009, Upper Dry), it is hoped that the opportunity to preserve extensive and valuable aquatic resources in the context of a functional habitat mosaic will outweigh the mitigation site's out-of-watershed location. This is particularly the case as conservation of vernal pools and related habitat in Madera County is an identified priority, and these resources are considered at risk due to expanding development in the region (e.g., U.S. Fish and Wildlife Service 2005, Vollmar Natural Lands Consulting 2021).

Mitigation Proposal

Preservation of documented breeding habitat for California tiger salamander (*Ambystoma californiense*), vernal pool fairy shrimp (*Branchinecta lynchi*), and western spadefoot (*Spea hammondii*), along with adjacent upland habitat, is proposed as compensation for unavoidable Project impacts on these species.

Preservation of aquatic resources on the Property, including vernal pools, vernal swales, and functional seasonal stream corridor, is also proposed as providing at least partial compensation for unavoidable Project impacts on wetlands and waters. Because of the quality, extent, and functionality of the habitat available for preservation, full compensation for the Project's impacts on aquatic resources intended via conservation at the Property. If this is not acceptable to the resource agencies, a 1:1 purchase of aquatic resources credits from an agency-approved source is proposed in addition to substantive preservation at the Property.

[2] Much of the Vista Ranch site also lies within the Madera Core Recovery Area (Vollmar Natural Lands Consulting 2023b). However, as noted elsewhere, soils at the Vista Ranch site are generally less conductive to vernal pool formation and persistence than those at the Jamison Ranch Property.

The proponent is currently engaging the resource agencies—the Corps, Service, Central Valley Regional Water Quality Control Board (RWQCB), and California Department of Fish and Wildlife (DFW)—in discussions to flesh out mitigation details.

Final preservation acreages, and any credit purchases, will reflect input from the Corps, Service, RWQCB, and DFW. The extent and exact location of preserved lands within the Property will also be developed in consultation with the agencies, since the preserve will need to be configured to (1) maximize long-term habitat functionality to support affected species and (2) provide long-term protection for aquatic resources functions, values, and services.

Long-Term Protection & Management of Mitigation Lands

The portion of the Property dedicated for mitigation will be placed under a conservation easement to preclude future development and to control use and management of the preserved lands. The easement holder is tentatively expected to be the Sierra Foothill Conservancy.

The proponent intends to develop a *Long-Term Management Plan* for the site, which will

- define necessary management activities and the range of acceptable methods
- lay out a monitoring process and criteria for routine assessments of site health, and
- establish an adaptive management approach—including triggers for management intervention/corrective action—to ensure that habitat on the site remains in good condition and that aquatic resources and upland functions and values are preserved

A *Grazing Plan* will also be put in place as a step-down from the overall *Long-Term Management Plan*. All of the preserve documents are expected to be subject to review and approval by the Corps, Service, RWQCB, and DFW.

Establishment of the preserve on the Property will also include funding an endowment to pay for species habitat monitoring and management in perpetuity.

Proposed Compensation for Temporary Impacts

As shown in Table 1, the only temporary impacts anticipated as a result of the Project would be the very small area of wetland channel disturbance (~0.003 acre) associated with construction of the new bridge over the FMFCD canal. Following bridge construction, any disturbed areas within the canal channel will be restored to their pre-Project configuration and appropriately stabilized. If vegetation has been removed, damaged, or disturbed by construction, the area will be revegetated in an appropriate palette of native species. Disturbed and revegetated areas in the channel will be monitored annually for 5 years to ensure recovery to the pre-Project reference condition. Remedial measures will be undertaken if revegetation appears to be unsuccessful (i.e., is not meeting interim success criteria). The revegetaion planting palette and monitoring protocols and criteria are expected to be subject to review and approval by the Corps, Service, RWQCB, and DFW.

No compensation for temporal impacts during vegetation recovery at the bridge site is proposed, due to the limited habitat value provided by the canal channel and the fact that a substantial extent of wetland habitat and seasonal stream channel is planned to be preserved in perpetuity and managed for habitat value at the Property.

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Appendix E

Cultural

Cultural Resources Inventory Report
Triangle Property Project

Fresno County, California

Prepared For:

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Prepared By:

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January 2023

MANAGEMENT SUMMARY

Wilson Premier Homes, Inc. retained ECORP Consulting, Inc. in 2022 to conduct a cultural resources inventory for the Triangle Property in Fresno County, California. Wilson Premier Homes, Inc. proposes to apply for entitlement for the Project for future development.

The inventory included a records search, literature review, and field survey. The records search results indicated that 19 previous cultural resources studies have been conducted within 0.5 mile of the Project Area. Seven of these studies included a portion of the Project Area. As a result of those studies, no sites have previously been recorded within the Project Area.

ECORP observed 11 newly recorded resources during the 2022 pedestrian survey. These resources consist of 10 historic-period architectural resources and one pre-contact isolated archaeological resource. ECORP evaluated the 10 historic-period architectural resources using National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR) eligibility criteria and found that none meet the criteria with sufficient integrity to be considered eligible for the NRHP or CRHR.

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 Project Location and Description 1
1.2 Area of Potential Effects 1
1.3 Regulatory Context 2
1.3.1 National Environmental Policy Act 2
1.3.2 National Historic Preservation Act 2
1.3.3 California Environmental Quality Act 4
1.3.4 United States Army Corps of Engineers Regulations 5
1.4 Report Organization 6
2.0 SETTING 7
2.1 Environmental Setting 7
2.2 Geology and Soils 7
2.3 Vegetation and Wildlife 8
3.0 CULTURAL CONTEXT 8
3.1 Regional Precontact History 8
3.2 Local Precontact History 9
3.3 Ethnography 11
3.4 Regional History 12
3.5 Project Area History 14
3.5.1 Flood Control on Big Dry Creek 15
3.6 Architectural Context: The Home Ranch 15
3.7 Architectural Context: Public Roads 16
4.0 METHODS 17
4.1 Personnel Qualifications 17
4.2 Records Search Methods 19
4.3 Sacred Lands File Coordination Methods 20
4.4 Other Interested Party Consultation Methods 21
4.5 Field Methods 21
5.0 RESULTS 21
5.1 Records Search 21
5.1.1 Previous Research 21
5.1.2 Records 25
5.1.3 Map Review and Aerial Photographs 26
5.2 Sacred Lands File Results 28

5.3 Other Interested Party Consultation Results 28
5.4 Field Survey Results 28
5.4.2 Cultural Resources 30
5.4.3 Isolates 53
6.0 MANAGEMENT CONSIDERATIONS 54
6.1 Conclusions 54
6.2 Likelihood for Subsurface Cultural Resources 55
6.3 Post-Review Discoveries 55
7.0 REFERENCES CITED 57

LIST OF FIGURES

Figure 1. Project Location and Vicinity 1
Figure 2. Survey Coverage 22
Figure 3. Project Area Overview (view south; August 15, 2022). 28
Figure 4. Project Area Overview (view west-northwest; August 16, 2022). 29
Figure 5. Project Area Overview (view south-southeast; August 17, 2022). 29
Figure 6. Project Area Overview (view southeast; August 18, 2022). 30
Figure 7. Overview of TRI-001-S (Drainage Canal) (view southwest; August 16, 2022). 31
Figure 8. Overview of TRI-003-S (view east; August 15, 2022). 33
Figure 9. Overview of TRI-005-S (view west; August 15, 2022). 34
Figure 10. Overview of TRI-006-S (view west; August 15, 2022). 36
Figure 11. Overview of TRI-007-S (view north; August 15, 2022). 38
Figure 12. Overview of Building A of TRI-009-S (view northwest; August 16, 2022). 39
Figure 13. Overview of Building B of TRI-009-S (view north; August 16, 2022). 40
Figure 14. Overview of Building C of TRI-009-S (view north; August 16, 2022). 40
Figure 15. Overview of Building D of TRI-009-S (view northeast; August 16, 2022). 41
Figure 16. Overview of Building A of TRI-011-S (view northwest; August 17, 2022). 42
Figure 17. Overview of Building B of TRI-011-S (view west; August 17, 2022). 43
Figure 18. Overview of Building D of TRI-011-S (view southwest; August 17, 2022). 43
Figure 19. Overview of Building C of TRI-011-S (view east; August 17, 2022). 44
Figure 20. Overview of Building E of TRI-011-S (view south; August 17, 2022). 44
Figure 21. Overview of Building F of TRI-011-S (view northeast; August 18, 2022). 45

Figure 22. Overview of Building G of TRI-011-S (view northwest; August 19, 2022). 45
Figure 23. Overview of Building H of TRI-011-S (view west; August 19, 2022). 46
Figure 24. Overview of Building I of TRI-011-S (view northwest; August 19, 2022). 46
Figure 25. Overview of Building J of TRI-011-S (view northwest; August 19, 2022). 47
Figure 26. Overview of TRI-016-S (view north; August 18, 2022). 48
Figure 27. Overview of TRI-017-S (view south; August 18, 2022). 50
Figure 28. Overview of Building A of TRI-019-S (view west; August 19, 2022). 52
Figure 29. Overview of Building B of TRI-019-S (view northeast; August 19, 2022). 52
Figure 30. Closeup of TRI-015-I (detail view; August 18, 2022). 54

LIST OF TABLES

Table 1. Previous Cultural Studies within 0.5 mile of the Project Area 23
Table 2. Previously Recorded Cultural Resources within 0.5 mile of the Project Area 24
Table 3. GLO Land Patent Records 25

LIST OF APPENDICES

Appendix A – Records Search Confirmation and Historical Society Coordination
Appendix B – Sacred Lands File Coordination
Appendix C – Project Area Photographs
Appendix D – ***Confidential*** Cultural Resource Site Location Map

LIST OF ACRONYMS AND ABBREVIATIONS

Term	Definition
AB	Assembly Bill
ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effect
BLM	Bureau of Land Management
BP	Before present
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CHL	California Historical Landmarks
CHRIS	California Historical Resources Information System
CRHR	California Register of Historical Resources
CWA	Clean Water Act
DPR	Department of Parks and Recreation
ECORP	ECORP Consulting, Inc.
FR	Federal Register
GLO	General Land Office
MLD	Most Likely Descendant
MOA	Memorandum of Agreement
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OHP	California Office of Historic Preservation
PRC	Public Resources Code
Project	Triangle Property Project
RPA	Registered Professional Archaeologist
SHPO	State Historic Preservation Office
SJVRR	San Joaquin Valley Railroad
SSJVIC	Southern San Joaquin Valley Information Center
TCR	Tribal Cultural Resource
U.S.	United States of America
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey

1.0 INTRODUCTION

Wilson Premier Homes, Inc. retained ECORP Consulting, Inc. in 2022 to conduct a cultural resources inventory of the Proposed Triangle Property Project located north of the City of Clovis in Fresno County, California. A survey of the Project Area was required to identify potentially eligible cultural resources (i.e., archaeological sites and historic buildings, structures, and objects) that could be affected by the Project.

1.1 Project Location and Description

The Project Area consists of 398.40 acres of property and offsite improvements located in Sections 21, 22, and 23 of Township 12 South, Range 21 East, Mount Diablo Base and Meridian as depicted on the 1964 (photorevised 1981) Clovis and 1964 Friant, California United States Geological Survey (USGS) 7.5-minute topographic quadrangle maps (Figure 1). The property is also known by the following Assessor Parcel Numbers (APNs):

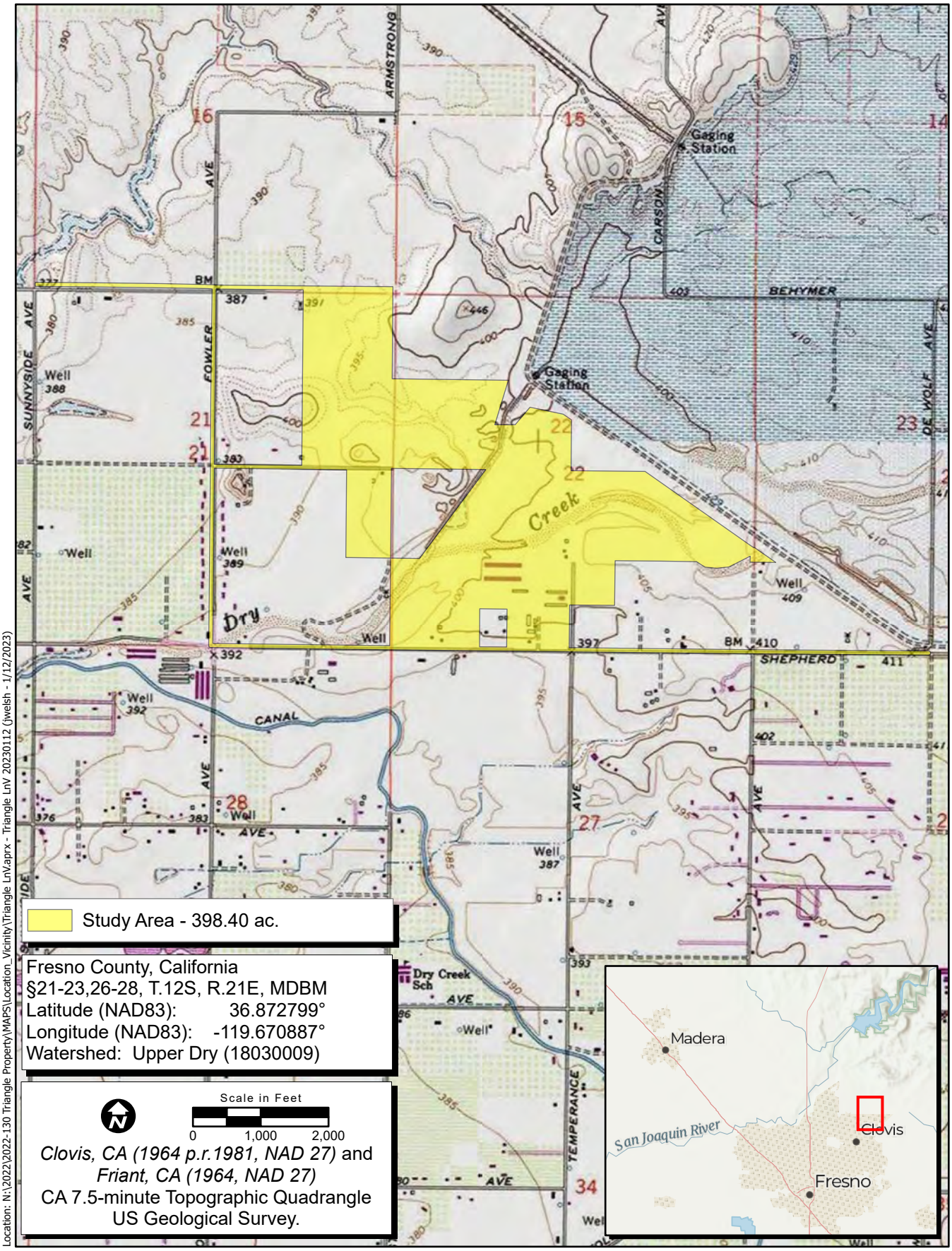
- 557-012-02
- 557-012-28
- 557-012-29
- 557-022-11S
- 557-031-05S
- 557-031-23
- 557-031-24
- 557-031-25
- 557-031-27
- 557-031-35
- 557-031-37
- 557-031-44S
- 558-010-25

The Big Dry Creek Dam and Reservoir bound the Project Area to the east; East Shepherd Avenue is to the south; North Burgan Avenue is to the west; and East Behymer Avenue is to the north. Offsite improvements are proposed between East Behymer Avenue and North Sunnyside Avenue, North Fowler Avenue and East Shepherd Avenue, East Shepherd Avenue and North De Wolf Avenue, and East Perrin Avenue and North Fowler Avenue. The Project proponent intends to apply for entitlement for future development.

1.2 Area of Potential Effects

The Area of Potential Effects (APE) consists of the horizontal and vertical limits of a project and includes the area within which significant impacts or adverse effects to Historical Resources or Historic Properties could occur as a result of the Project. The APE is defined for projects subject to regulations implementing Section 106 (federal law and regulations). For projects subject to the California Environmental Quality Act (CEQA) review, the term Project Area is used rather than APE. The terms Project Area and APE are interchangeable for the purpose of this document.

The horizontal APE consists of all areas where activities associated with a project are proposed and, in the case of this Project, equals the Project Area subject to environmental review under the National Environmental Policy Act (NEPA) and CEQA. This includes areas proposed for construction, vegetation removal, grading, trenching, stockpiling, staging, paving, and other elements in the official Project description. The horizontal APE is illustrated in Figure 1 and also represents the survey coverage area. It measures 398.40 acres.



Location: N:\2022\2022-130 Triangle Property\MAPS\Location_Vicinity\Triangle LnV.aprx - Triangle LnV 20230112 (jwelsh - 1/12/2023)

Map Date: 1/12/2023
Sources: ESRI, USGS

Figure 1. Project Location and Vicinity

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

2022-130 Triangle Property

The vertical APE is described as the maximum depth below the surface to which excavations for project foundations and facilities will extend. Therefore, the vertical APE for this Project includes all subsurface areas where archaeological deposits could be affected. The subsurface vertical APE varies across the Project and could extend as deep as 10 feet below the surface; therefore, a review of geologic and soils maps was necessary to determine the potential for buried archaeological sites that are cannot be seen on the surface.

1.3 Regulatory Context

A review of the regulatory context is provided below; however, the inclusion of any of these laws and regulations in this report does not make a law or regulation apply when it otherwise would not. Similarly, the omission of any other laws and regulations from this section does not mean that they do not apply. Rather, the purpose of this section is to provide context in explaining why the study was carried out in the manner documented herein.

1.3.1 National Environmental Policy Act

NEPA establishes national policy for the protection and enhancement of the environment. Part of the function of the federal government in protecting the environment is to "preserve important historic, cultural, and natural aspects of our national heritage." Cultural resources need not be determined eligible for the National Register of Historic Places (NRHP) through the National Historic Preservation Act (NHPA) of 1966 (as amended) to receive consideration under NEPA. NEPA is implemented by regulations of the Council on Environmental Quality (40 Code of Federal Regulations [CFR] 1500-1508).

The definition of *effects* in the NEPA regulations includes adverse and beneficial effects on historic and cultural resources (40 CFR 1508.8). Therefore, the *Environmental Consequences* section of an Environmental Impact Statement (see 40 CFR 1502.16(f)) must analyze potential effects to historic or cultural resources that could result from the proposed action and each alternative. In considering whether an alternative may "significantly affect the quality of the human environment," a federal agency must consider, among other things:

- unique characteristics of the geographic area, such as proximity to historic or cultural resources (40 CFR 1508.27(b)(3)), and
- The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the NRHP (40 CFR 1508.27(b)(8)).

Therefore, because historic properties are a subset of *cultural resources*, they are one aspect of the *human environment* defined by NEPA regulations.

1.3.2 National Historic Preservation Act

The NHPA of 1966, as amended, is the federal law that covers cultural resources that could be affected by federal undertakings. Section 106 of the NHPA requires that federal agencies take into account the effects of a federal undertaking on properties listed in or eligible for the NRHP. The agencies must afford the

Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on the undertaking. A federal undertaking is defined in 36 CFR 800.16(y):

> A federal undertaking means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license, or approval.

The regulations that stipulate the procedures for complying with Section 106 are in 36 CFR 800. The Section 106 regulations require:

- definition of the APE;
- identification of cultural resources within the APE;
- evaluation of the identified resources in the APE using NRHP eligibility criteria;
- determination of whether the effects of the undertaking or project on eligible resources will be adverse; and
- agreement on and implementation of efforts to resolve adverse effects, if necessary.

The federal agency must seek comment from the State Historic Preservation Officer (SHPO) and, in some cases, the ACHP, for its determinations of eligibility, effects, and proposed mitigation measures. Section 106 procedures for a specific project can be modified by negotiation of a Memorandum of Agreement or Programmatic Agreement between the federal agency, the SHPO, and, in some cases, the project proponent.

Effects to a cultural resource are potentially adverse if the lead federal agency, with the SHPO's concurrence, determines the resource eligible for the NRHP, making it a Historic Property, and if application of the Criteria of Adverse Effects (36 CFR 800.5[a][2] et seq.) results in the conclusion that the effects will be adverse. The NRHP eligibility criteria, contained in 36 CFR 60.4, are as follows:

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess aspects of integrity of location, design, setting, materials, workmanship, feeling, association, and

(A) is associated with events that have made a significant contribution to the broad patterns of our nation's history and cultural heritage;

(B) is associated with the lives of persons important in our past;

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

(D) has yielded, or may be likely to yield, information important in prehistory or history.

In addition, the resource must be at least 50 years old, barring exceptional circumstances (36 CFR 60.4). Resources that are eligible for, or listed on, the NRHP are *historic properties*.

Regulations implementing Section 106 of the NHPA (36 CFR 800.5) require that the federal agency, in consultation with the SHPO, apply the Criteria of Adverse Effect to historic properties within the APE. According to 36 CFR 800.5(a)(1):

> "An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association."

1.3.3 California Environmental Quality Act

CEQA is the state law that applies to a project's impacts on cultural resources. A project is an activity that may cause a direct or indirect physical change in the environment and that is undertaken or funded by a state or local agency, or requires a permit, license, or lease from a state or local agency. CEQA requires that impacts to Historical Resources be identified and, if the impacts will be significant, apply mitigation measures to reduce the impacts.

A Historical Resource is a resource that

(1) is listed in or has been determined eligible for listing in the California Register of Historical Resources (CRHR) by the State Historical Resources Commission, or has been determined historically significant by the CEQA lead agency because it meets the eligibility criteria for the CRHR,

(2) is included in a local register of historical resources, as defined in Public Resources Code (PRC) 5020.1(k), or

(3) has been identified as significant in a historical resources survey, as defined in PRC 5024.1(g) (California Code of Regulations [CCR] Title 14, Section 15064.5(a)).

The eligibility criteria for the CRHR are as follows (CCR Title 14, Section 4852(b)):

(1) It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States (U.S.);

(2) It is associated with the lives of persons important to local, California, or national history;

(3) It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or

(4) It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

In addition, the resource must retain integrity, which is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association (CCR Title 14, Section 4852(c)). Resources that have been determined eligible for the NRHP are automatically eligible for the CRHR.

Impacts to a Historical Resource, as defined by CEQA (listed in an official historic inventory or survey or eligible for the CRHR), are significant if the resource is demolished or destroyed or if the characteristics that made the resource eligible are materially impaired (CCR Title 14, Section 15064.5(b)). Demolition or alteration of eligible buildings, structures, and features that they would no longer be eligible would result in a significant impact. Whole or partial destruction of eligible archaeological sites would result in a significant impact. In addition to impacts from construction resulting in destruction or physical alteration of an eligible resource, impacts to the integrity of setting (sometimes termed *visual impacts*) of physical features in the Project Area could also result in significant impacts.

Tribal Cultural Resources (TCRs) are defined in Section 21074 of the California PRC as sites, features, places, cultural landscapes (geographically defined in terms of the size and scope), sacred places, and objects with cultural value to a California Native American tribe that are either included in or determined to be eligible for inclusion in the CRHR, or are included in a local register of historical resources as defined in subdivision (k) of Section 5020.1, or are 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 Section 5024.1. Section 1(b)(4) of Assembly Bill (AB) 52 established that only California Native American tribes, as defined in Section 21073 of the California PRC, are experts in the identification of Tribal Cultural Resources (TCR) and impacts thereto. Because ECORP does not meet the definition of a California Native American tribe, it only addresses information in this report for which it is qualified to identify and evaluate, and that which is needed to inform the cultural resources section of CEQA documents. This report, therefore, does not identify or evaluate TCRs. Should California Native American tribes ascribe additional importance to or interpretation of archaeological resources described herein, or provide information about non-archeological TCRs, that information is documented separately in the AB 52 tribal consultation record between the tribe(s) and lead agency and summarized in the TCRs section of the CEQA document, if applicable.

1.3.4 United States Army Corps of Engineers Regulations

The Project must meet the requirements of Section 404 of the Clean Water Act (CWA) if it affects Waters of the U.S. The Project also needs to obtain a U.S. Army Corps of Engineers (USACE) Sacramento District Regulatory Division permit and follow USACE regulations for cultural resources in 33 CFR 325 Appendix C (Procedures for the Protection of Historic Properties) to fulfill the requirements set forth in the NHPA, in other applicable historic preservation laws, and in presidential directives as they relate to the regulatory program of the USACE (33 CFR Parts 320-334). In addition, the USACE Sacramento District provides guidance for preparation of Section 106 reports in *2014 Sacramento District Regulatory Branch Guidelines for Compliance with Section 106 of the NHPA of 1966, as amended*. Apart from the requirements of the NHPA, all historic properties are subject to consideration under the USACE's NEPA processes (33 CFR Part 325, Appendix B), and the USACE's public interest review requirements contained in 33 CFR 320.4. Therefore, historic properties are included as a factor in the district engineer's decision on each CWA 404 permit application.

If the Project or activity is found to have an adverse effect on NRHP-designated historic properties, the district engineer will coordinate with the SHPO to seek ways to avoid or reduce effects on designated historic properties. At any time during CWA 404 permit processing, the district engineer may consult with

the involved parties to discuss and consider possible alternatives or measures to avoid or minimize adverse effects of a proposed activity in accordance with the procedures described in 33 CFR Part 325, Appendix C. If the consultation results in a mutual agreement among the SHPOs, the permit applicant, and the district engineer regarding the treatment of designated historic properties, the district engineer may formalize that agreement either through special conditions added to the CWA 404 permit or by signing a Memorandum of Agreement (MOA) with these parties. The MOA would comprise the comments of the SHPO and the ACHP. The criteria involved in making an adverse effect determination are described fully in 33 CFR Part 325, Appendix C.

The USACE district engineer, in accordance with 33 CFR 320.4, shall weigh all factors, including the effects of the undertaking on historic properties and any comments of the ACHP and the SHPO, and any views of other interested parties, in making a decision about a permit application. The district engineer will add permit conditions to avoid or reduce effects on historic properties that are determined to be necessary in accordance with 33 CFR 325.4. The district engineer will consider the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 Federal Register 44716) for making decisions. If permitting the Project would cause irrevocable loss of important scientific, prehistoric, historical, or archeological data, the district engineer, in accordance with the Archeological and Historic Preservation Act, will advise the Secretary of the Interior of the extent of loss of data, implementation of plans to mitigate such a loss, and the inclusion of permit conditions for mitigation.

1.4 Report Organization

The following report documents the study and its findings and was prepared in conformance with the California Office of Historic Preservation's (OHP) *Archaeological Resource Management Reports: Recommended Contents and Format*. Appendix A provides a confirmation of the records search with the California Historical Resources Information System (CHRIS). Appendix B contains documentation of a search of the Sacred Lands File. Appendix C presents photographs of the Project Area. Appendix D contains a confidential cultural resource site locations map.

Sections 6253, 6254, and 6254.10 of the California Code authorize state agencies to exclude archaeological site information from public disclosure under the Public Records Act. In addition, the California Public Records Act (Government Code Section 6250 et seq.) and California's open meeting laws (The Brown Act, Government Code Section 54950 et seq.) protect the confidentiality of Native American cultural place information. Because the disclosure of information about the location of cultural resources is prohibited by the Archaeological Resources Protection Act of 1979 (16 U.S. Code 552 470hh) and Section 307103 of the NHPA, it is exempted from disclosure under Exemption 3 of the federal Freedom of Information Act (5 U.S. Code 552) Likewise, the Information Centers of the CHRIS maintained by the OHP prohibit public dissemination of records search information. In compliance with these requirements, the results of this cultural resource investigation were prepared as a confidential document, which is not intended for public distribution in either paper or electronic format.

2.0 SETTING

2.1 Environmental Setting

The Project Area is located in the San Joaquin Valley region within the greater Central Valley. Elevations range between 390 and 416 feet above mean sea level. Big Dry Creek flows through the southern portion of the Project Area, trending in a north-northwest to southwest direction, with various ephemeral drainages throughout the area. The Big Dry Creek Dam is located directly east of the Project Area. Agricultural land makes up most of the immediate Project Area, with dense residential development to the south and rural residential development to the west and northwest.

2.2 Geology and Soils

The Project Area is located in the eastern portion of the San Joaquin Valley, less than 10 miles from the Sierra Nevada Foothills, which is an area that is currently in a geological interval of uplift and erosion. This area was formed by a series of geologic activities over eons, including crustal plates colliding and suturing, volcanic and sedimentary deposition, and plutonic intrusions (Kipps and Moratto 1988). During the Pleistocene, erosion of the Sierra Nevada led to the deposition of large alluvial fans at the base of the foothills along the eastern side of the Central Valley. Glacial conditions are generally credited for the deposition of these fans, while subsequent interglacial periods are marked by landscape stability, soil formation, and channel incision. Subsequent depositional cycles during the Holocene progressively buried downstream sections of many older alluvial fans and led to the formation of inset stream terraces and nested alluvial fans along the foothills (Rosenthal and Willis 2017).

Jennings et al. (1977) identifies the geology of the southern portion of the Project Area as composed primarily of Quaternary alluvium and marine deposits from the Pliocene through the Holocene (5.333-0 Ma). This portion is predominantly covered in alluvial sediments deposited by ancient and recent water flow. The northeastern portion of the Project Area is identified as Mesozoic granitic rocks. The northern portion of the Project Area near East Behymer Avenue is identified as undivided pre-Cenozoic metasedimentary and metavolcanic rocks of a wide variety, including slate, quartzite, chert, schists, gneiss, and minor marble (Jennings et al. 1977).

According to the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Web Soil Survey website (NRCS 2022), 21 soil types are located within the Project Area, including:

five variations of Atwater loamy sand (AoA, AoB, ArA, ArB, and AtA), drained 0 to 9 percent slopes;

Blasingame loam (BcC), well-drained 3 to 15 percent slopes;

Delhi loamy sand (DhB), somewhat excessively drained 3 to 9 percent slopes;

Dello sandy loam (Dn); Foster loam (Fn);

two variations of Grangeville fine sandy loam (Gf and Gn);

Greenfield sandy loam (GtA), well drained 0 to 3 percent slopes;

Hildreth clay (Hu);

Millerton rocky fine sandy loam (MoD), well drained 3 to 30 percent slopes;

four variations of Ramona loam (Ra, Rb, Rc, and Re); Riverwash (Rh);

San Joaquin loam (SeA), moderately well drained 0 to 3 percent slopes; and

Tujunga loamy sand (TzbA), somewhat excessively drained 0 to 3 percent.

There exists a moderate potential for buried pre-contact archaeological sites in the Project Area due to the presence of alluvium along Big Dry Creek, which runs within the southern portion of the Project Area, and the presence of a of pre-contact archaeological site located along Big Dry Creek. Additionally, Delhi sands are known for having increased potential for archaeological sites, however, this soil comprises less than 1 percent of the total project area and is adjacent to Big Dry Creek. The potential decreases with distance from Big Dry Creek.

2.3 Vegetation and Wildlife

The dominant plant communities within the Project Area includes fallowed farmland, rural development landscaping, and invasive vegetation, including star thistle, wall barley, stinkwort, ripgut brome, and other various perennial grasses and weeds (ECORP 2022).

Wildlife species that may occur in the Project Area include desert cottontail, California ground squirrel, western fence lizard, rock pigeon, house sparrow, common crow, and common raven (ECORP 2022).

3.0 CULTURAL CONTEXT

3.1 Regional Precontact History

It is generally believed that human occupation of California began at least 10,000 years before present (BP). The archaeological record indicates that between approximately 10,000 and 8,000 BP, a predominantly hunting economy existed, characterized by archaeological sites containing numerous projectile points and butchered large animal bones. Animals that were hunted probably consisted mostly of large species still alive today. Bones of extinct species have been found but cannot definitively be associated with human artifacts. Although small animal bones and plant grinding tools are rarely found within archaeological sites of this period, small game and floral foods were probably exploited on a limited basis. A lack of deep cultural deposits from this period suggests that groups included only small numbers of individuals who did not often stay in one place for extended periods (Wallace 1978a).

Around 8,000 BP, there was a shift in focus from hunting toward a greater reliance on plant resources. Archaeological evidence of this trend consists of a much greater number of milling tools (e.g., metates and manos) for processing seeds and other vegetable matter. This period, which extended until around 5,000 BP, is sometimes referred to as the Millingstone Horizon (Wallace 1978a). Projectile points are found in archaeological sites from this period, but they are far fewer in number than from sites dating to 8,000 BP. An increase in the size of groups and the stability of settlements is indicated by deep, extensive middens at some sites from this period (Wallace 1978a).

Archaeological evidence indicates that reliance on both plant gathering and hunting continued as in the previous period, with more specialized adaptation to particular environments in sites dating to after about 5,000 BP. Mortars and pestles were added to metates and manos for grinding seeds and other vegetable material. Flaked-stone tools became more refined and specialized, and bone tools were more common. New peoples from the Great Basin began entering Southern California during this period. These immigrants, who spoke a language of the Uto-Aztecan linguistic stock, seem to have displaced or absorbed the earlier population of Hokan-speaking peoples. During this period, known as the Late Horizon, population densities were higher than before, and settlement became concentrated in villages and communities along the coast and interior valleys (Erlandson 1994; McCawley 1996). Regional subcultures also started to develop, each with its own geographical territory and language or dialect (Kroeber 1925; McCawley 1996; Moratto 1984). These were most likely the basis for the groups that the first Europeans encountered during the 18th century (Wallace 1978a). Despite the regional differences, many material culture traits were shared among groups, indicating a great deal of interaction (Erlandson 1994). The presence of small projectile points indicates the introduction of the bow and arrow into the region sometime around 2,000 BP (Wallace 1978a; Moratto 1984).

3.2 Local Precontact History

The San Joaquin Valley and adjacent Sierra Nevada foothills and Coast Range have a long and complex cultural history with distinct regional patterns that extend back more than 11,000 years (McGuire 1995). The first generally agreed-upon evidence for the presence of pre-contact peoples in the region is represented by the distinctive basally thinned and fluted projectile points, found on the margins of extinct lakes in the San Joaquin Valley. These projectiles, often compared to Clovis points, have been found at three localities in the San Joaquin Valley including along the Pleistocene shorelines of former Tulare Lake. Based on evidence from these sites and other well-dated contexts elsewhere, the Paleo-Indian hunters used these spear points existed during a narrow time range of 11,550 to 8,550 BP (Rosenthal et al. 2007).

As a result of climate change at the end of the Pleistocene, a period of extensive deposition occurred throughout the lowlands of central California, burying many older landforms, and providing a distinct break between Pleistocene and subsequent occupations during the Holocene. Another period of deposition, also a product of climate change, had similar results around 7,550 BP, burying some of the oldest archaeological deposits discovered in California (Rosenthal and McGuire 2004).

The Lower Archaic (8,550 to 5,550 BP) is characterized by an apparent contrast in economy, although it is possible they may be seasonal expressions of the same economy. Archaeological deposits that date to this period on the valley floor frequently include only large-stemmed spear points, suggesting an emphasis on large game such as artiodactyls (Wallace 1991). Recent discoveries in the adjacent Sierra Nevada have yielded distinct milling assemblages, which clearly indicate a reliance on plant foods. Investigations at Copperopolis (LaJeunesse and Pryor 1996) argue that nut crops were the primary target of seasonal plant exploitation. Assemblages at these foothill sites include dense accumulations of handstones, millingslabs, and various cobble-core tools, representing “frequently visited camps in a seasonally structured settlement system” (Rosenthal et al. 2007). As previously stated, these may represent different elements of the seasonal round. What is known is that during the Lower Archaic, regional interaction spheres had been well-established. Marine shell from the central California coast has been

found in early Holocene contexts in the great basin east of the Sierra Nevada, and eastern Sierra obsidian composes a large percentage of flaked-stone debitage and tools recovered from sites on both sides of the Sierra.

About 8,000 years ago, many California cultures shifted the main focus of their subsistence strategies from hunting to nut and seed gathering, as evidenced by the increase in food-grinding implements found in archeological sites dating to this period. This cultural pattern is best known for Southern California, where it has been termed the Millingstone Horizon (Wallace 1978a), but recent studies suggest that the horizon may be more widespread than originally described and is found throughout the region during the Middle Archaic Period. Radiocarbon dates associated with this period vary between 8,000 and 2,000 BP, although most cluster in the 6,000 to 4,000 BP range (Basgall and True 1985).

Early Middle Archaic sites are relatively rare on the valley floor. This changes significantly toward the end of the Middle Archaic. In central California, late Middle Archaic settlement focused on river courses on the valley floor. Although rare, these sites did provide evidence of long-term residence consisting of vast amounts of trade objects, specialized tools, and remains of animal and plants found during different seasons of the year. Again, climate change apparently influenced this shift, with warmer, drier conditions prevailing throughout California. The shorelines of many lakes, including Tulare Lake, contracted substantially, while at the same time rising sea levels favored the expansion of the San Joaquin/Sacramento Delta region, with newly formed wetlands extending eastward from the San Francisco Bay (Rosenthal et al. 2007).

In contrast, early Middle Archaic sites are relatively common in the Sierra foothills, and the mainly utilitarian assemblages recovered show relatively little change from the preceding period with a continued emphasis on acorns and pine nuts. Few bone or shell artifacts, beads, or ornaments have been recovered from these localities. Projectile points from this period reflect a high degree of regional morphological variability, with an emphasis on local tool stone material supplemented with a small amount of obsidian from eastern sources. In contrast with the more elaborate mortuary assemblages and extended burial mode documented at Valley sites, burials sites documented at some foothill sites such as CA-FRE-61 on Wahtoke Creek are reminiscent of *reburial* features reported from Millingstone Horizon sites in Southern California. These reburials are characterized by reinterment of incomplete skeletons often capped with inverted milling stones (McGuire 1995).

A return to colder and wetter conditions marked the Upper Archaic in Central California (2,500 to 1,000 BP). Previously desiccated lakes returned to spill levels and increased freshwater flowed in the San Joaquin and Sacramento watershed. Cultural patterns as reflected in the archeological record, particularly specialized subsistence practices, emerged during this period. The archeological record becomes more complex, as specialized adaptations to locally available resources were developed, and valley populations expanded into the lower Sierra foothills. New and specialized technologies expanded, and distinct shell bead types started to occur across the region. The range of subsistence resources utilized expanded significantly from the previous period, as did the exchange systems utilized by the surrounding tribes. In the Central Valley, archaeological evidence of social stratification and craft specialization is indicated by well-made artifacts such as charmstones and beads, often found as mortuary items (Rosenthal et al. 2007).

The period between approximately 1,000 BP and European-American contact is referred to as the Emergent Period. The Emergent Period is marked by the introduction of bow-and-arrow technology, which replaced the dart and atlatl at about 1,100 to 800 BP. In the San Joaquin region, villages and small residential sites developed along the many stream courses in the lower foothills and along the river channels and sloughs of the valley floor. A local form of pottery was developed in the southern Sierra foothills along the Kaweah River. While many sites with rich archaeological assemblages have been documented in the northern Central Valley, relatively few sites have been documented from this period in the southern Sierra foothills and adjacent valley floor, despite the fact that the ethnographic record suggests dense populations for this region.

3.3 Ethnography

Prior to the arrival of European Americans in the region, indigenous groups speaking more than 100 different languages and occupying a variety of ecological settings inhabited California. Kroeber (1925, 1936), and others (i.e., Driver 1961; Murdock 1960), recognized the uniqueness of California's indigenous groups and classified them as belonging to the California culture area. Kroeber (1925) further subdivided California into four subculture areas: Northwestern, Northeastern, Southern, and Central.

When the first European explorers entered the regions between 1772 and 1821, an estimated 100,000 people, about one third of the state's native population, lived in the Central Valley (Moratto 1984:171). At least seven distinct languages of Penutian stock were spoken among these populations: Wintu, Nomlaki, Konkow, River Patwin, Nisenan, Miwok, and Yokuts. Common linguistic roots and similar cultural and technological characteristics indicate that these groups shared a long history of interaction (Rosenthal et al. 2007). The Central area (as defined by Kroeber 1925) encompasses the Project Area and includes the Yokuts.

Ethnographically, predominant Native American group occupying the region at the time of European contact in the late 18th century was the Penutian-speaking Yokuts. The Yokuts, (meaning *person* or *people*) Penutian/Yokutsan speakers, were divided into three distinct groups: the Northern Valley Yokuts, the Southern Valley Yokuts, and the Foothills Yokuts. These groups spoke different dialects and were separated by topography (Kroeber 1925; Shipley 1978). Of the three groups, the Southern Valley Yokuts territory encompasses the Project Area. The southern San Joaquin Valley was originally covered by sloughs and marshes surrounding three shallow lakes: Tulare, Buena Vista, and Kern. The lakes were fed by rivers coming from the Sierras such as the Kern River. Areas away from the lakes, rivers, and sloughs were dry since the valley receives less than 10 inches of rain per year. The Southern Valley Yokuts obtained fish, freshwater mussels, turtles, and waterfowl from the lakes and marshes. Fishing was carried out year-round. Elk and pronghorn antelope were hunted from blinds when they came to the lakes to drink. Grass and tule seeds were important plant foods. Since there were no oak trees on the valley floor, acorns were not an important food (Wallace 1978b).

The Yokuts lived in villages occupied year-round near lakes, sloughs, and rivers. However, groups of people left the village and lived in temporary camps while collecting seeds in the spring. Single family houses consisted of wood frames covered with tule mats. There were also large multi-family communal residences that were long mat-covered rectangular structures with steep pitched roofs. These structures

were divided into sections so that each family had their own fireplace and door. A shade porch, where cooking took place, ran along the front of the building. Seeds, roots, and dried fish were stored in mat-covered granaries raised off the ground. Each village also had an earth-covered sweathouse for use by men. Tule was used to make baskets and cradles. Wood and stone were obtained through trade with groups outside the valley. Marine shells obtained from coastal people were made into beads by the Yokuts. Clamshell disks circulated as primitive money and *Olivella* beads and abalone pendants were strung for necklaces. Canoes and rafts made of tule were used for water transport (Wallace 1978b).

The Southern Valley Yokuts were organized in territorial tribelets with an average population of 350 people. Each tribelet spoke a different dialect and claimed the resources within its territory. Each tribelet had a chief who belonged to the Eagle lineage. There was usually more than one village in a tribelet territory.

3.4 Regional History

Spanish maritime explorer Juan Rodriguez Cabrillo and his crewmembers became the first Europeans to visit California when they sailed north from Mexico in 1542. Sent north by the Viceroy of New Spain (Mexico) to look for the Northwest Passage, Cabrillo visited San Diego Bay, Catalina Island, San Pedro Bay, and the northern Channel Islands. In 1579, the English privateer Francis Drake set anchor somewhere along the coast of northern California and interacted with local Native American groups. Sebastian Vizcaíno, sailing north from Mexico, explored the California coast as far north as Monterey Bay in 1602 (Castillo 1978).

The colonization of Alta California began in 1769, when Spanish army captain Gaspar de Portolá and Junipero Serra, a Franciscan missionary, led a large party up the California coast by land from San Diego Bay to Monterey Bay. Along the coast they established a chain of Spanish missions, presidios (forts), and pueblos (towns). Franciscan friars eventually built 21 missions in California, beginning with Mission San Diego in 1769 and ending with missions in San Rafael and Sonoma in 1823. The missions sought to convert California's Native American groups to Catholicism. Franciscans missionaries also planted California's earliest orchards, vineyards, and vegetable gardens and raised cattle. All missions made use of unpaid Native American labor. Presidios at San Diego, Santa Barbara, Monterey, and San Francisco housed Spanish military personnel, who guarded California's best harbors. Pueblos at Los Angeles, San Jose, Branciforte (near what is now Santa Cruz), and Sonoma housed civilian farmers who cultivated grain for the presidios. No missions, presidios, or pueblos were established in California's Central Valley. The region remained a *terra incognita* until Gabriel Moraga and his party explored the valley in 1803-06. In 1827, American trapper Jedediah Smith arrived in the San Joaquin Valley to meet other trappers of his company who camped there, but the fur trappers established no permanent settlements in the Central Valley (Thompson and West 1880).

Spanish rule over California ended when Mexico achieved independence from Spain in 1821. The new Republic of Mexico sought to secularize California's missions after 1833. Former mission lands were granted to retired soldiers and other Mexican citizens for use as cattle ranches called *ranchos*. During California's Mexican period (1821 to 1848), millions of acres of grazing lands along the California coast and in the Central Valley became privatized (Robinson 1948). Some rancho owners built homes in

settlements that developed around former missions, presidios, and pueblos; others lived in rural haciendas. Cattle became California's leading export. At San Diego, Santa Barbara, Monterey, and other harbors, rancho owners traded cow hides and tallow for manufactured goods imported from Britain, New England, and elsewhere. Native Americans provided the ranchos with unpaid labor (Robinson 1948).

In 1839, John Sutter, a European immigrant, built a fort at the confluence of the Sacramento and American rivers in what is now Sacramento County and petitioned the Mexican governor for a land grant, which he received in 1841. Sutter built a flour mill and grew wheat near the fort (Bidwell 1971). Gold was discovered in the flume of Sutter's lumber mill at Coloma on the South Fork of the American River in January 1848 (Marshall 1971). The discovery of gold initiated the California Gold Rush, which brought thousands of miners and settlers to the Sierra foothills east and southeast of Sacramento. The 1848 Treaty of Guadalupe Hidalgo ended the Mexican American War and gave the United States possession of California and other southwestern states. Rapid population increase occasioned by the Gold Rush allowed California to become a U.S. state in 1850. U.S. courts confirmed most Mexican land grants, albeit with restricted boundaries, while ungranted lands became federal public lands. Once surveyed into grids of townships, sections, quarter-sections, and quarter-quarter sections under the Public Lands Survey System, California's public lands became available for purchase or for homesteading under the 1862 Homestead Act (Robinson 1948).

The California Legislature created Fresno County from parts of Mariposa, Merced, and Tulare counties in 1856. Located in the geographical enter of California, Fresno County consisted of high Sierra Nevada peaks, low rolling foothills, and San Joaquin Valley flatlands. The word *fresno* in Spanish means ash tree, a species that grew in abundance along the San Joaquin River. The county seat, Fresno, was a creation of the railroad. As late as 1870, the site of Fresno remained a hot, dry, barren flatland. "There was at the time," an early observer recalled, "no railroad, no water nearer than the San Joaquin River (10 miles to the north), and nothing encouraging whatsoever" (Angel 1892:90). In spring 1872, the Central Pacific Railroad, building south through the San Joaquin Valley, bridged the San Joaquin River. Through a subsidiary, the Contract and Finance Company, the railroad surveyed and staked out a grid of streets and blocks 10 miles south of the river. Rail service to the new town of Fresno commenced in May 1872. Fresno's freight depot immediately attracted the attention of local cattle and sheep ranchers, who happily shipped livestock to San Francisco and other markets on the new railroad. This, in turn, attracted merchants, who bought building lots in town and began establishing businesses catering to ranchers: stables, blacksmiths, saloons, restaurants, general stores, and hotels. The town became the Fresno County seat in summer 1874. By then, Fresno possessed 55 buildings housing a much wider range of services, including physicians and law offices. In 1876, two entrepreneurial residents sank a 100-foot well encased with a 7-inch pipe. Driven by a steam engine pump, the well delivered "an abundance of fresh water" which sustained Fresno's early growth (Angel 1892:93). By 1890, Fresno's population exceeded 10,000.

Fresno's early growth owed much to the productivity of farms and ranches in the town's immediate vicinity. The *colony* system of development shaped the region. Irrigation was the system's lifeblood and the railroad its lifeline. Before irrigation and the railroad, agriculture in the region's hot, dry, flat plains consisted of open-range grazing and wheat cultivated extensively by a handful of wealthy absentee landowners. In 1869, a Fresno County sheep rancher named Moses J. Church recognized that water could

be diverted from the nearby Kings River and sent by canal to the region's dry plains. In 1870, Church built a canal from a headgate on the Kings River and began delivering water 25 miles westward to a wheatfield belonging to A. Y. Easterby, a landowner who lived in Napa. Easterby and other Fresno-area landowners recognized that their wheat fields, under irrigation, possessed speculative that exceeded the price of wheat. In 1870, Church, partnering with Easterby, Frederick CIRCA Roeding, and William S. Chapman, established the Fresno Canal and Irrigation Company and solicited capital from San Francisco banks to build a larger water delivery system from the Kings River (Angel 1892).

When completed, the Fresno Canal brought irrigation water to the Fresno area's first colony, the Central California Colony. Located 3 miles south of Fresno and built on a 6-square-mile tract owned by Chapman, the Central California Colony was the vision of Chapman's agent, Martin Theodore "M. Theo" Kearney. It consisted of a checkerboard of 20-acre farms, each with an irrigation ditch. After 1872, Central Pacific trains began delivering eager buyers. By 1890, the Central California Colony was home to 150 families. Most grew raisin grapes bought by packing houses in Fresno. Raisins became Fresno's most important cash crop during the late 19th century (Angel 1892). During the 1870s and 1880s, the Fresno Canal and Irrigation Company opened a series of new canals, each delivering irrigation water from the Kings River (Fresno Irrigation District 2022). By the 1890s, scores of new colonies blanketed the region in vineyards and alfalfa fields. "These colonies surround the city of Fresno in every direction," noted an observer in 1892, "and have so grown into each other that there are no lines of distinction, the boundaries of each being now wholly imaginary" (Angel 1892:128). Between 1880 and 1890, Fresno County's population grew from 9,500 to 32,000, much of it centered in and around Fresno and its rural colonies.

3.5 Project Area History

After 1890, a similar pattern of development occurred in the town of Clovis, 8 miles northeast of Fresno. Marcus Pollasky, an eastern railroad promoter, arrived in the area in 1891 to solicit investors for the new San Joaquin Valley Railroad (SJVRR). The SJVRR intended to build north and east from Fresno. Eventually, it was hoped, the line would cross the Sierra Nevada and provide the San Joaquin Valley with a direct connection to eastern markets. One of the railroad's early investors was Clovis Cole, a large landowner in Fresno and Madera counties. Along the SJVRR route, Cole provided Pollasky with 480 acres for "railroad purposes" and "for the purposes of platting and laying out a town site" (Clovis Centennial Book Committee 2011:18). In return, the SJVRR established a passenger and freight depot at the site called *Clovis*. The first SJVRR trains arrived at Clovis in fall 1891. In 1892, Cole and his associates platted a grid of streets and blocks near the depot and began selling lots to merchants. Early Clovis businesses, like those of early Fresno, catered to farmers and ranchers who arrived at Clovis to ship their livestock and grain on the SJVRR to Fresno. In January 1892, the SJVRR reached Hamptonville (now Friant) but proceeded no further due to financial constraints; later in 1892 the Southern Pacific Railroad (successor to the Central Pacific) acquired the SJVRR at auction (Clovis Centennial Book Committee 2011).

Clovis owed its existence to industries in town and to agricultural production in its immediate vicinity. In 1894, the Fresno Flume and Irrigation Company completed a 42-mile wooden flume that extended from Shaver, a Sierra Nevada logging camp, to Clovis. At its planing mill in Clovis, the company produced finished lumber from boards floated in from Shaver. On the outskirts of Clovis, Kings River water delivered through the Enterprise Canal irrigated nearby fields. Repeating a pattern established in Fresno, irrigation

water and the railroad prompted large landowners near Clovis to subdivide their lands into 20-acre farms marketed as colonies (Clovis Centennial Book Committee 2011). By 1910, the population of Clovis neared 1,000 as lumber and agricultural production created new business opportunities in town.

The Enterprise Canal formed a geographical boundary in the countryside north of Clovis. On lower-elevation lands south and west of the canal, laterals and ditches irrigated 20-acre farms associated with the Garfield and Nees colonies. On higher-elevation lands located north and east of the canal, a landscape of dry farming and ranching prevailed. This included the ranches of the Mississippi Settlement along Big Dry Creek, an area settled by wheat farmers and cattle ranchers in the late 1860s (Hedgecock 1972). The Mississippi School, a one-room schoolhouse built in 1869 (demolished sometime between 1913 and 1920) formed the nucleus of the settlement. It was located 1,000 feet northeast of the Project Area in the northeast quarter of Section 22 (*The Clovis Roundup* 2020). Through 1910, the size of ranches in the Mississippi Settlement generally exceeded those of the 20-acre irrigated farms of the nearby Garfield and Nees colonies. After 1910, as improvements to modern groundwater pumps made irrigation feasible in areas not served by canals, some landowners in the Mississippi Settlement subdivided their ranches into 20-acre farms and marketed them as orchard tracts (Fresno County Public Library 2022). But these tracts did not appeal to buyers; by 1946 only a few homes dotted Shepherd Avenue south of Big Dry Creek.

3.5.1 Flood Control on Big Dry Creek

Lack of flood control along Big Dry Creek may have deterred settlers. In March 1938, Big Dry Creek and its four tributaries, Little Dry, Dog, Redbank, and Fancher creeks, overflowed their banks after heavy rains. Ranches west of Clovis flooded, destroying orchards and vineyards. Fresno's Fig Garden neighborhood also became inundated; many of its adobe homes "crumpled like cubes of sugar" (*Fresno Bee* 1948). In 1948, the USACE built the Big Dry Creek Project immediately east of the Project Area, in an area that historically encompassed much of the Mississippi Settlement (*Fresno Bee* 1948). The project regulated flows on Big Dry Creek, mitigating the risk of flooding downstream. In March 1955, USACE crews completed remedial work to control hill-side erosion at the dam. Only 7 months later, the Christmas flood of 1955 put the project to the test. Analysts estimated that the Big Dry Creek Project saved Fresno County property owners $3,000,000 in damages (Hagwood Jr. 1976). In 1993, Fresno Metropolitan Flood Control District crews elevated the dam crest 7.2 feet to increase the reservoir's storage capacity (MWH 2003). By the late 20th century, however, the area along Big Dry Creek in the Project Area remained only sparsely settled with a handful of home ranches.

3.6 Architectural Context: The Home Ranch

"For the last hundred years," writes geographer Paul F. Starrs, "the fundamental unit of a livestock operation in the western United States has been the home ranch" (Starrs 1998:11). In California, the home ranch traces its roots to no-fence laws of the 1870s. No-fence laws shifted the burden of building fences from farmers to ranchers, signaling the end of free-range grazing as practiced on California's Mexican-era ranchos (Jelinek 1982). Whereas ranchers previously grazed livestock on California grasses with no regard for property boundaries, after 1870 they began acquiring their own fenced private ranges. The entire operation, called a *home ranch*, included family residences and outbuildings.

Unlike fruit orchards and other types of intensive agriculture where farmers supported families on 5, 10, or 20 acres by producing high-value farmed goods, ranching required greater acreage to raise cattle and sheep. "The term *home ranch*," writes Starrs, "asserts viability, a size and substance sufficient to claim permanence and self-reliance" (Starrs 1998:13). It represented *extensive* agriculture, where supporting a family might require 40 acres or more. Home ranches were characterized by vast open spaces where herds roamed and grazed. If well located, they possessed flowing streams or wells for watering stock and for irrigating fields planted in alfalfa or other forage crops. Spatially, home ranches were also characterized by flexibility: a rancher could add adjoining acreage to increase the size of a ranch or sell off portions when cash was needed.

The nucleus of the home ranch was the headquarters, typically set upon high ground and fronting a rural county road. The headquarters contained the main house for the ranching family. Architecturally, main houses built on home ranches through the first half of the 20th century differed little from houses built in town. They ranged from modest Minimal Traditional-style dwellings and prototypical Ranch-style houses to elaborate revival-style residences (Packard 1995). Around the main house stood a cluster of buildings, structures, and landscape features that supported ranching activities. These included barns, corrals, housing for ranch hands, stables for horses, shade trees, water towers, windmills, repair shops, and storage sheds for miscellaneous supplies (Starrs 1998). Silos and chicken coops were also common features of home ranches (Packard 1995). Many western ranches, particularly those in mountain states, had special enclosures for livestock and poultry, but benign winter weather in California made "light and cheap shelter" sufficient. Animal shelters were, as one 1920s California rancher observed, "frequently dispensed with altogether" (Wickson 1923:210).

3.7 Architectural Context: Public Roads

During the first half of the 19th century, as the U.S. made western territorial gains, Congress directed Army engineers to establish a network of wagon roads linking western military installations; federal railroad surveyors carried on the work during the 1850s and 1860s. For a generation of overland emigrants and freighters, wagon roads established by federal surveyors pointed the way to California (Jackson 1998). Many western wagon roads, particularly those that traversed mountain passes, had Native American origins. In California, non-native incursions such as the de Anza (1774), Portola (1769), and Fremont (1844) expeditions relied on directions given by Native American guides. The roads established by Spanish and American newcomers linking missions, presidios, pueblos, ranchos, and forts in California often superseded Native American footpaths used for generations (Davis 1961).

Overshadowed by railroads, pioneer wagon roads in California and other western states became neglected and degraded during the late 19th century. "By 1900," observes a planning historian, "the nation with the greatest railway system in the world had the worst roads" (Johnson 1990). Interest in road building revived after 1890 as farmers and ranchers, many disillusioned with railroads, began asking county officials for better wagon roads. They were joined by millions of bicyclists who called for smoother roads in town and the countryside. Joining forces, farmers, ranchers, and bicyclists began organizing local, state, and national "good roads" campaigns. In response, the federal government established the Office of Road Inquiry in the Department of Agriculture to study new road building techniques (Jackson 1998).

Dusty during summer and fall months, muddy through the winter and spring, unimproved wagon roads in California played havoc with horse-drawn vehicles and bicycles. Overcoming mud and dust became the main objective of good roads proponents. Plank roads made from lumber first appeared in California in the 1850s. Gravel roads and macadam, a form of compacted gravel coated with oil, came into use during the late 19th century. Finally, beginning in 1890, concrete roads topped by a mixture of bitumen, aggregate, and sand called *asphalt* became the standard modern road surface. Durable, smooth, and impervious to water, asphalt roads withstood winter weather, reduced vehicular wear and tear, and facilitated better drainage (Kostof 1992).

The task of grading and paving rural wagon roads initially fell to county boards of supervisors. The most heavily trafficked rural roads such as those leading to towns, cities, and schools, or those leading to major sites of production such as large ranches, mines, quarries, and mills, received priority attention. Thousands of other rural roads derived from the Public Land Survey System, the checkerboard of square-mile sections and 36-square-mile townships laid out by federal surveyors to facilitate the sale of western public lands. Because they marked property boundaries, section and quarter-section lines became mutually beneficial roadways for neighboring property owners (Johnson 1990). To create roads, property owners forfeited equal strips of land along section lines to counties in exchange for grading and other improvements (U.S. Department of Transportation 1976).

After 1910, as automobile usage surged, and as suburbanization occurred on the edges of town and cities in California and elsewhere, city planners began articulating a *hierarchy of streets* to distinguish residential roads, collector roads, arterial roads, and highways, each handling progressively higher volumes of traffic. Through the remainder of the twentieth century, as commercial and residential growth supplanted farms and ranches on the edges of California towns and cities, many rural county roads became adapted to suit the new suburban landscape. In many places, older two-lane rural roads became two- and four-lane suburban arterial streets lined with shopping centers and parking lots; others became two-lane collector streets lined with new residential subdivisions.

4.0 METHODS

4.1 Personnel Qualifications

Registered Professional Archaeologist (RPA) Brian S. Marks, Ph.D., who meets the Secretary of the Interior's Professional Qualifications Standards for prehistoric and historical archaeology, was responsible for this cultural resource investigation. Senior Architectural Historian Nathan Hallam, Ph.D., who meets the Secretary of the Interior's Professional Qualifications Standards for architectural history and history, conducted or supervised all phases of the architectural history investigation. Senior Archaeologist Sonia Sifuentes, RPA conducted the fieldwork, recorded cultural resources, and prepared the technical report. Associate Archaeologists Nicholas Bizzell, Evelyn Hildebrand, RPA, and Steven Wintergerst assisted in the fieldwork. Michael M. DeGiovine, RPA, Christa Westphal, RPA, and Julian E. Acuña, RPA assisted in writing the technical report. Lisa Westwood, RPA provided technical report review and quality assurance.

Dr. Marks is the Principal Investigator and has been an archaeologist since 1997. He has been working in cultural resources management in California since 2010, following 8 years of archaeological work in the

southeastern United States. Dr. Marks holds a Ph.D. and an M.S. in Anthropology. He has participated in or supervised more than 200 survey, testing, and data recovery excavations and has recorded and mapped a multitude of pre-contact and historical sites, including Civil War battlefields, Gold Rush boom towns, submerged pre-contact sites, and others. He has conducted evaluations of cultural resources for eligibility to the NRHP and CRHR and is well versed in impact assessment and development of mitigation measures for CEQA and Section 106 (NHPA) projects.

Dr. Hallam is a Senior Architectural Historian with 17 years of experience in historic preservation, cultural resources management, and academic teaching and scholarship. Dr. Hallam has extensive experience preparing historic contexts, conducting field surveys, and using National Register criteria to evaluate historic properties. He holds a Ph.D. in History, an M.A. in Public History, and a B.A. in History.

Sonia Sifuentes, RPA is a Senior Archaeologist with more than 14 years of experience in cultural resources management, primarily in Southern California. Ms. Sifuentes holds an M.S. in Archaeology of the North and meets the Secretary of the Interior's Professional Qualifications Standards for prehistoric and historic archaeology. She has participated in and supervised numerous surveys, test programs, data recovery excavations, and construction monitoring compliance for both prehistoric and historical sites; and has cataloged, identified, and curated thousands of artifacts. She has conducted evaluations of cultural resources for eligibility for the NRHP and CRHR. Ms. Sifuentes is experienced in the organization and execution of field projects in compliance with Section 106 of the NHPA and CEQA. She has contributed to and authored numerous cultural resources technical reports, research designs, and cultural resources management plans.

Nicholas Bizzell is an Associate Archaeologist with more than 11 years of experience in cultural resources management. He holds a B.A. in Anthropology. Mr. Bizzell has participated in numerous archaeological projects throughout California, including working with clients in both public and private sectors. Mr. Bizzell has substantial archaeological experience with cultural resources monitoring, inventory surveys, excavation and subsurface testing, and laboratory analysis for projects in Northern and Southern California. Additionally, Mr. Bizzell is cross-trained as a paleontological monitor for projects requiring both archaeological and paleontological monitoring.

Evelyn Hildebrand, RPA is an Associate Archaeologist with more than 5 years of experience working in cultural resource management across Southern California. She holds an M.A. in Applied Archaeology and a B.A. in Anthropology with a focused curriculum in archaeology. She meets the Secretary of the Interior's Professional Qualifications Standards for prehistoric and historic archaeology. She has participated in various aspects of archaeological fieldwork including survey, test excavation, data recovery, artifact analysis, construction monitoring, both as an archaeological monitor and field lead, and the recording and recovery of pre-contact and historic-period archaeological sites. She has also worked with Egypt's department of Antiquities in collaboration with the Wadi el-Hudi expedition in 2019 in the desert southeast of Aswan Egypt, using photogrammetry to record and create digital 3D models of sites.

Steven Wintergerst is an Associate Archaeologist with 11 years of experience in cultural resources management. He holds a B.A. in Anthropology. Mr. Wintergerst has participated in all aspects of archaeological fieldwork and laboratory process, with extensive experience throughout California and

western Arizona. His experience has involved working as an archaeological crew chief, technician, and monitor, as well as a paleontological monitor and preparator. He is experienced in the organization and execution of field projects in compliance with CEQA and Section 106 of the NHPA.

Michael M. DeGiovine, RPA is a Staff Archaeologist with more than 15 years of experience in cultural resources management. He meets the Secretary of the Interior's Professional Qualifications Standards for prehistoric and historic archaeology. Mr. DeGiovine holds a B.A. and M.A. in Anthropology. He has prepared or contributed to cultural resource studies dealing with CEQA and NHPA Sections 106.

Christa Westphal, RPA is a Staff Archaeologist with more than 10 years of experience in California cultural resources management. She has experience in many aspects of archaeological fieldwork, laboratory, and reporting. These include archaeological survey, excavation, monitoring, artifact analysis, artifact collections management, graphics production, Geographic Information System analysis, CHRIS records searches, Native American Heritage Commission (NAHC) requests, preparation of Department of Parks and Recreation (DPR) forms and author and contributor of technical reports. She holds a B.A. and an M.A. in Anthropology.

Julian Acuña, RPA is an Associate Archaeologist with more than 6 years of experience in cultural resources management. Mr. Acuña holds an M.A. in Applied Archaeology and a B.A. Cum Laude in Anthropology. He meets the Secretary of the Interior's Professional Qualifications Standards for prehistoric and historic archaeology. He has participated in various aspects of archaeological fieldwork including survey, test excavations, construction monitoring, the recording of both pre-contact and historic-period archaeological sites, and laboratory work for the analysis and cataloging of artifacts from multi-component sites.

Lisa Westwood, RPA has 27 years of experience and meets the Secretary of the Interior's Professional Qualifications Standards for prehistoric and historical archaeology. She holds a B.A. in Anthropology and an M.A. in Anthropology (Archaeology). She is the Director of Cultural Resources for ECORP.

4.2 Records Search Methods

ECORP requested a records search for the Project Area at the Southern San Joaquin Valley Information Center (SSJVIC) of the CHRIS at California State University, Bakersfield on July 29, 2022 (SSJVIC search #22-303; Appendix A). The purpose of the records search was to determine the extent of previous surveys within a 0.5-mile (800-meter) radius of the Proposed Project location, and whether previously documented pre-contact or historic archaeological sites, architectural resources, or traditional cultural properties exist within this area. SSJVIC staff completed and returned the records search to ECORP on August 8, 2022.

In addition to the official records and maps for archaeological sites and surveys in Fresno County, the following historic references were also reviewed:

- Built Environment Resource Directory (OHP 2022a);
- The National Register Information System (National Park Service [NPS] 2022);

- Office of Historic Preservation, California Historical Landmarks (CHL, OHP 2022b);
- CHL (OHP 1996 and updates);
- California Points of Historical Interest (OHP 1992 and updates);
- Directory of Properties in the Historical Resources Inventory (1999);
- Caltrans Local Bridge Survey (California Department of Transportation [Caltrans] 2022); and
- Caltrans State Bridge Survey (Caltrans 2019).
- Historic Spots in California (Kyle 2002).

Other references examined include a RealQuest Property Search and historic General Land Office (GLO) land patent records (Bureau of Land Management [BLM] 2022). The following historic maps were reviewed:

- 1922 USGS Friant, California topographic quadrangle map (1:31,680 scale);
- 1923 USGS Clovis, California topographic quadrangle map (1:31,680 scale);
- 1946 USGS Clovis, California topographic quadrangle map (1:24,000 scale);
- 1946 USGS Friant, California topographic quadrangle map (1:24,000 scale);
- 1964 USGS Friant, California topographic quadrangle map (1:24,000 scale);
- 1964 USGS Clovis, California topographic quadrangle map (1:24,000 scale);
- 1964 USGS Clovis, California (photorevised 1972) topographic quadrangle map (1:24,000 scale); and
- 1964 USGS Clovis, California (photorevised 1981) topographic quadrangle map (1:24,000 scale).

ECORP reviewed historic aerial photographs taken between 1937 and 2018 for any indications of property usage and built environment.

ECORP conducted a search of local historical registries for historical sites and landmarks in Fresno County (Fresno County Historical Landmarks and Records Advisory Commission 2022).

4.3 Sacred Lands File Coordination Methods

In addition to the records search, ECORP contacted NAHC on July 29, 2022 to request a search of the Sacred Lands File for the Project Area (Appendix B). This search will determine whether the California Native American tribes within the Project Area have recorded Sacred Lands, because the Sacred Lands File is populated by members of the Native American community with knowledge about the locations of tribal resources. In requesting a search of the Sacred Lands File, ECORP solicited information from the Native American community regarding TCRs; however, the responsibility to formally consult with the Native American community lies exclusively with the federal and local agencies under applicable state and federal laws. The lead agencies have not delegated authority to ECORP to conduct tribal consultation.

4.4 Other Interested Party Consultation Methods

ECORP mailed letters to the Fresno County Historical Society on August 31, 2022 to solicit comments or obtain historical information regarding events, people, or resources of historical significance in the area (Appendix A).

4.5 Field Methods

ECORP conducted an intensive pedestrian survey of the APE from August 15 through 19, 2022 under the guidance of the *Secretary of the Interior's Standards for the Identification of Historic Properties* (NPS 1983) using 15-meter transects (Figure 2). ECORP spent 20 person-days in the field. ECORP archaeologists examined the ground surface for indications of surface or subsurface cultural resources and inspected the general morphological characteristics of the ground surface for indications of subsurface deposits that may be manifested on the surface, such as circular depressions or ditches.

Whenever possible, ECORP examined the locations of subsurface exposures caused by factors such as rodent activity, water or soil erosion, or vegetation disturbances for artifacts or for indications of buried deposits. No subsurface investigations or artifact collections were undertaken during the pedestrian survey.

Standard professional practice requires that all cultural resources encountered during the survey be recorded using DPR 523-series forms approved by the California OHP. The resources are usually photographed, mapped using a handheld Global Positioning System receiver, and sketched (as necessary) to document their presence using appropriate DPR forms.

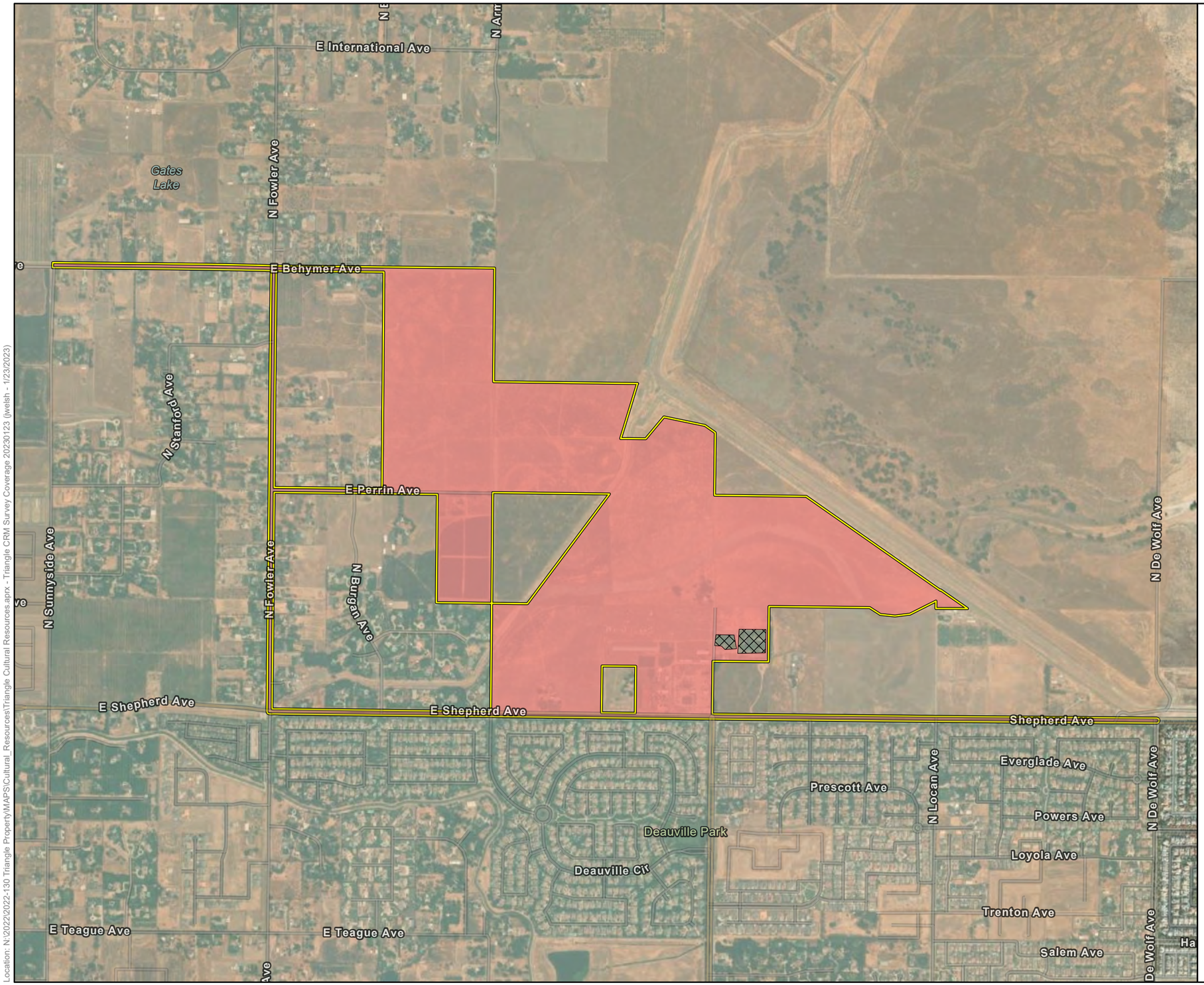
5.0 RESULTS

5.1 Records Search

The records search consisted of a review of previous research and literature, records on file with the SSJVIC for previously recorded resources, and historical aerial photographs and maps of the vicinity.

5.1.1 Previous Research

Nineteen previous cultural resource investigations have been conducted within 0.5 mile of the property, covering approximately 90 percent of the total area surrounding the property within the records search radius (Table 1). Of the 19 studies, seven covered a portion of the Project Area. These studies revealed the presence of a precontact site that consists of a bedrock milling site, and historical sites, including water conveyance, historic refuse, and a historic building associated with rural/agricultural activities. The previous studies were conducted between 1975 and 2018.



Map Contents

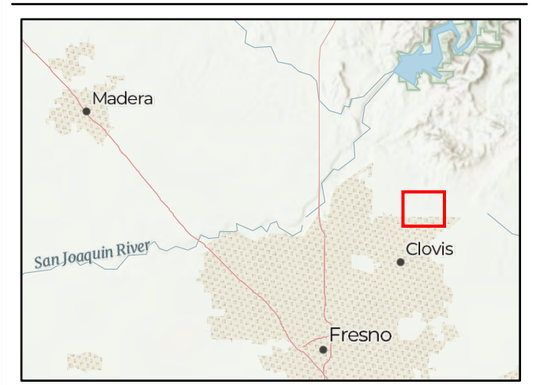
Study Area - 398.40 ac.

Survey Coverage

Surveyed - 395.44 ac.

Not Surveyed - 2.96 ac.

Sources: Maxar (2020/2021/2022), ESRI



Location: N:\2022\2022-130 Triangle Property\MAPS\Cultural_Resources\Triangle Cultural Resources.aprx - Triangle CRM Survey Coverage 20230123 (jwelsh - 1/23/2023)

Map Date: 1/23/2023

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 600 1,200

Figure 2. Survey Coverage

2022-130 Triangle Property

Table 1. Previous Cultural Studies within 0.5 mile of the Project Area

Report Number	Author(s)	Report Title	Year	Includes Portion of the Project Area?
FR-00279	Bissonnette, Linda Dick	Cultural Resources Assessment for the Clovis Unified School District, Northeast Educational Center, Shepherd Avenue, Fresno County	1992	**Yes**
FR-00293	Bissonnette, Linda Dick	Phase I Cultural Resources Assessment for the Eagle Gate Corporation Subdivision, Shepherd Avenue Near Fowler Avenue, Fresno County	1993	**Yes**
FR-00534	Jones & Stokes Associates, Inc.	Archaeological Survey Report for the Behymer Lake Storm Drainage and Flood Control Project Initial Study	1991	No
FR-00548	Meighan, Clement, Dillon, Brian, Verano, John, and Indermill, Roc	Redbank and Fancher Creeks Intensive Cultural Resources Survey, Fresno County, California	1987	**Yes**
FR-00792	Cursi, Kathi and Varner, Dudley M.	Environmental Assessment 1406 (Thompson and Nees Roads), Fresno County, California	1978	**Yes**
FR-00793	Cursi, Kathi and Varner, Dudley M.	Archaeological Reconnaissance of the Harlan/Parr Property, Fresno County, California	1979	**Yes**
FR-01084	Wren, Donald G.	An Archaeological Survey for Susan Mortensen Variance Application No. 3353 - EA 3810	1992	No
FR-01130	Wren, Donald G. and Crist, Michael	Archaeological Reconnaissance of the Redbank and Fancher Creek Investigation Area	1975	**Yes**
FR-01219	Bissonnette, Linda Dick	Fresno Metropolitan Flood Control District Drainage Area "BY" Facilities	1993	**Yes**
FR-01849	Pastron, Allen G. and Brown, R. Keith	Historical and Cultural Resource Assessment for a Proposed Telecommunications Facility, Site No. CV-607-C1, 8901 Fowler Avenue, Fresno County, California	2000	No
FR-01869	Nadolski, John A.	Archaeological Investigations for Tower modifications at 34 Cell Tower Sites	2001	No
FR-01982	Varner, Dudley M.	A Cultural Resources Study of the Harlan Ranch Property, Fresno County, California	2003	No
FR-02016	Varner, Dudley M.	A Cultural Resource Study of the Harland Ranch - Additional Property, Fresno County, California	2004	No
FR-02203	Varner, Dudley M.	A Cultural Resource Study of the Battlin Brooks Property, Fresno County, California	2006	No
FR-02285	Losee, Carolyn	New Tower Submission Packet, FCC Form 620, for 5388 East Shepard Avenue	2006	No

Table 1. Previous Cultural Studies within 0.5 mile of the Project Area				
Report Number	**Author(s)**	**Report Title**	**Year**	**Includes Portion of the Project Area?**
FR-02289	Nettles, Wendy M. and Baloian, Randy	Cultural Resources Reconnaissance Survey of the City of Clovis Northwest Urban Center Specific Plan Area, Fresno County, California	2006	No
FR-02490	Chotkowski, Michael A.	Section 106 Compliance for Enterprise Canal at Big Dry Creek Improvement Project, Fresno County, California	2009	No
FR-03009	Peak, Melinda A.	Cultural Resource Assessment for the Tract 6205, City of Clovis Fresno County, California	2017	No
FR-03067	Stanley, Ward, Baloian, Randy, and Baloian, Mary	Cultural Resource Inventory and Evaluation for the Tract 6200 Development in the City of Clovis, Fresno County, California	2018	No

The results of the records search indicate that approximately 90 percent of the property has been previously surveyed for cultural resources; however, these studies were conducted in segments, at different times, by different consultants, as many as 47 years ago, or under obsolete standards. Therefore, ECORP conducted a pedestrian survey of the APE for the Project under current protocols.

The records search also determined that one previously recorded pre-contact resource and three historic-era cultural resources are located within 0.5 mile of the Project Area (Table 2). Of these, one is believed to be associated with Native American occupation of the vicinity, and three are historic-era sites associated with irrigation and agricultural activities. The pre-contact resource is located adjacent to the Project Area.

Table 2. Previously Recorded Cultural Resources within 0.5 mile of the Project Area					
Site Number CA-FRE-	**Primary Number P-10-**	**Year and Recorder**	**Age/ Period**	**Site Description**	**Within Project Area?**
1691	1691	1984 (Roc H. Indermill, Lorri Planas, UCLA Archaeological Survey, Dillon party)	Pre-contact	The Grialdi-Keller Site – Bedrock milling and cupules. NRHP-eligible, listed in CRHR	Adjacent
3564H	5934	2007 (R. Baloian, Applied EarthWorks, Inc.); 2013 (Randy Baloian, Applied EarthWorks, Inc.); 2017 (Ward Stanley and Randy Baloian, Applied EarthWorks, Inc.)	Historic	Shepherd Avenue segment of Enterprise Canal	No
–	6461	2015 (Matthew Armstrong, PG&E)	Historic	Privy/trash deposit	No
–	7197	2017 (Michael Lawson, Peak & Associates, Inc.)	Historic	Single family property – 5230 E. Shepherd Avenue, evaluated as 3CS – appears eligible for CR	No

5.1.2 Records

The OHP's Built Environment Resource Directory for Fresno County did not include any resources within 0.5 mile of the Project Area (OHP 2022a). There are 24 properties listed in the town of Clovis, located approximately 3 miles south-southwest of the Project Area.

The National Register Information System (NPS 2022) failed to reveal any eligible or listed properties within the Project Area. The nearest National Register properties are located 10 miles southwest of the Project Area, in the city of Fresno.

ECORP reviewed resources listed as *California Historical Landmarks* (OHP 1996) by the OHP (2022b) on August 15, 2022. The nearest listed landmark is #934: The Temporary Detention Camps for Japanese Americans – Fresno Assembly Center (plaque located 6.1 miles west-southwest of the Project Area).

A RealQuest online property search of the parcels in the Project Area revealed that the properties consist of land zoned for residential and farming, including truck crops, pasture, and poultry. No other property history information was on record with RealQuest.

The Caltrans Bridge Local and State Inventories (Caltrans 2022, 2019) did not list any historic bridges within 0.5 mile of the Project Area.

Historic GLO land patent records from the BLM's patent information database (BLM 2022) revealed that the lands in the Project Area were patented to several individuals between 1870 and 1876 (Table 3). The federal government granted public land to these people through the Homestead Act, outright sale, or claimed as payment for military or other service (in the case of Sogan F. Potter).

Table 3. GLO Land Patent Records

Patentee	Patent Date	Serial No.	Patent Type/Authority	Location
Freeman, Richard B.	May 15, 1876	CACAAA 121669	May 20, 1862: Homestead Entry Original (12 Stat. 392)	NE ¼ Sec. 21
Potter, William N.	May 15, 1876	CACAAA 121671	May 20, 1862: Homestead Entry Original (12 Stat. 392)	SE ¼ Sec. 21
Strother, Laura	September 15, 1875	CACAAA 121610	April 24, 1820: Sale-Cash Entry (3 Stat. 566)	NW ¼ Sec. 21
Neirling, Adam	December 2, 1870	CACAAA 121360	April 24, 1820: Sale-Cash Entry (3 Stat. 566)	E ½ of SE ¼ Sec. 22; W ½ of SW ¼ of Sec. 23
Nowison, Minnie	May 15. 1875	CACAAA 121601	April 24, 1820: Sale-Cash Entry (3 Stat. 566)	N ½ of NW ¼ Sec. 22
Patterson, E. H.	May 20, 1870	CACAAA 121326	April 24, 1820: Sale-Cash Entry (3 Stat. 566)	S ½ of SW ¼ and W ½ of SE ¼ Sec. 22
Potter, Sogan F.	January 2, 1874	CACAAA 121495	March 1, 1842: Scrip or Nature of Scrip (5 Stat. 607)	S ½ of NW ¼ and N ½ of SW ¼ Sec. 22
Blevins, David P.	July 20, 1872	CACAAA 121404	April 24, 1820: Sale-Cash Entry (3 Stat. 566)	E ½ of SW ¼ Sec. 23

The *Handbook of North American Indians* (Wallace 1978c) lists the nearest Native American village as *Wakichi*. This village is located on the southern side of the San Joaquin River, near the town of Friant, approximately 7 miles north of the Project Area.

A review of the Fresno County local historical registry did not reveal any resources in the vicinity.

5.1.3 Map Review and Aerial Photographs

The review of historical aerial photographs and maps of the Project Area provides information on the past land uses of the property and potential for buried archaeological sites. This information shows the property was initially used for agriculture. Following is a summary of the review of historical maps and photographs:

- 1922 USGS Friant, California topographic quadrangle map (1:31,680 scale) depicts a segment of East Behymer Avenue between North Fowler Avenue and North Armstrong Road; a single structure is visible along Armstrong Avenue (north of Perrin Road).
- 1923 USGS Clovis, California topographic quadrangle map (1:31,680 scale) depicts North Temperance Avenue as an unimproved road; Perrin Road, East Shepherd Avenue, and North Fowler Avenue are depicted as main through-fares. One structure is visible at each of the following locations: 9255 North Temperance Avenue, 6374 East Shepherd Avenue, and 6110 East Shepherd Avenue.
- 1946 USGS Clovis, California topographic quadrangle map (1:24,000 scale) depicts an additional structure south of North Temperance Avenue on the eastern end. The structures at the three residences noted above are depicted in different locations and the roads are depicted along the same route as in previous years. The surrounding area shows moderate commercial and residential growth.
- 1946 USGS Friant, California topographic quadrangle map (1:24,000 scale) shows that Armstrong Road no longer extends to the APE.
- 1964 USGS Friant, California topographic quadrangle map (1:24,000 scale) depicts an additional structure at 5931 Perrin Road that is likely a garage. Big Dry Creek is channeled through the Project Area in a northeastern-to-southwestern direction from the Big Dry Creek Project reservoir, located east of the Project Area.
- 1964 USGS Clovis, California topographic quadrangle map (1:24,000 scale) depicts North Temperance Road as an improved road. Three structures are visible at 6110 East Shepherd Avenue; seven elongated structures and two smaller (likely residential) structures are visible at 6374 East Shepherd Avenue; and three structures are visible at 9255 North Temperance Avenue.
- 1964 USGS Clovis, California (photorevised 1972) topographic quadrangle map (1:24,000 scale) depicts three additional elongated structures at 6374 East Shepherd Avenue.

- An aerial photograph from 1937 shows the Project Area as rural land. Big Dry Creek flows east to west along the southern portion of the Project Area. Shepherd Avenue is oriented east-to-west along the southern border of the Project Area.
- Aerial photographs from 1940 show two larger structures and as many as five smaller, ancillary structures at 6110 East Shepherd Avenue. Two or three structures are located at 6374 East Shepherd Avenue. Two large structures (likely a residence and barn) and corral are located at 9255 North Temperance Avenue. Two structures, a main residence and ancillary structure, are located at 5931 Perrin Road. The rest of the Project Area is used for agricultural purposes.
- Aerial photograph from 1942 show two large structures at 6374 North Shepherd Avenue demolished.
- A 1950 aerial photograph shows Big Creek Reservoir east of the Project Area. The property at 6110 East Shepherd Avenue shows improvements, as evidenced by a fence line around a large structure on the northern part of the ranching complex. At 6374 East Shepherd Avenue, one of the structures has been demolished and replaced with a larger structure. An additional structure and agricultural fields are evident to the north and east. No significant improvements are visible at 9255 North Temperance Avenue.
- An aerial photograph from 1957 shows significant changes at 6374 East Shepherd Avenue. Three elongated structures (poultry housing) are located on the northern portion of the property. Many additional structures are located to the south of the poultry housing.
- Aerial photographs from 1962 reveal that the Project Area is mostly used for agricultural purposes. Big Dry Creek is an earthen channel. Residence and second structure/garage visible at 5931 Perrin Road.
- Aerial photographs from 1972 show a change in quantity and location of the greenhouses at 6374 East Shepherd Avenue.
- An aerial photograph from 1985 shows the land surrounding the Project Area mostly used for agricultural purposes.
- A 1987 aerial photograph shows significant commercial and residential growth. The Project Area continues to be mostly used for agricultural purposes.
- Aerial photographs from 2014 show an increase of industrial activities from agricultural activities at southeastern corner of 6374 East Shepherd Avenue.
- Aerial photographs from 1998 to 2012 show a second residence at the northwestern corner of 5931 Perrin Road. All structures at this location appear to have been removed by 2012.

In sum, the Project Area has been developed for residential, agricultural, and industrial uses. Land use for residential expansion increased significantly in the surrounding area after 1985. Much of the Project Area shows little change over time, except for the construction of the Big Dry Creek Dam and Canal. Structures at the residences change over time, including the number of structures and appearance.

5.2 Sacred Lands File Results

A search of the Sacred Lands File by the NAHC failed to indicate the presence of Native American cultural resources in the Project Area. A record of all correspondence is provided in Appendix B.

5.3 Other Interested Party Consultation Results

ECORP has not received any responses to the letters sent to the Fresno County Historical Society as of the date of the preparation of this document.

5.4 Field Survey Results

ECORP surveyed the Project Area for cultural resources between August 15 and 19, 2022. Much of the Project Area was covered with short, dense grasses, and some portions showed evidence of tilling. Ground surface visibility ranged from less than 10 percent in areas of dense vegetation to 90 percent in previously disturbed areas. Approximately 2.96 acres located along North Temperance Avenue were not surveyed due to the presence of a palm orchard that impeded safety (Figure 4). The palm orchard was planted in the mid-2000s, and subsequent maintenance would have uprooted and removed or destroyed any surface expression of archaeological deposits. Overview photographs are provided below in Figures 3 through 6.

Figure 3. Project Area Overview (view south; August 15, 2022).

Figure 4. Project Area Overview (view west-northwest; August 16, 2022).

Figure 5. Project Area Overview (view south-southeast; August 17, 2022).

Figure 6. Project Area Overview (view southeast; August 18, 2022).

5.4.1 Cultural Resources

Resource Descriptions

Previous investigations by other firms did not result in any previously recorded resources in the Project Area. ECORP identified 10 architectural resources and one pre-contact resource within the Project Area during the 2022 survey:

- TRI-001-S, the Big Dry Creek Project;
- TRI-003-S, a segment of East Perrin Avenue;
- TRI-005-S, a segment of East Behymer Avenue;
- TRI-006-S, a segment of East Shepherd Avenue;
- TRI-007-S, a segment of North Fowler Avenue;
- TRI-009-S, a farm/ranch property;
- TRI-011-S, a farm/ranch property;
- TRI-016-S, a windmill;
- TRI-017-S, a segment of North Temperance Avenue;
- TRI-019-S, a farm/ranch property; and
- TRI-015-I, an isolated pre-contact basalt flake.

In total, ECORP recorded 11 cultural resources within the Project Area. Brief descriptions follow, and a confidential site location map is provided in Appendix D.

5.4.1.1 TRI-001-S

Resource Description

TRI-001-S is the Big Dry Creek Project in Fresno County (Figure 7). The resource consists of a reservoir on Big Dry Creek with a storage capacity of 30,200 acre-feet. The creek is impounded by a 2.92-mile, 33-foot-tall earthen flood detention dam. The reservoir is drained by a 29.5-foot-wide, 3.5-foot-deep, 2,960-foot-long earthen drainage canal that flows diagonally through the Project Area to the Big Dry Creek channel in the southwestern quarter of Section 22. An 11-foot-wide earthen levee road parallels the canal on its northwestern banks. The reservoir is almost always empty; it only fills with water during rare flood events on Big Dry Creek and slowly empties through the drainage canal to the Big Dry Creek channel.

Figure 7. Overview of TRI-001-S (Drainage Canal) (view southwest; August 16, 2022).

Evaluation of TRI-001-S

TRI-001-S, the Big Dry Creek Project in Fresno County, provided flood control for the Fig Garden neighborhood of Fresno and for rural sections south and west of Clovis after 1948. By reducing the risk of destructive flood events such as the 1938 flood on Big Dry Creek, TRI-001-S allowed for patterns of agricultural and urban development in flood-prone areas of Clovis and Fresno, making it associated with events that have made a significant contribution to the broad patterns of our history. Therefore, it is eligible for the NRHP under Criterion A and CRHR under Criterion 1.

USACE crews built TRI-001-S from 1947 to 1948 and Fresno Metropolitan Flood Control District crews maintained and modified it through the following decades; however, there is nothing in the archival

record to suggest that TRI-001-S is associated with the lives of persons significant in our past. Therefore, it is not eligible for the NRHP under Criterion B or CRHR under Criterion 2.

As a conventional earthen flood detention dam, reservoir, and drainage canal, designed and built by the USACE and indistinguishable from multiple similar mid-sized flood control projects in California, TRI-001-S does not embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, possesses high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction. Therefore, it is not eligible for the NRHP under Criterion C or CRHR under Criterion 3.

The information potential of TRI-001-S is expressed in its built form and in the historical record. It has not yielded, nor is it likely to yield information important in history or prehistory. As modern infrastructure, it does not possess the potential to have associated archaeological deposits. Therefore, it is not eligible for the NRHP under Criterion D or CRHR under Criterion 4.

TRI-001-S possesses integrity of location, setting, materials, feeling, and association. It remains situated in its original location on Big Dry Creek in a rural section of Fresno County. It retains its earthen construction and conveys the overall aesthetic of a 1940s federal flood control project associated with flood control in urban and rural sections of Fresno and Clovis. TRI-001-S does not, however, possess integrity of design and workmanship. In 1993, Fresno Metropolitan Flood Control District crews raised the dam by 7.2 feet, enlarging the reservoir's storage capacity from 16,500 acre-feet to 30,200 acre-feet. By modifying the 1948 project's design, the work accomplished in 1993 compromised the overall integrity of TRI-001-S, making it not eligible for the NRHP or CRHR. This conclusion rests on a recent precedent set at Prado Dam in Riverside County, an earthen dam built by the USACE in 1941 and determined eligible for the NRHP in 1991. Modifications to the dam accomplished during the early 2000s included raising the height of the dam's earthen embankment. The California SHPO in 2020 concurred with the USACE's determination that the resource no longer remained eligible for the NRHP (USACE 2021). Additionally, TRI-001-S is not part of any known or suspected historic district, and the resource is not listed on any Certified Local Government historic property register.

5.4.1.2 TRI-003-S

Resource Description

TRI-003-S is a segment of East Perrin Avenue (historically called Friant Road) in Fresno County (Figure 8). It is a 20-foot-wide, 3,250-foot-long, two-lane rural section line road paved with asphalt. The road divides the northeastern and southeastern quarters of Section 21 (Township 12 South, Range 21 East).

Figure 8. Overview of TRI-003-S (view east; August 15, 2022).

Evaluation of TRI-003-S

TRI-003-S, a segment of East Perrin Avenue in Fresno County, provided local farmers and ranchers with vehicular access to North Fowler Avenue, the most direct route to Clovis. However, there is nothing in the archival record to suggest that TRI-003-S is associated with events that have made a significant contribution to the broad patterns of our history. Therefore, it is not eligible for the NRHP under Criterion A or CRHR under Criterion 1.

Fresno County crews built and maintained TRI-003-S. However, there is nothing in the archival record to suggest that TRI-003-S is associated with the lives of persons significant in our past. Therefore, it is not eligible for the NRHP under Criterion B or CRHR under Criterion 2.

As a conventional two-lane rural section line road paved with asphalt that is indistinguishable from multiple similar roads in Fresno County, TRI-003-S does not embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, possesses high artistic values, represent a significant and distinguishable entity whose components may lack individual distinction. Therefore, it is not eligible for the NRHP under Criterion C or CRHR under Criterion 3.

The information potential of TRI-003-S is expressed in its built form, alignment, and in the historical record. It has not yielded, nor is it likely to yield, information important in history or prehistory. Therefore, it is not eligible for the NRHP under Criterion D or CRHR under Criterion 4.

TRI-003-S possesses integrity of location, setting, design, materials, workmanship, feeling, and association. It remains a two-lane road paved with asphalt and is situated on the dividing line between the northeastern and southeastern quarters of Section 21 (Township 12 South, Range 21 East) in a rural

setting. TRI-003-S still conveys the aesthetic of a 20th-century rural section line road that provided local farmers and ranchers with vehicular access to North Fowler Avenue, the most direct route to Clovis.

Regardless of integrity, TRI-003-S does not meet NRHP or CRHR eligibility criteria as an individual resource or as part of any known or suspected historic district. The resource is not listed on any Certified Local Government historic property register.

5.4.1.3 TRI-005-S

Resource Description

TRI-005-S is a segment of East Behymer Avenue in Fresno County. It is a 20-foot-wide, 4,830-foot-long, two-lane rural section line road paved with asphalt (Figure 9). TRI-005-S divides Section 22 from Section 15 (Township 12 South, Range 21 East).

Evaluation of TRI-005-S

TRI-005-S, a segment of East Behymer Avenue in Fresno County, provided local farmers and ranchers with vehicular access to North Fowler Avenue, the most direct route to Clovis. However, there is nothing in the archival record to suggest that TRI-005-S is associated with events that have made a significant contribution to the broad patterns of our history. Therefore, it is not eligible for the NRHP under Criterion A or CRHR under Criterion 1.

Figure 9. Overview of TRI-005-S (view west; August 15, 2022).

Fresno County crews built and maintained TRI-005-S. However, there is nothing in the archival record to suggest that TRI-005-S is associated with the lives of persons significant in our past. Therefore, it is not eligible for the NRHP under Criterion B or CRHR under Criterion 2.

As a conventional two-lane rural section line road paved with asphalt, indistinguishable from multiple similar roads in Fresno County, TRI-005-S does not embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, possesses high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction. Therefore, it is not eligible for the NRHP under Criterion C or CRHR under Criterion 3.

The information potential of TRI-005-S is expressed in its built form, alignment, and in the historical record. It has not yielded, nor is it likely to yield, information important in history or prehistory. Therefore, it is not eligible for the NRHP under Criterion D or CRHR under Criterion 4.

TRI-005-S possesses integrity of location, setting, design, materials, workmanship, feeling, and association. It remains a two-lane road paved with asphalt and situated on the dividing line between Section 22 and Section 15 (Township 12 South, Range 21 East) in a rural setting. TRI-005-S still conveys the aesthetic of a 20th-century rural section line road that provided local farmers and ranchers with vehicular access to North Fowler Avenue, the most direct route to Clovis.

Regardless of integrity, TRI-005-S does not meet NRHP or CRHR eligibility criteria as an individual resource or as part of any known or suspected historic district. The resource is not listed on any Certified Local Government historic property register.

5.4.1.4 TRI-006-S

Resource Description

TRI-006-S is a segment of East Shepherd Avenue in Fresno County. It is a 43-foot-wide, 2-mile-long, 3- and four-lane suburban arterial and section line road paved with asphalt (Figure 10). Multiple stretches of TRI-006-S include a landscaped median that separates eastbound from westbound traffic; the median includes multiple plastic underground utility vaults and boxes. The southern shoulder of TRI-006-S has curbs, gutters, storm drains, fire hydrants, streetlights, and sidewalks. The northern shoulder has storm drains, fire hydrants, and no other improvements. TRI-006-S divides Sections 21 and 22 from Sections 16 and 15 (Township 12 South, Range 21 East).

Figure 10. Overview of TRI-006-S (view west; August 15, 2022).

Evaluation of TRI-006-S

TRI-006-S, a segment of East Shepherd Avenue in Fresno County, provided local farmers and ranchers with vehicular access to North Fowler Avenue, the most direct route to Clovis. However, there is nothing in the archival record to suggest that TRI-006-S is associated with events that have made a significant contribution to the broad patterns of our history. Therefore, it is not eligible for the NRHP under Criterion A or CRHR under Criterion 1.

Fresno County crews built and maintained TRI-006-S. However, there is nothing in the archival record to suggest that TRI-006-S is associated with the lives of persons significant in our past. Therefore, it is not eligible for the NRHP under Criterion B or CRHR under Criterion 2.

As a conventional three- and four-lane suburban arterial and section line road, indistinguishable from multiple similar roads in Fresno County, TRI-006-S does not embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, possesses high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction. Therefore, it is not eligible for the NRHP under Criterion C or CRHR under Criterion 3.

The information potential of TRI-006-S is expressed in its built form, alignment, and in the historical record. It has not yielded, nor is it likely to yield, information important in history or prehistory. Therefore, it is not eligible for the NRHP under Criterion D or CRHR under Criterion 4.

TRI-006-S possesses integrity of location; it remains situated on the dividing line between Sections 21 and 22 and Sections 16 and 15 (Township 12 South, Range 21 East). TRI-006-S does not, however, possess integrity of setting, design, materials, workmanship, feeling, and association. Its original rural setting has become a suburban setting with multiple single-family residential developments superimposed on

farmlands to the immediate south. Additionally, the southern shoulder of its original 20-foot-wide, two-lane configuration was widened and given concrete curb, gutter, and sidewalks and other improvements in 2002. As a suburban arterial road, TRI-006-S no longer conveys the aesthetic of a 20th-century rural section line road that provided local farmers and ranchers with vehicular access to North Fowler Avenue, the most direct route to Clovis.

Regardless of integrity, TRI-006-S does not meet NRHP or CRHR eligibility criteria as an individual resource or as part of any known or suspected historic district. The resource is not listed on any Certified Local Government historic property register.

5.4.1.5 TRI-007-S

Resource Description

TRI-007-S is a segment of North Fowler Avenue in Fresno County. It is a 20-foot-wide, 1-mile-long, two-lane, rural collector and section line road paved with asphalt (Figure 11). TRI-007-S divides the eastern half of Section 21 from the western half of Section 21 (Township 12 South, Range 21 East).

Evaluation of TRI-007-S

TRI-007-S, a segment of North Fowler Avenue in Fresno County, provided local farmers and ranchers with direct vehicular access to Clovis; however, other nearby roads, including North Sunnyside Avenue, also provided direct access to Clovis. There is nothing in the archival record to suggest that TRI-007-S is associated with events that have made a significant contribution to the broad patterns of our history. Therefore, it is not eligible for the NRHP under Criterion A or CRHR under Criterion 1.

Fresno County crews built and maintained TRI-007-S. However, there is nothing in the archival record to suggest that TRI-007-S is associated with the lives of persons significant in our past. Therefore, it is not eligible for the NRHP under Criterion B or CRHR under Criterion 2.

As a conventional two-lane rural collector and section line road paved with asphalt, indistinguishable from multiple similar roads in Fresno County, TRI-007-S does not embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, possesses high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction. Therefore, it is not eligible for the NRHP under Criterion C or CRHR under Criterion 3.

Figure 11. Overview of TRI-007-S (view north; August 15, 2022).

The information potential of TRI-007-S is expressed in its built form, alignment, and in the historical record. It has not yielded, nor is it likely to yield, information important in history or prehistory. Therefore, it is not eligible for the NRHP under Criterion D or CRHR under Criterion 4.

TRI-007-S possesses integrity of location, setting, design, materials, workmanship, feeling, and association. It remains a two-lane road paved with asphalt and situated on the dividing line between the eastern and western halves of Section 21 (Township 12 South, Range 21 East) in a rural setting. TRI-007-S still conveys the aesthetic of a 20th-century rural collector and section line road that provided local farmers and ranchers with vehicular access to Clovis.

Regardless of integrity, TRI-007-S does not meet NRHP or CRHR eligibility criteria as an individual resource or as part of any known or suspected historic district. The resource is not listed on any Certified Local Government historic property register.

5.4.1.6 TRI-009-S

Resource Description

TRI-009-S is a farm/ranch property located at 6110 and 6120 East Shepherd Avenue. It consists of Building A (Main House), Building B (Barn), Building C (Secondary House), and Building D (Shed).

Building A is a single-story Craftsman-style house built in circa 1920 (Figure 12). The house is L-shaped in plan and has a medium-pitched intersecting gable roof with overhanging eaves, corbels, louvered attic vents, and composition shingle roofing. A concrete perimeter crawlspace foundation supports a wooden frame and horizontal wooden siding. On the house's southern and eastern elevations, 8-by-8-inch wooden columns support a roof overhang that shades a front porch. Single-leaf entries provide access to

the house, and fenestration consists of wooden single-hung windows. A masonry chimney vents an interior fireplace or oven through the roof. Lawn and mature trees surround the house.

Figure 12. Overview of Building A of TRI-009-S (view northwest; August 16, 2022).

Building B is a single-story monitor barn built in circa 1920 (Figure 13). The barn is rectangular in plan and has metal roofing. Shed roofs top its eastern and western elevations, a low-pitched gable roof tops the central monitor, and openings below the monitor's eaves vent the barn. A concrete slab foundation supports a wooden foundation and vertical wooden siding. Swinging barn doors provide access to the southern and western elevations; fenestration consists of a single opening on the southern elevation.

Building C is a single-story Ranch-style house built in circa 1955 (Figure 14). The house is rectangular in plan and has a medium-pitched side gable roof with overhanging eaves, corbels, louvered attic vents, and composition shingle roofing. A concrete perimeter crawlspace foundation supports a wooden frame and horizontal wooden siding. On the house's southern elevation, 8-by-inch wooden columns support a roof overhang that shades a front porch. Single-leaf entries provide access to the house; fenestration consists of modern vinyl windows. A masonry chimney vents an interior fireplace on the house's western elevation. Lawn and mature trees surround the house.

Building D is a single-story shed built in circa 1960 (Figure 15). Rectangular in plan, the shed has a side-gable roof with metal roofing. A concrete slab foundation supports a wooden frame and metal walls. The southern elevation is open.

Figure 13. Overview of Building B of TRI-009-S (view north; August 16, 2022).

Figure 14. Overview of Building C of TRI-009-S (view north; August 16, 2022).

Figure 15. Overview of Building D of TRI-009-S (view northeast; August 16, 2022).

Evaluation of TRI-009-S

TRI-009-S, a farm/ranch property located at 6110 and 6120 East Shepherd Avenue, contributed to the overall agricultural production of the Clovis area during the 20th century; however, there is nothing in the archival record to suggest that TRI-009-S is associated with events that have made a significant contribution to the broad patterns of our history. Therefore, it is not eligible for the NRHP under Criterion A or CRHR under Criterion 1.

G. E. Hamshar owned TRI-009-S in 1923 and T. L. Harper owned it in 1940; however, there is nothing in the archival record to suggest that G. E. Hamshar made significant contributions to the history of the area, and therefore, TRI-009-S is not associated with the lives of persons significant in our past. Accordingly, it is not eligible for the NRHP under Criterion B or CRHR under Criterion 2.

As a conventional home ranch, indistinguishable from multiple similar home ranches in Fresno County, TRI-009-S does not embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, possesses high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction. Therefore, it is not eligible for the NRHP under Criterion C or CRHR under Criterion 3.

The information potential of TRI-009-S is expressed in its built form and in the historical record. It has not yielded, nor is it likely to yield, information important in history or prehistory. Therefore, it is not eligible for the NRHP under Criterion D or CRHR under Criterion 4.

TRI-009-S possesses integrity of location, setting, design, materials, workmanship, feeling, and association. It remains a working home ranch in its original location in a rural setting with original buildings intact.

Lastly, TRI-009-S still conveys the aesthetic of a 20th-century Fresno County home ranch that contributed to the overall agricultural production of the Clovis area.

Regardless of integrity, TRI-009-S does not meet NRHP or CRHR eligibility criteria as an individual resource or as part of any known or suspected historic district. The resource is not listed on any Certified Local Government historic property register.

5.4.1.7 TRI-011-S

Resource Description

TRI-011-S is a farm/ranch property located at 6374 East Shepherd Avenue. It consists of Building A (Main House); Building B (Garage); Building D (Secondary House); and buildings C, E, F, G, H, I, and J (farm/ranch buildings).

Building A is a single-story Minimal Traditional-style house built in circa 1940 (Figure 16). The house is irregular in plan and has a medium-pitched side-gable roof with overhanging eaves, exposed rafter tails, louvered attic vents, and composition shingle roofing. A concrete slab foundation supports a wooden frame, horizontal wood siding, and stucco cladding. Single-leaf entries provide access to the house and fenestration consists of aluminum sliding windows.

Figure 16. Overview of Building A of TRI-011-S (view northwest; August 17, 2022).

Building B is a single-story garage built in 1952 (Figure 17). The garage is square in plan and has a medium-pitched side-gable roof with overhanging eaves, exposed rafter tails, louvered attic vents, and composition shingle roofing. A concrete slab foundation supports a wood frame and walls clad in stucco. On the eastern elevation, tilt-up garage doors provide vehicular access. A single-leaf entry provides access to the southern elevation and fenestration consists of aluminum sliding windows.

Figure 17. Overview of Building B of TRI-011-S (view west; August 17, 2022).

Building D is a single-story Minimal Traditional-style house built in circa 1945 (Figure 18). The house is irregular in plan and has a medium-pitched side-gable roof with overhanging eaves, exposed rafter tails, louvered attic vents, and composition shingle roofing. A crawlspace foundation supports a wooden frame, horizontal wood siding, and faux-masonry cladding. A single-leaf entries provide access to the house and fenestration consists of 3-over-4 wood casement windows.

Figure 18. Overview of Building D of TRI-011-S (view southwest; August 17, 2022).

Buildings C, E, F, G, H, I, and J are 20th-century wood-frame farm/ranch buildings that collectively exhibit an advanced state of disrepair (Figures 19 to 25). None remain fit for human or animal habitation.

Figure 19. Overview of Building C of TRI-011-S (view east; August 17, 2022).

Figure 20. Overview of Building E of TRI-011-S (view south; August 17, 2022).

Figure 21. Overview of Building F of TRI-011-S (view northeast; August 18, 2022).

Figure 22. Overview of Building G of TRI-011-S (view northwest; August 19, 2022).

Figure 23. Overview of Building H of TRI-011-S (view west; August 19, 2022).

Figure 24. Overview of Building I of TRI-011-S (view northwest; August 19, 2022).

Figure 25. Overview of Building J of TRI-011-S (view northwest; August 19, 2022).

Evaluation of TRI-011-S

TRI-011-S, a farm/ranch property located at 6374 East Shepherd Avenue, contributed to the overall agricultural production of the Clovis area during the 20th century. However, there is nothing in the archival record to suggest that TRI-011-S is associated with events that have made a significant contribution to the broad patterns of our history. Therefore, it is not eligible for the NRHP under Criterion A or CRHR under Criterion 1.

J. M. Foster owned TRI-011-S in 1923 and Margaret Cobb owned it in 1940; however, there is nothing in the archival record to suggest that J. M. Foster made significant contributions to the history of the area. Accordingly, TRI-011-S is not associated with the lives of persons significant in our past. Therefore, it is not eligible for the NRHP under Criterion B or CRHR under Criterion 2.

As a conventional home ranch, indistinguishable from multiple similar home ranches in Fresno County, TRI-011-S does not embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, possesses high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction. Therefore, it is not eligible for the NRHP under Criterion C or CRHR under Criterion 3.

The information potential of TRI-011-S is expressed in its built form and in the historical record. It has not yielded, nor is it likely to yield, information important in history or prehistory. Therefore, it is not eligible for the NRHP under Criterion D or CRHR under Criterion 4.

TRI-011-S possesses integrity of location, setting, design, materials, workmanship, feeling, and association. It remains a home ranch in its original location in a rural setting with original buildings intact, although

collectively exhibiting a state of disrepair. Lastly, TRI-011-S still conveys the aesthetic of a 20th-century Fresno County home ranch that contributed to the overall agricultural production of the Clovis area.

Regardless of integrity, TRI-011-S does not meet NRHP or CRHR eligibility criteria as an individual resource or as part of any known or suspected historic district. The resource is not listed on any Certified Local Government historic property register.

5.4.1.8 TRI-016-S

Resource Description

TRI-016-S is an Aermotor 702 windmill mounted on a steel tower with an associated groundwater pump (Figure 26). The windmill tail is marked "THE/ AERMOTOR/ CHICAGO/ [large C and small circle inside the C]." The structure measures approximately 30 feet tall and 6 feet across, with 20-foot-long metal blades. The well casing is composed of metal measuring 12 inches in diameter and 26 inches high.

Figure 26. Overview of TRI-016-S (view north; August 18, 2022).

Resource Evaluation

TRI-016-S, an Aermotor 702 windmill, provided an alternative to gas- and electrical-powered groundwater pumps. It used wind power to drive a geared mechanism that converted rotary motion to up-and-down

motion; this motion drove a pump rod up and down inside a well to pump groundwater to the surface. Through it provided a source of groundwater, TRI-016-S was one of several groundwater pumps that served farmers and ranchers in the Project Area. There is nothing in the archival record to suggest that TRI-016-S is associated with events that have made a significant contribution to the broad patterns of our history. Therefore, it is not eligible for the NRHP under Criterion A or CRHR under Criterion 1.

TRI-016-S is located on a parcel that belonged to the Anglo California Trust Company in 1940. Unknown farmers or ranchers installed and maintained TRI-016-S. There is nothing in the archival record to suggest the Anglo California Trust Company made significant contributions to history. Accordingly, it is not associated with the lives of persons significant in our past. Therefore, it is not eligible for the NRHP under Criterion B or CRHR under Criterion 2.

TRI-016-S did not represent a technological breakthrough. Daniel Halladay, founder of the Halladay Windmill Company, developed the first commercially successful self-governing windmill in New England in the 1850s. During the 20th century, the Aermotor Company of Chicago emerged as "the largest of the American windmill makers" (Baker 1985:38). The company introduced the 702 model in 1933; by 1950 it claimed to have more than 800,000 windmills in service. The Aermotor 702 windmill, though no longer manufactured, remains a common feature of American ranching landscapes. Today the Aermotor Company offers the 802 model windmill but emphasizes that its "parts are still interchangeable with the 702 mill," suggesting that many 702 models remain in service (Schnurr 2018). As a common, mass-produced device, TRI-016-S does not embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, possesses high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction. Therefore, it is not eligible for the NRHP under Criterion C or CRHR under Criterion 3.

The information potential of TRI-016-S is expressed in its built form and in the historical record. It has not yielded, nor is it likely to yield, information important in history or prehistory. Therefore, it is not eligible for the NRHP under Criterion D or CRHR under Criterion 4.

TRI-016-S possesses integrity of location, setting, design, materials, workmanship, feeling, and association. It remains a free-standing Aermotor 702 windmill in its original location in a rural setting with original parts intact. TRI-016-S still conveys the aesthetic of a 20th-century Aermotor windmill that provided local farmers or ranchers with a source of groundwater.

Regardless of integrity, TRI-016-S does not meet NRHP or CRHR eligibility criteria as an individual resource or as part of any known or suspected historic district; the resource is not listed on any Certified Local Government historic property register.

Though not rare, Aermotor 702 windmills do, however, possess intrinsic historical value that may suit a local history museum's collections management policy. Likewise, in recent years homebuilders in western cities have preserved Aermotor windmills and incorporated them into their community design (Agrihood Living 2019).

5.4.1.9 TRI-017-S

Resource Description

TRI-017-S is a segment of North Temperance Avenue in Fresno County (Figure 27). It is a 20-foot-wide, 1,230-foot-long, two-lane rural section line road. It remains unpaved with no further improvements. TRI-017-S divides the eastern and western halves of Section 22 (Township 12 South, Range 21 East).

Figure 27. Overview of TRI-017-S (view south; August 18, 2022).

Resource Evaluation

TRI-017-S, a segment of North Temperance Avenue in Fresno County, provided local farmers and ranchers with vehicular access to East Shepherd Avenue and North Fowler Avenue, the most direct route to Clovis. However, there is nothing in the archival record to suggest that TRI-017-S is associated with events that have made a significant contribution to the broad patterns of our history. Therefore, it is not eligible for the NRHP under Criterion A or CRHR under Criterion 1.

Fresno County crews built and maintained TRI-017-S. However, there is nothing in the archival record to suggest that TRI-017-S is associated with the lives of persons significant in our past. Therefore, it is not eligible for the NRHP under Criterion B or CRHR under Criterion 2.

As a conventional two-lane rural unpaved section line road, indistinguishable from multiple similar roads in Fresno County, TRI-017-S does not embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, possesses high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction. Therefore, it is not eligible for the NRHP under Criterion C or CRHR under Criterion 3.

The information potential of TRI-017-S is expressed in its built form, alignment, and in the historical record. It has not yielded, nor is it likely to yield, information important in history or prehistory. Therefore, it is not eligible for the NRHP under Criterion D or CRHR under Criterion 4.

TRI-017-S possesses integrity of location, setting, design, materials, workmanship, feeling, and association. It remains a two-lane unpaved road situated on the dividing line between the eastern and western halves of Section 22 (Township 12 South, Range 21 East) in a rural setting. TRI-017-S still conveys the aesthetic of a 20th-century rural section line road that provided local farmers and ranchers with vehicular access to Clovis.

Regardless of integrity, TRI-017-S does not meet NRHP or CRHR eligibility criteria as an individual resource or as part of any known or suspected historic district. The resource is not listed on any Certified Local Government historic property register.

5.4.1.10 TRI-019-S

Resource Description

TRI-019-S is a farm/ranch property located at 9255 North Temperance Road. It consists of Building A (Main House) and Building B (Shed).

Building A is a single-story Ranch-style house built in circa 1955 (Figure 28). The house is irregular in plan and has a medium-pitched intersecting gable roof with overhanging eaves and composition shingle roofing. A concrete slab foundation supports masonry walls. The western elevation includes an addition with a concrete slab foundation, wooden frame, and vertical wooden siding. On the house's eastern elevation, 8-by-8-inch wooden columns support a roof overhang that shades a front porch; the southernmost portion of the porch is enclosed with plywood. Single-leaf entries provide access to the house and fenestration consists of steel casement, aluminum sliding, and vinyl replacement windows. A masonry chimney vents an interior fireplace on the western elevation. Mature trees surround the house.

Building B is a single-story shed built in circa 1965 (Figure 29). The shed is square in plan and has a hipped roof with exposed rafter tails and shake roofing wood siding. A concrete perimeter foundation supports a wooden frame and horizontal wooden siding. A single-leaf entry provides access to the house; fenestration consists of a single fixed window.

Figure 28. Overview of Building A of TRI-019-S (view west; August 19, 2022)

Figure 29. Overview of Building B of TRI-019-S (view northeast; August 19, 2022).

Evaluation of TRI-019-S

TRI-019-S, a farm/ranch property located at 9255 North Temperance Road, contributed to the overall agricultural production of the Clovis area during the 20th century; however, there is nothing in the archival record to suggest that TRI-019-S is associated with events that have made a significant

contribution to the broad patterns of our history. Therefore, it is not eligible for the NRHP under Criterion A or CRHR under Criterion 1.

The Aloha Company owned TRI-019-S in 1923 and Melinda S. Daly owned it in 1940; however, there is nothing in the archival record to suggest that the Aloha Company made significant contributions to history. Accordingly, TRI-019-S is associated with the lives of persons significant in our past. Therefore, it is not eligible for the NRHP under Criterion B or CRHR under Criterion 2.

As a conventional home ranch, indistinguishable from multiple similar home ranches in Fresno County, TRI-019-S does not embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possesses high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction. Therefore, it is not eligible for the NRHP under Criterion C or CRHR under Criterion 3.

The information potential of TRI-019-S is expressed in its built form and in the historical record. It has not yielded, nor is it likely to yield, information important in history or prehistory. Therefore, it is not eligible for the NRHP under Criterion D or CRHR under Criterion 4.

TRI-019-S possesses integrity of location, setting, design, materials, workmanship, feeling, and association. It remains a working home ranch in its original location in a rural setting with original buildings intact. Lastly, TRI-019-S still conveys the aesthetic of a 20th-century Fresno County home ranch that contributed to the overall agricultural production of the Clovis area.

Regardless of integrity, TRI-019-S does not meet NRHP or CRHR eligibility criteria as an individual resource or as part of any known or suspected historic district. The resource is not listed on any Certified Local Government historic property register.

5.4.2 Isolates

5.4.2.1 TRI-015-I

Resource Description

TRI-015-I is an isolated pre-contact basalt tertiary flake measuring less than 3 centimeters (Figure 30). An ECORP archaeologist observed the isolated flake on the ground and conducted a thorough investigation of the surrounding area within 5 meters in each direction with 100 percent coverage but did not observe additional artifacts. There were no rodent burrows or surface disturbances in the immediate area that might otherwise suggest that the flake was moved to the surface through bioturbation.

Figure 30. Closeup of TRI-015-I (detail view; August 18, 2022).

Evaluation of TRI-015-I

Isolated artifacts are disconnected from the human activity that led to their presence. Isolates like these typically do not individually contribute to the broad patterns of history because they cannot be connected to a particular event (NRHP Criterion A and CRHR Criterion 1). They are similarly difficult to associate with specific individuals due to their lack of association with archaeological or historical sites, and generally no information exists in the archival record to associate them with important individuals in history (NRHP Criterion B and CRHR Criterion 2). They do not embody the distinctive characteristics of a type, period, region, or method of construction, represent the work of an important creative individual or possess high artistic values (NRHP Criterion C and CRHR Criterion 3). Finally, they do not provide important information in history or prehistory (NRHP Criterion D and CRHR Criterion 4). They are not considered to be a Historic Property for the purpose of Section 106 NHPA or a Historical Resource under CEQA.

6.0 MANAGEMENT CONSIDERATIONS

6.1 Conclusions

ECORP observed 11 previously unrecorded resources during the 2022 pedestrian survey. These resources consist of 10 historic-period architectural resources and one pre-contact isolated archaeological resource. ECORP evaluated all of these using NRHP and CRHR eligibility criteria and found that none meet the criteria with sufficient integrity to be considered eligible for the NRHP or CRHR. Though not considered eligible for the NRHP or CRHR, one resource, TRI-016-S, an Aermotor 702 windmill, possesses intrinsic historical value that may suit a local history museum's collections management policy. Likewise, in recent years homebuilders in western cities have preserved Aermotor windmills and incorporated them into their community design (Agrihood Living 2019).

6.2 Likelihood for Subsurface Cultural Resources

Due to the presence of alluvium along Big Dry Creek and given the likelihood of precontact archaeological sites located along perennial waterways, there exists a moderate potential for buried precontact archaeological sites in the Project Area along Big Dry Creek. Within the area of moderate potential exists the Delhi sandy loam, a material that is often associated with archaeological deposits. However, this soil type comprises less than 1 percent of the total Project Area. The overall potential for buried archaeological sites reduces with distance from the perennial waterway.

6.3 Post-Review Discoveries

There always remains the potential for ground-disturbing activities to expose previously unrecorded cultural resources. Both CEQA and Section 106 of the NHPA require the lead agency to address any unanticipated cultural resource discoveries during Project construction. Therefore, ECORP recommends the lead agency adopt and implement the following mitigation measures to reduce potential adverse impacts to Less than Significant:

- If subsurface deposits believed to be cultural or human in origin are discovered during construction, all work must halt within a 100-foot radius of the discovery. A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeology, shall be retained to evaluate the significance of the find, and shall have the authority to modify the no-work radius as appropriate, using professional judgment. The following notifications shall apply, depending on the nature of the find:
- If the professional archaeologist determines that the find does not represent a cultural resource, work may resume immediately with no agency notifications required.
- If the professional archaeologist determines that the find does represent a cultural resource from any time period or cultural affiliation, the archaeologist shall immediately notify the lead agencies. The agencies shall consult on a finding of eligibility and implement appropriate treatment measures, if the find is determined to be a Historical Resource under CEQA, as defined in Section 15064.5(a) of the CEQA Guidelines or a historic property under Section 106 NHPA, if applicable. Work may not resume within the no-work radius until the lead agencies, through consultation as appropriate, determine that the site either: 1) is not a Historical Resource under CEQA or a Historic Property under Section 106; or 2) that the treatment measures have been completed to their satisfaction.
- If the find includes human remains, or remains that are potentially human, they shall ensure reasonable protection measures are taken to protect the discovery from disturbance (AB 2641). The archaeologist shall notify the Fresno County Coroner (per Section 7050.5 of the Health and Safety Code). The provisions of Section 7050.5 of the California Health and Safety Code, Section 5097.98 of the California PRC, and AB 2641 will be implemented. If the coroner determines the remains are Native American and not the result of a crime scene, the coroner will notify the NAHC, which then will designate a Native American Most Likely Descendant (MLD) for the Project (Section 5097.98 of the PRC). The designated MLD will have 48 hours from the time access to the

property is granted to make recommendations concerning treatment of the remains. If the landowner does not agree with the recommendations of the MLD, the NAHC can mediate (Section 5097.94 of the PRC). If no agreement is reached, the landowner must rebury the remains where they will not be further disturbed (Section 5097.98 of the PRC). This will also include either recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a reinternment document with the county in which the property is located (AB 2641). Work may not resume within the no-work radius until the lead agencies, through consultation as appropriate, determine that the treatment measures have been completed to their satisfaction.

The Lead Agency is responsible for ensuring compliance with these mitigation measures. Section 15097 of Title 14, Chapter 3, Article 7 of CEQA, *Mitigation Monitoring or Reporting*, "The public agency shall adopt a program for monitoring or reporting on the revisions which it has required in the project and the measures it has imposed to mitigate or avoid significant environmental effects. A public agency may delegate reporting or monitoring responsibilities to another public agency or to a private entity which accepts the delegation; however, until mitigation measures have been completed the lead agency remains responsible for ensuring that implementation of the mitigation measures occurs in accordance with the program."

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LIST OF APPENDICES

Appendix A – Records Search Confirmation and Historical Society Coordination

Appendix B – Sacred Lands File Coordination

Appendix C – Project Area Photographs

Appendix D – ***Confidential*** Cultural Resource Site Location Map

APPENDIX A

Records Search Confirmation and Historical Society Coordination

California Historical Resources Information System

Fresno
Kern
Kings
Madera
Tulare

Southern San Joaquin Valley Information Center
California State University, Bakersfield
Mail Stop: 72 DOB
9001 Stockdale Highway
Bakersfield, California 93311-1022
(661) 654-2289
E-mail: ssjvic@csub.edu
Website: www.csub.edu/ssjvic

8/8/2022

Brian S. Marks
ECORP Consulting, Inc.
2525 Warren Drive
Rocklin, CA 95677

Re: 2022-130 Triangle Property
Records Search File No.: 22-303

The Southern San Joaquin Valley Information Center received your record search request for the project area referenced above, located on the Clovis & Friant USGS 7.5' quads. The following reflects the results of the records search for the project area and the 0.5 mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: ☒ custom GIS maps ☒ GIS data

Resources within project area:	None
Resources within 0.5 mile radius:	P-10-001691, 005934, 006461, 007197
Reports within project area:	FR-00279, 00293, 00548, 00792, 00793, 01130, 01219
Reports within 0.5 mile radius:	FR-00534, 01084, 01849, 01869, 01982, 02016, 02203, 02285, 02289, 02490, 03009, 03067

Resource Database Printout (list): ☒ enclosed ☐ not requested ☐ nothing listed

Resource Database Printout (details): ☐ enclosed ☒ not requested ☐ nothing listed

Resource Digital Database Records: ☒ enclosed ☐ not requested ☐ nothing listed

Report Database Printout (list): ☒ enclosed ☐ not requested ☐ nothing listed

Report Database Printout (details): ☐ enclosed ☒ not requested ☐ nothing listed

Report Digital Database Records: ☒ enclosed ☐ not requested ☐ nothing listed

Resource Record Copies: ☒ enclosed ☐ not requested ☐ nothing listed

Report Copies: ☒ enclosed ☐ not requested ☐ nothing listed

OHP Built Environment Resources Directory: ☐ enclosed ☒ not requested ☐ nothing listed

Archaeological Determinations of Eligibility: ☐ enclosed ☐ not requested ☒ nothing listed

CA Inventory of Historic Resources (1976): ☐ enclosed ☐ not requested ☒ nothing listed

Caltrans Bridge Survey: Not available at SSJVIC; please see https://dot.ca.gov/programs/environmental-analysis/cultural-studies/california-historical-bridges-tunnels

Ethnographic Information: Not available at SSJVIC

Historical Literature: Not available at SSJVIC

Historical Maps: Not available at SSJVIC; please see http://historicalmaps.arcgis.com/usgs/

Local Inventories: Not available at SSJVIC

GLO and/or Rancho Plat Maps: Not available at SSJVIC; please see http://www.glorecords.blm.gov/search/default.aspx#searchTabIndex=0&searchByTypeIndex=1 and/or http://www.oac.cdlib.org/view?docId=hb8489p15p;developer=local;style=oac4;doc.view=items

Shipwreck Inventory: Not available at SSJVIC; please see https://www.slc.ca.gov/shipwrecks/

Soil Survey Maps: Not available at SSJVIC; please see http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Invoices for Information Center services will be sent under separate cover from the California State University, Bakersfield Accounting Office.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Celeste M. Thomson
Coordinator

California Historical Resources Information System

CHRIS Data Request Form

ACCESS AND USE AGREEMENT NO.: 34.00 **IC FILE NO.:** _____

To: Southern San Joaquin Valley Information Center

Print Name: Brian S. Marks Date: 07/29/2022

Affiliation: ECORP Consulting, Inc.

Address: 2525 Warren Drive

City: Rocklin State: CA Zip: 95677

Phone: (916) 782-9100 Fax: _____ Email: bmarks@ecorpconsulting.com

Billing Address (if different than above): _____

Billing Email: bmarks@ecorpconsulting.com Billing Phone: (916) 782-9100

Project Name / Reference: 2022-130 Triangle Property

Project Street Address: 6374 E Shepard Ave, Clovis, CA 93619

County or Counties: Fresno

Township/Range/UTMs: T 12 S, R 21E, 262147mE 4083841 mN

USGS 7.5' Quad(s): Clovis and Friant quads

PRIORITY RESPONSE (Additional Fee): yes ☐ / no ☒

TOTAL FEE NOT TO EXCEED: $ 1,500.00
(If blank, the Information Center will contact you if the fee is expected to exceed $1,000.00)

Special Instructions:

Please contact me if search will exceed $1500.00 While we don't want copies of the ECORP reports, we do want them listed on the database printout. Please do not spend extra time making the maps "pretty"
Thank you.

Information Center Use Only

Date of CHRIS Data Provided for this Request: _____

Confidential Data Included in Response: yes ☐ / no ☐

Notes: _____

CHRIS Data Request Form

Mark the request form as needed. Attach a PDF of your project area (with the radius if applicable) mapped on a 7.5′ USGS topographic quadrangle to scale 1:24000 ratio 1:1 neither enlarged nor reduced and include a shapefile of your project area, if available. Shapefiles are the current CHRIS standard for submitting digital spatial data for your project area or radius. **Check with the appropriate IC for current availability of digital data products.**

- Documents will be provided in PDF format. Paper copies will only be provided if PDFs are not available at the time of the request or under specially arranged circumstances.
- Location information will be provided as a digital map product (Custom Maps or GIS data) unless the area has not yet been digitized. In such circumstances, the IC may provide hand drawn maps.
- In addition to the $150/hr. staff time fee, client will be charged the Custom Map fee when GIS is required to complete the request [e.g., a map printout or map image/PDF is requested and no GIS Data is requested, or an electronic product is requested (derived from GIS data) but no mapping is requested].

For product fees, see the CHRIS IC Fee Structure on the OHP website.

1. Map Format Choice:

Select One: Custom GIS Maps ☐ GIS Data ☐ Custom GIS Maps **and** GIS Data ☒ No Maps ☐

Any selection below left unmarked will be considered a "no. "

Location Information:

	Within project area	Within .5 mi. radius
ARCHAEOLOGICAL Resource Locations[1]	yes ☒ / no ☐	yes ☒ / no ☐
NON-ARCHAEOLOGICAL Resource Locations	yes ☒ / no ☐	yes ☒ / no ☐
Report Locations[1]	yes ☒ / no ☐	yes ☒ / no ☐
"Other" Report Locations[2]	yes ☐ / no ☒	yes ☐ / no ☒

3. Database Information:
(contact the IC for product examples, or visit the SSJVIC website for examples)

	Within project area	Within .5 mi. radius
ARCHAEOLOGICAL Resource Database[1]		
List (PDF format)	yes ☒ / no ☐	yes ☒ / no ☐
Detail (PDF format)	yes ☐ / no ☒	yes ☐ / no ☒
Excel Spreadsheet	yes ☒ / no ☐	yes ☒ / no ☐
NON-ARCHAEOLOGICAL Resource Database		
List (PDF format)	yes ☒ / no ☐	yes ☒ / no ☐
Detail (PDF format)	yes ☐ / no ☒	yes ☐ / no ☒
Excel Spreadsheet	yes ☒ / no ☐	yes ☒ / no ☐
Report Database[1]		
List (PDF format)	yes ☒ / no ☐	yes ☒ / no ☐
Detail (PDF format)	yes ☐ / no ☒	yes ☐ / no ☒
Excel Spreadsheet	yes ☒ / no ☐	yes ☒ / no ☐
Include "Other" Reports [2]	yes ☐ / no ☒	yes ☐ / no ☒

4. Document PDFs (paper copy only upon request):

	Within project area	Within .5 mi. radius
ARCHAEOLOGICAL Resource Records[1]	yes ☒ / no ☐	yes ☒ / no ☐
NON-ARCHAEOLOGICAL Resource Records	yes ☒ / no ☐	yes ☒ / no ☐
Reports[1]	yes ☒ / no ☐	yes ☐ / no ☒
"Other" Reports[2]	yes ☐ / no ☒	yes ☐ / no ☒

CHRIS Data Request Form

5. Eligibility Listings and Documentation:

	Within project area	Within .5 mi. radius
OHP Built Environment Resources Directory[3]:		
Directory listing only (Excel format)	yes ☐ / no ☒	yes ☐ / no ☒
Associated documentation[4]	yes ☐ / no ☒	yes ☐ / no ☒
OHP Archaeological Resources Directory[1,5]:		
Directory listing only (Excel format)	yes ☒ / no ☐	yes ☒ / no ☐
Associated documentation[4]	yes ☒ / no ☐	yes ☐ / no ☒
***California Inventory of Historic Resources* (1976):**		
Directory listing only (PDF format)	yes ☒ / no ☐	yes ☐ / no ☒
Associated documentation[4]	yes ☒ / no ☐	yes ☐ / no ☒

6. Additional Information:

The following sources of information may be available through the Information Center. However, several of these sources are now available on the OHP website and can be accessed directly. The Office of Historic Preservation makes no guarantees about the availability, completeness, or accuracy of the information provided through these sources. Indicate below if the Information Center should review and provide documentation (if available) of any of the following sources as part of this request.

Caltrans Bridge Survey	yes ☐ / no ☒
Ethnographic Information	yes ☐ / no ☒
Historical Literature	yes ☐ / no ☒
Historical Maps	yes ☐ / no ☒
Local Inventories	yes ☒ / no ☐
GLO and/or Rancho Plat Maps	yes ☐ / no ☒
Shipwreck Inventory	yes ☐ / no ☒
Soil Survey Maps	yes ☐ / no ☒

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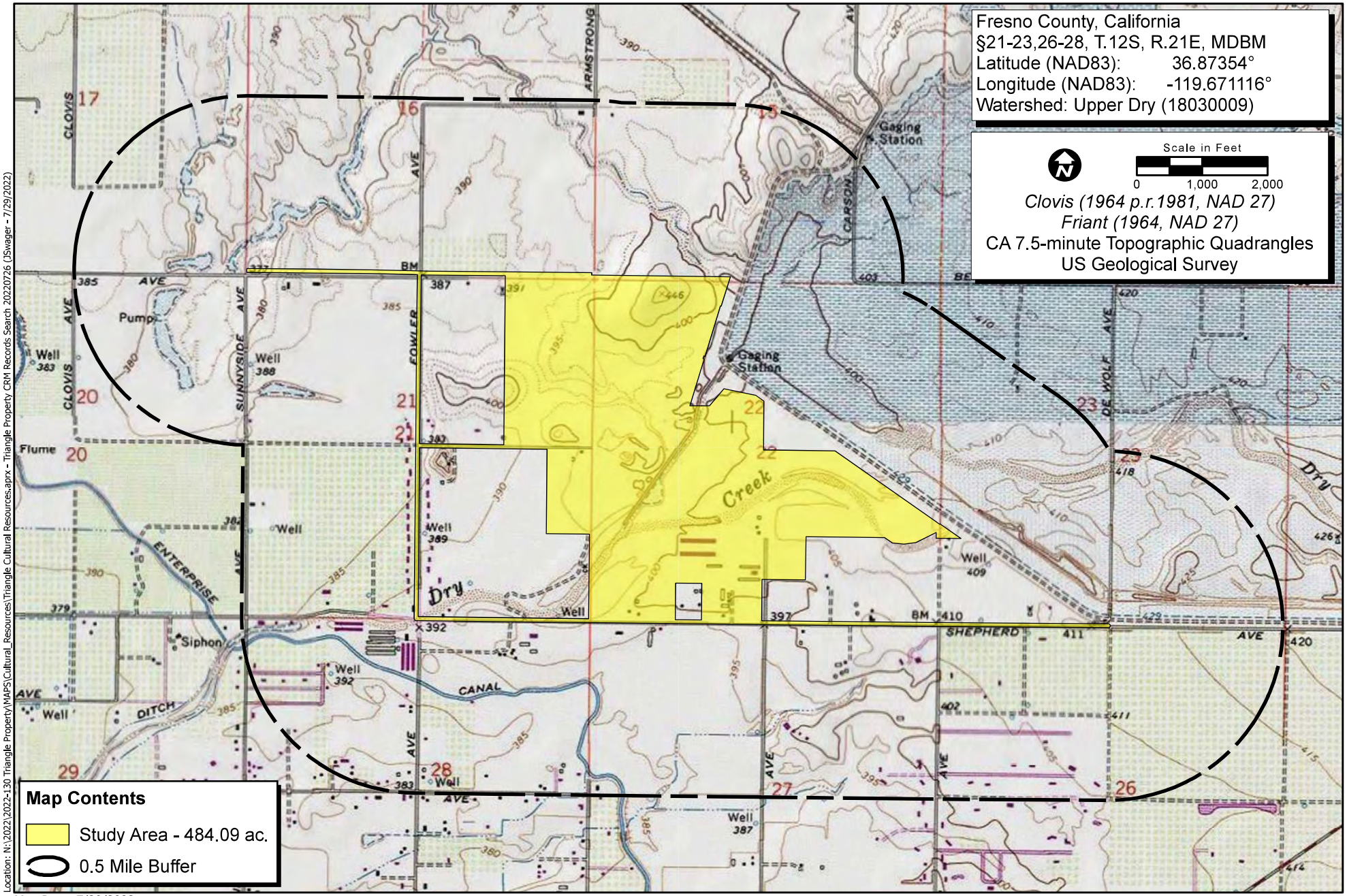
[1] In order to receive archaeological information, requestor must meet qualifications as specified in Section III of the current version of the California Historical Resources Information System Information Center Rules of Operation Manual and be identified as an Authorized User or Conditional User under an active CHRIS Access and Use Agreement.

[2] "Other" Reports GIS layer consists of report study areas for which the report content is almost entirely non-fieldwork related (e.g., local/regional history, or overview) and/or for which the presentation of the study area boundary may or may not add value to a record search.

[3] Provided as Excel spreadsheets with no cost for the rows; the only cost for this component is IC staff time. Includes, but not limited to, information regarding National Register of Historic Places, California Register of Historical Resources, California State Historical Landmarks, California State Points of Historical Interest, and historic building surveys. Previously known as the HRI and then as the HPD, it is now known as the Built Environment Resources Directory (BERD). The Office of Historic Preservation compiles this documentation and it is the source of the official status codes for evaluated resources.

[4] Associated documentation will vary by resource. Contact the IC for further details.

[5] Provided as Excel spreadsheets with no cost for the rows; the only cost for this component is IC staff time. Previously known as the Archaeological Determinations of Eligibility, now it is known as the Archaeological Resources Directory (ARD). The Office of Historic Preservation compiles this documentation and it is the source of the official status codes for evaluated resources.



Location: N:\2022\2022-130 Triangle Property\MAPS\Cultural_Resources\Triangle Cultural Resources.aprx - Triangle Property CRM Records Search 20220726 (JSwager - 7/29/2022)

Map Date: 7/29/2022

Sources: ESRI, USGS, Morton and Pitalo

Records Search

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

2022-130 Triangle Property

August 31, 2022

Fresno County Historical Society
7160 W. Kearney Boulevard
Fresno, CA 93706

RE: Cultural Resources Identification Effort for the Triangle Property Project, Fresno County, California

Dear Fresno County Historical Society:

ECORP Consulting, Inc. has been retained to assist in the planning of the development on the project indicated above. The proposed project consists of approximately 426 acres located in Sections 21, 22, and 23 of Township 12 South, Range 21, East, Mount Diablo Base and Meridian as depicted on the enclosed map. The property is bounded to the east by Big Dry Creek Dam, to the south by East Shepard Avenue, in the west by North Burgan Avenue, and to the north by East Behymer Avenue in Clovis. As part of the identification effort, we are seeking information from all parties that may have knowledge of or concerns with historic properties or cultural resources in the area of potential effect.

Included is a map showing the project area outlined. We would appreciate input on this undertaking from the historical society with concerns about possible cultural properties or potential impacts within or adjacent to the area of potential effect. If you have any questions, please contact me at (916) 782-9100 or bmarks@ecorpconsulting.com.

Thank you in advance for your assistance in our cultural resource management study.

Sincerely,

Brian Marks
Senior Archaeologist

Attachment(s)
Project Location and Vicinity Map

APPENDIX B

Sacred Lands File Coordination

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: 2022-130 Triangle Property

County: Fresno

USGS Quadrangle: Clovis and Friant, Calif.

Township: 12S Range: 21E Section(s): 21-23 and 26-28

Company/Firm/Agency: ECORP Consulting, Inc.

Contact Person: Brian Marks

Street Address: __2525 Warren Drive_____

City: __Rocklin_____Zip:___95677_____

Phone: __(916) 782-9100_____

Fax: __(916) 782-9134_____

Email: bmarks@ecorpconsulting.com

Date: July 29, 2022

Project Description: Please see attached letter and map.

July 28, 2022

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
nahc@nahc.ca.gov

RE: Cultural Resources Identification Effort for the Triangle Property Project, Fresno County, Sections 21-23 and 26-28 of Township 12 South, Range 21 East (ECORP Project No. 2022-130).

Dear NAHC Staff:

ECORP Consulting, Inc. has been retained to assist in the planning of the development on the project indicated above. The Project consists of the development of a housing sub-division and associated offsite infrastructure located in unincorporated Fresno County, California, just north of the City of Clovis. The proposed project area measures approximately 484 acres, and is roughly bounded by East Shepard Avenue, East Behmyer Avenue, North Fowler Avenue, and the levee on the eastern side. As part of the identification effort, we are seeking information from all parties that may have knowledge of or concerns with historic properties or cultural resources in the area of potential effects.

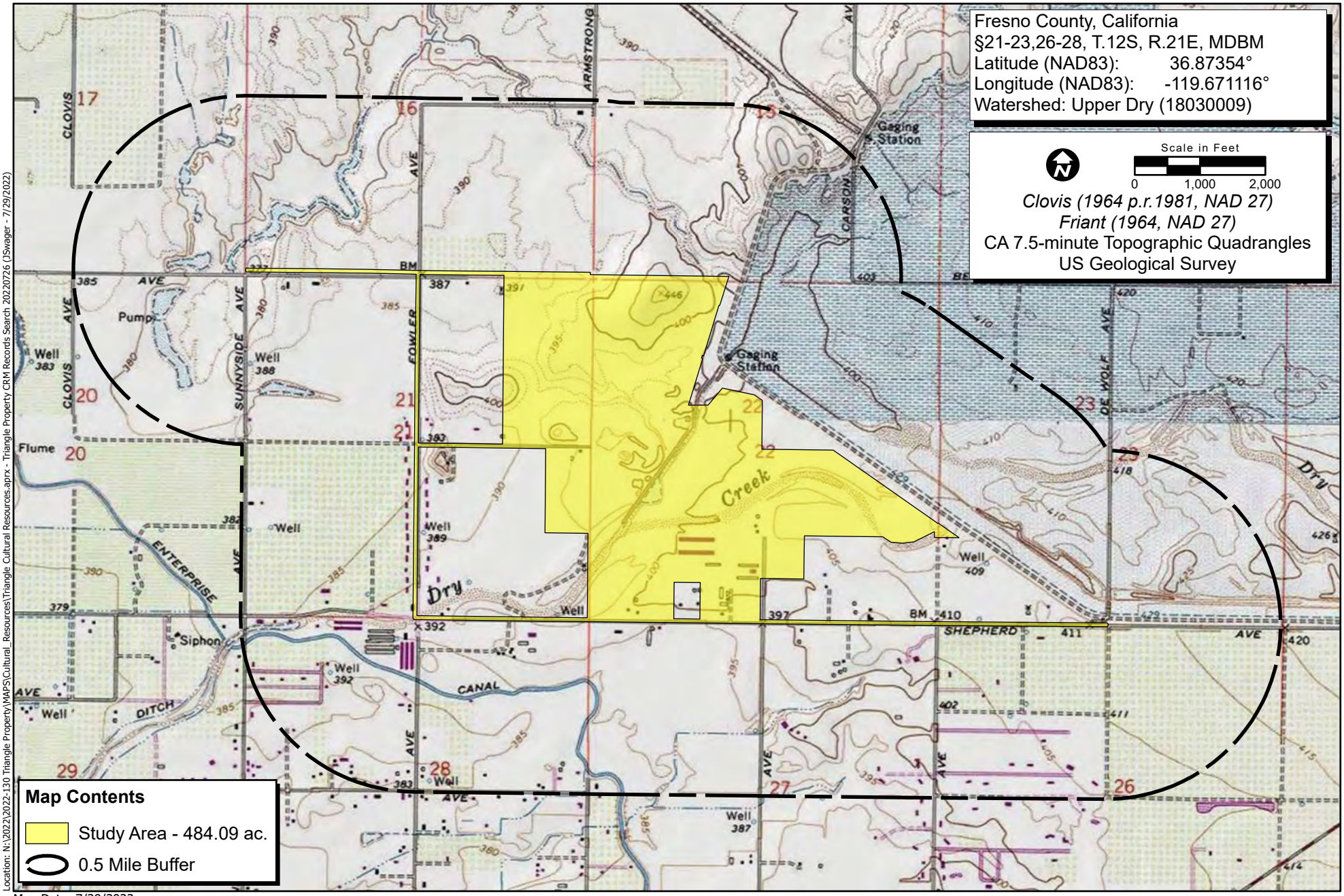
Included is a map showing the project area outlined. We would appreciate the results of your search of the Sacred Lands File and list of tribal contacts who can be contacted to provide input on this undertaking.

Please email or fax your response to my attention at bmarks@ecorpconsulting.com or (916) 782-9134. If you have any questions, please contact me at (916) 782-9100.

Thank you in advance for your assistance.

Sincerely,

Brian S. Marks, Ph.D., RPA
Senior Archaeologist



Location: N:\2022\2022-130 Triangle Property\MAPS\Cultural_Resources\Triangle Cultural Resources.aprx - Triangle Property CRM Records Search 20220726 (JSwager - 7/29/2022)

Map Date: 7/29/2022

Sources: ESRI, USGS, Morton and Pitalo

Records Search

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

2022-130 Triangle Property

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

PARLIAMENTARIAN
Russell Attebery
Karuk

SECRETARY
Sara Dutschke
Miwok

COMMISSIONER
William Mungary
Paiute/White Mountain Apache

COMMISSIONER
Isaac Bojorquez
Ohlone-Costanoan

COMMISSIONER
Buffy McQuillen
Yokayo Pomo, Yuki, Nomlaki

COMMISSIONER
Wayne Nelson
Luiseño

COMMISSIONER
Stanley Rodriguez
Kumeyaay

EXECUTIVE SECRETARY
Raymond C. Hitchcock
Miwok/Nisenan

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710

September 9, 2022

Brian Marks
ECORP Consulting, Inc.

Via Email to: bmarks@ecorpconsulting.com

Re: 2022-130 Triangle Property Project, Fresno County

Dear Mr. Marks:

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: Cameron.Vela@nahc.ca.gov.

Sincerely,

Cameron Vela

Cameron Vela
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Fresno County
9/9/2022

Big Sandy Rancheria of Western Mono Indians
Elizabeth Kipp, Chairperson
P.O. Box 337
Auberry, CA, 93602
Phone: (559) 374 - 0066
Fax: (559) 374-0055
lkipp@bsrnation.com
Western Mono

Cold Springs Rancheria of Mono Indians
Carol Bill, Chairperson
P.O. Box 209
Tollhouse, CA, 93667
Phone: (559) 855 - 5043
Fax: (559) 855-4445
coldsprgstribe@netptc.net
Mono

Cold Springs Rancheria of Mono Indians
Jared Aldern,
P. O. Box 209
Tollhouse, CA, 93667
Phone: (559) 855 - 5043
Fax: (559) 855-4445
csrepa@netptc.net
Mono

Dumna Wo-Wah Tribal Government
Robert Ledger, Chairperson
2191 West Pico Ave.
Fresno, CA, 93705
Phone: (559) 540 - 6346
ledgerrobert@ymail.com
Foothill Yokut
Mono

Kings River Choinumni Farm Tribe
Stan Alec,
3515 East Fedora Avenue
Fresno, CA, 93726
Phone: (559) 647 - 3227
Foothill Yokut

North Fork Mono Tribe
Ron Goode, Chairperson
13396 Tollhouse Road
Clovis, CA, 93619
Phone: (559) 299 - 3729
rwgoode911@hotmail.com
Mono

North Fork Rancheria of Mono Indians
Elaine Fink, Chairperson
P.O .Box 929
North Fork, CA, 93643
Phone: (559) 877 - 2461
Fax: (559) 877-2467
efink@nfr-nsn.gov
Mono

North Valley Yokuts Tribe
Timothy Perez,
P.O. Box 717
Linden, CA, 95236
Phone: (209) 662 - 2788
huskanam@gmail.com
Costanoan
Northern Valley Yokut

North Valley Yokuts Tribe
Katherine Perez, Chairperson
P.O. Box 717
Linden, CA, 95236
Phone: (209) 887 - 3415
canutes@verizon.net
Costanoan
Northern Valley Yokut

Picayune Rancheria of Chukchansi Indians
Heather Airey, Tribal Historic Preservation Officer
P.O. Box 2226
Oakhurst, CA, 93644
Phone: (559) 795 - 5986
hairey@chukchansi-nsn.gov
Foothill Yokut

Picayune Rancheria of Chukchansi Indians
Claudia Gonzales, Chairwoman
P.O. Box 2226
Oakhurst, CA, 93644
Phone: (559) 412 - 5590
cgonzales@chukchansitribe.net
Foothill Yokut

Table Mountain Rancheria
Brenda Lavell, Chairperson
P.O. Box 410
Friant, CA, 93626
Phone: (559) 822 - 2587
Fax: (559) 822-2693
rpennell@tmr.org
Yokut

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 2022-130 Triangle Property Project, Fresno County.

Table Mountain Rancheria
Bob Pennell, Cultural Resource Director
P.O. Box 410 — Yokut
Friant, CA, 93626
Phone: (559) 325 - 0351
Fax: (559) 325-0394
rpennell@tmr.org

Traditional Choinumni Tribe
David Alvarez, Chairperson
2415 E. Houston Avenue — Foothill Yokut
Fresno, CA, 93720
Phone: (559) 217 - 0396
Fax: (559) 292-5057
davealvarez@sbcglobal.net

Tule River Indian Tribe
Joey Garfield, Tribal Archaeologist
P. O. Box 589 — Yokut
Porterville, CA, 93258
Phone: (559) 783 - 8892
Fax: (559) 783-8932
joey.garfield@tulerivertribe-nsn.gov

Tule River Indian Tribe
Kerri Vera, Environmental Department
P. O. Box 589 — Yokut
Porterville, CA, 93258
Phone: (559) 783 - 8892
Fax: (559) 783-8932
kerri.vera@tulerivertribe-nsn.gov

Tule River Indian Tribe
Neil Peyron, Chairperson
P.O. Box 589 — Yokut
Porterville, CA, 93258
Phone: (559) 781 - 4271
Fax: (559) 781-4610
neil.peyron@tulerivertribe-nsn.gov

Wuksache Indian Tribe/Eshom Valley Band
Kenneth Woodrow, Chairperson
1179 Rock Haven Ct. — Foothill Yokut
Salinas, CA, 93906 — Mono
Phone: (831) 443 - 9702
kwood8934@aol.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 2022-130 Triangle Property Project, Fresno County.

APPENDIX C

Project Area Photographs

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PHOTOGRAPH RECORD

Primary #
HRI#
Trinomial

Page of **Resource/Project Name: Triangle Properties** **Year** 2022
Camera: Lens Size: 35mm
Film Type and Speed: Digital Negatives Kept at: ECORP Consulting, Inc.

Mo.	Day	Initials	Subject/Description	View Toward	Accession #
8	15	NB	Utility pole	SW	20220815_2022_130_Photo(1)
8	15	NB	Possible utility cap	W	20220815_2022_130_Photo(2)
8	15	NB	Utility line	END	20220815_2022_130_Photo(3)
8	15	NB	Fence line	SW	20220815_2022_130_Photo(4)
8	15	NB	Fence line	W	20220815_2022_130_Photo(5)
8	15	NB	Driveway	N	20220815_2022_130_Photo(6)
8	15	NB	Possible remnants of a building foundation	W	20220815_2022_130_Photo(7)
8	15	NB	T-well casing concrete lined	Plan	20220815_2022_130_Photo(8)
8	15	NB	Chicken coop modern	S	20220815_2022_130_Photo(9)
8	15	NB	Overview of field	S	20220815_2022_130_Photo(10)
8	15	NB	TRI-004-I: Site Overview	E	20220815_2022_130_Photo(11)
8	15	NB	TRI-004-I: Plan View	Plan	20220815_2022_130_Photo(12)
8	15	NB	Project Overview	WNW	20220815_2022_130_Photo(13)
8	15	EH	Overview of Project Area at North End	S	20220812_065409
8	15	EH	Detail of ground visibility	Plan	2022815_070325
8	15	EH	TRI-001-S, Feature A: overview, canal (R), berm in center background	W/SW	20220815_072654
8	15	EH	Reutilized wooden fence post	Close up	20220815_075419
8	15	EH	TRI-022-I: A+26 ft in depth irrigation feature	Detail	20220815_084327
8	15	EH	TRI-021-S:Canal Basin 6 ft depth	Close up	20220815_091547
8	15	EH	TRI-021-S: Canal Basin 6 ft depth	Close up	20220815_091559
8	15	EH	TRI-021-S: Overview	N/NE	20220815_093746
8	15	EH	TRI-021-S: Overview	N	20220815_094649

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PHOTOGRAPH RECORD

Primary #
HRI#
Trinomial

Page of **Resource/Project Name: Triangle Properties** **Year** 2022
Camera: Lens Size: 35mm
Film Type and Speed: Digital Negatives Kept at: ECORP Consulting, Inc.

Mo.	Day	Initials	Subject/Description	View Toward	Accession #
8	15	EH	TRI-003-S: Perrin Rd Eastern Overview	W	20220815_104130
8	15	EH	TRI-003-S: Perrin Rd Western #3 Overview	E	20220815_110000
8	15	EH	House	N/NE	20220815_110630
8	15	EH	TRI-007-S: Fowler St site #7 South end	N	20220815_125455
8	15	EH	TRI-005-S: Behymer site #5 East end	W	20220815_123938
8	15	EH	TRI-006-S: Shepherd Site #6 West End	E	20220815_125538
8	15	EH	TRI-007-S: Fowler St #7 North end	S	20220815_124254
8	15	EH	TRI-005-S: Behymer #5 West end	E	20220815_124604
8	15	EH	TRI-006-S: Shepherd St @ DeWolf East end	W	20220815_132905

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20220815_110000.jpg

20220815_110630.jpg

20220815_123938.jpg

20220815_124250.jpg

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220815_2022_130_Photo(2).j

220815_2022_130_Photo(3).j

220815_2022_130_Photo(4).j

220815_2022_130_Photo(5).j

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220815_2022_130_Photo(12).

220815_2022_130_Photo(13).

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20220815_084327.jpg

20220815_091547.jpg

20220815_091559.jpg

20220815_093746.jpg

20220815_094649.jpg

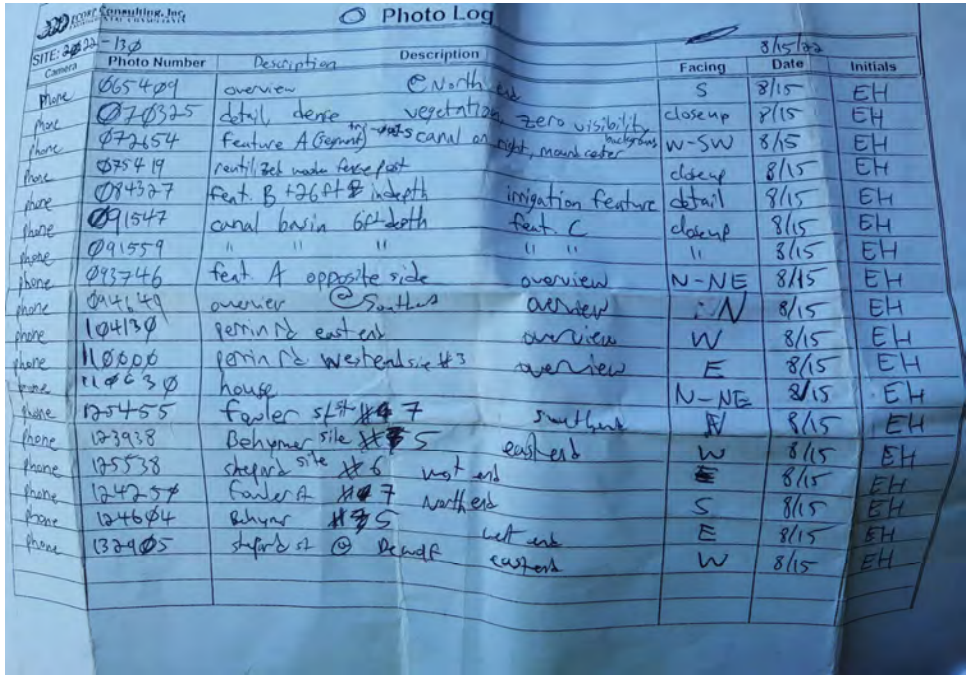

Photo Log

SITE: 2022-130

8/15/22

Camera	Photo Number	Description	Description	Facing	Date	Initials
phone	065409	overview	@North end	S	8/15	EH
phone	070325	detail dense	vegetation, zero visibility backgrounds	closeup	8/15	EH
phone	072654	feature A (segment)	tri-[illegible] canal on right, mound center	W-SW	8/15	EH
phone	075419	reutilized wooden fence post		closeup	8/15	EH
phone	084327	feat. B +26ft @ indepth	irrigation feature	detail	8/15	EH
phone	091547	canal basin 6ft depth	feat. C	closeup	8/15	EH
phone	091559	" " "	" "	"	8/15	EH
phone	093746	feat. A opposite side	overview	N-NE	8/15	EH
phone	094649	overview @Southend	overview	N	8/15	EH
phone	104130	perrin rd east end	overview	W	8/15	EH
phone	110000	perrin rd westend site #3	overview	E	8/15	EH
phone	110630	house		N-NE	8/15	EH
phone	125455	fowler st site #7	southend	N	8/15	EH
phone	123938	Behymer site #5	east end	W	8/15	EH
phone	125538	shepard site #6	west end	E	8/15	EH
phone	124250	fowler st #7	north end	S	8/15	EH
phone	124604	Behymer #5	west end	E	8/15	EH
phone	132905	shepard st @ Dewolf	east end	W	8/15	EH

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

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Mo.	Day	Initials	Subject/Description	View Toward	Accession #
8	16	SAW	TRI-009-S: Structure C NW Corner	SE	20220816_121445
8	16	SAW	TRI-009-S: Structure C West Side	E	20220816_121535
8	16	SAW	TRI-009-S: West wall, Structure C	E	20220816_121543
8	16	SAW	TRI-009-S: Structure C West wall middle window	E	20220816_121548
8	16	SAW	TRI-009-S: Structure C West wall south window	E	20220816_121551
8	16	SAW	TRI-009-S: Structure C Corner	E	20220816_121558
8	16	SAW	TRI-009-S: Structure C SW Corner	NE	20220816_121817
8	16	SAW	TRI-009-S: Structure C SW Corner	NE	20220816_121827
8	16	SAW	TRI-009-S: Structure C Front Porch	NE	20220816_121832
8	16	SAW	TRI-009-S: Structure C Front Porch	NE	20220816_121839
8	16	SAW	TRI-009-S: Structure C Overview from Shepherd Avenue	N	20220816_121728
8	16	SAW	TRI-009-S: Structure C SE Corner	NW	20220816_122008
8	16	SAW	TRI-009-S: Structure C East Side Detail	NW	20220816_122017
8	16	SAW	TRI-009-S: Structure C South Porch Detail	NW	20220816_122041
8	16	SAW	TRI-009-S: Structure C Chimney and Porch	N	20220816_122120
8	16	SAW	TRI-009-S: Structure C New Windows	N	20220816_122151
8	16	SAW	TRI-009-S: Structure C South Porch Detail	N	20220816_122320
8	16	SAW	TRI-009-S: Structure C Southwest Detail	NE	20220816_122443
8	16	SAW	TRI-009-S: Structure C Porch underside detail	E	20220816_122507
8	16	SAW	TRI-009-S: Structure C Eaves Detail	E	20220816_122520
8	16	SAW	TRI-009-S: Structure C Eaves Center detail	E	20220816_122524
8	16	SAW	TRI-009-S: Structure C Eaves Detail South	E	20220816_122527
8	16	SAW	TRI-009-S: Structure C Crawl space vents	E	20220816_122541
8	16	SAW	TRI-009-S: Structure C West Window Detail	E	20220816_122614
8	16	SAW	TRI-009-S: Structure C West Window Detail	E	20220816_
8	16	SAW	TRI-009-S: Structure C West Window Detail	E	20220816_122621
8	16	SAW	TRI-009-S: Structure C Chimney Base Detail	E	20220816_122651
8	16	SAW	TRI-009-S: Structure C Crawl space vents	E	20220816_122656
8	16	SAW	TRI-009-S: Structure C NE End	SE	20220816_122959
8	16	SAW	TRI-009-S: Structure C NW Corner	SE	20220816_123025
8	16	SAW	TRI-009-S: Structure C NE End	SE	20220816_123033
8	16	SAW	TRI-009-S: Structure C Roof details	SE	20220816_123117
8	16	SAW	TRI-009-S: Structure C Roof Detail	SE	20220816_123122
8	16	SAW	TRI-009-S: Structure C Roof Details	SE	20220816_123125
8	16	SAW	TRI-009-S: Structure C Roof detail	SE	20220816_123182
8	16	SAW	TRI-009-S: Structure C Roof detail	SE	20220816_123133
8	16	SAW	TRI-009-S: Irrigation Pump behind pool	E	20220816_123223
8	16	SAW	TRI-009-S: Standpipe behind pool	E	20220816_123226
8	16	SAW	TRI-009-S: Structure D Overview	NE	20220816_123328
8	16	SAW	TRI-009-S: Structure D Interior Wall	NE	20220816_123340
8	16	SAW	TRI-009-S: Structure D Interior Wall	NE	20220816_123348

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PHOTOGRAPH RECORD

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8	16	SAW	TRI-009-S: Structure D Interior	NE	20220816_123409
8	16	SAW	TRI-009-S: Structure D Post support	NE	20220816_123437
8	16	SAW	TRI-009-S: Structure D Post Support	NE	20220816_123442
8	16	SAW	TRI-009-S: Structure D Boards Backw Illegible	NE	20220816_123751
8	16	SAW	TRI-009-S: Structure D Framing	NE	20220816_123755
8	16	SAW	TRI-009-S: Structure D Post Ceramic illegible	Up	20220816_123816
8	16	SAW	TRI-009-S: Structure D	E	20220816_123832
8	16	SAW	TRI-009-S: Structure D NW Corner	E	20220816_123939
8	16	SAW	TRI-009-S: Structure D Roof detail	Up	20220816_123951
8	16	SAW	TRI-009-S: Structure D Roof Detail	Up	20220816_123956
8	16	SAW	TRI-009-S: Structure D roof Detail	Up	20220816_124017
8	16	SAW	TRI-009-S: Structure D SW Corner Nails	NE	20220816_124026
8	16	SAW	TRI-009-S: Structure D East Wall	W	20220816_124108
8	16	SAW	TRI-009-S: Irrigation behind pool	E	20220816_124114
8	16	SAW	TRI-009-S: Irrigation behind pool	S	20220816_124135
8	16	SAW	TRI-009-S: Irrigation behind pool	S	20220816_124138
8	16	SAW	TRI-009-S: Irrigation behind pool	S	20220816_124143
8	16	SAW	TRI-009-S: Structure C East Wall	SW	20220816_124150
8	16	SAW	TRI-009-S: Structure C East Wall	SW	20220816_124159
8	16	SAW	TRI-009-S: Structure C East Wall	W	20220816_131902
8	16	EH	TRI-001-S: Feature C Pipe	Close up	20220816_063021
8	16	EH	Project Area Overview/East side	W/NW	20220816_072322
8	16	EH	TRI-001-S, Feature D: Big Dry Creek Canal Overview	S/SE	20220816_072847
8	16	EH	TRI-001-S: Feature D Southern End	N/NE	20220816_082237
8	16	EH	TRI-001-S, Feature D:Big Dry Creek Canal Overview	S/SE	20220816_085437
8	16	EH	TRI-001-S, Feature A: Lateral Ditch	N/NE	20220816_085925
8	16	EH	TRI-001-S Feature A Unknown feature	E	20220816_104454
8	16	EH	TRI-001-S Feature E Close up Unknown feature	Close up	20220816_104257
8	16	EH	TRI-001-S Feature E: Concrete Pipe with metal bar	Close up	20220816_104708
8	16	EH	TRI-001-S Feature E: Standing Pipes closeup	Close up	20220816_110709
8	16	EH	Overview of Project Area, TRI-001-S, Feature E in background	S/SE	20220816_111123
8	16	EH	Project Area Overview	S/E	20220816_113818
8	16	EH	House, Structure A TRI-009-S	NW	20220816_121612
8	16	EH	Structure A TRI-009-S: House Close up windows	W	20220816_121757
8	16	EH	Structure A TRI-009-S:House Close up windows	NW	20220816_121806
8	16	EH	Structure A TRI-009-S: House side windows	SW	20220816_1218332 & 20220816_121838
8	16	EH	Structure A TRI-009-S: House side windows	ESE	20220816_122004
8	16	EH	Structure A TRI-009-S: House, side windows, opposite	SE	20220816_122013
8	16	EH	Structure A TRI-009-S: House basement vent	N/NE	20220816_122410
8	16	EH	Structure A TRI-009-S: Extension on west side	NE	20220816_123050

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

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8	16	EH	TRI-009-S: Barn Front Structure B South side	NE	20220816_123707
8	16	EH	TRI-009-S: Barn Closeup Structure B South side	Closeup	20220816_123843
8	16	EH	TRI-009-S: Barn Side	E	20220816_123956
8	16	EH	TRI-009-S: Barn Doors intact, north side	S/SE	20220816_124153

20220816_124143.jpg

20220816_124150.jpg

20220816_124153.jpg

20220816_124159.jpg

20220816_131902.jpg

20220816_063021.jpg

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20220816_104708.jpg

20220816_110709.jpg

20220816_111123.jpg

20220816_113818.jpg

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20220816_122004.jpg

20220816_122008.jpg

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20220816_122016.jpg

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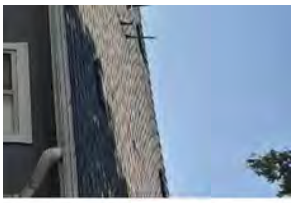
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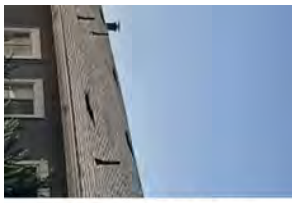
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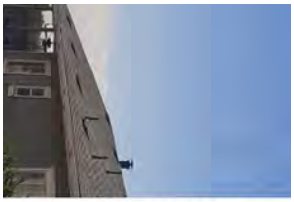
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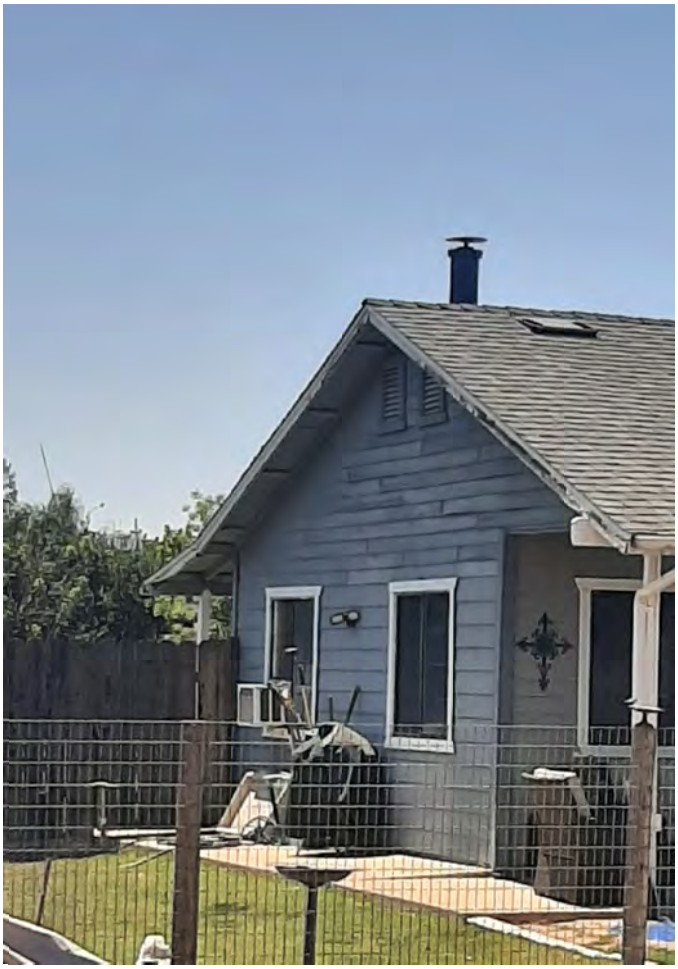

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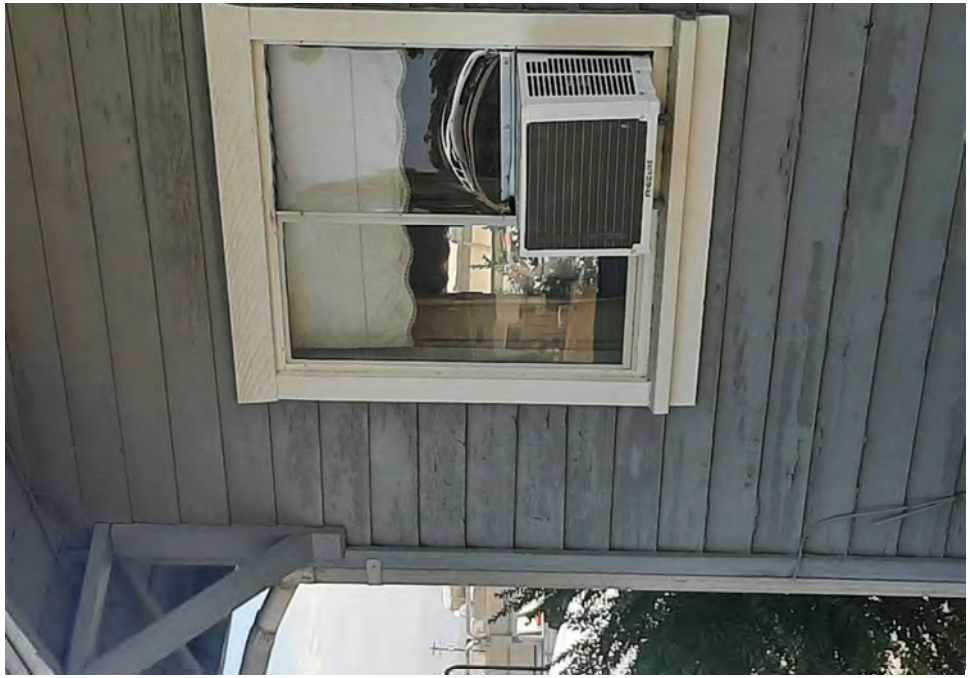

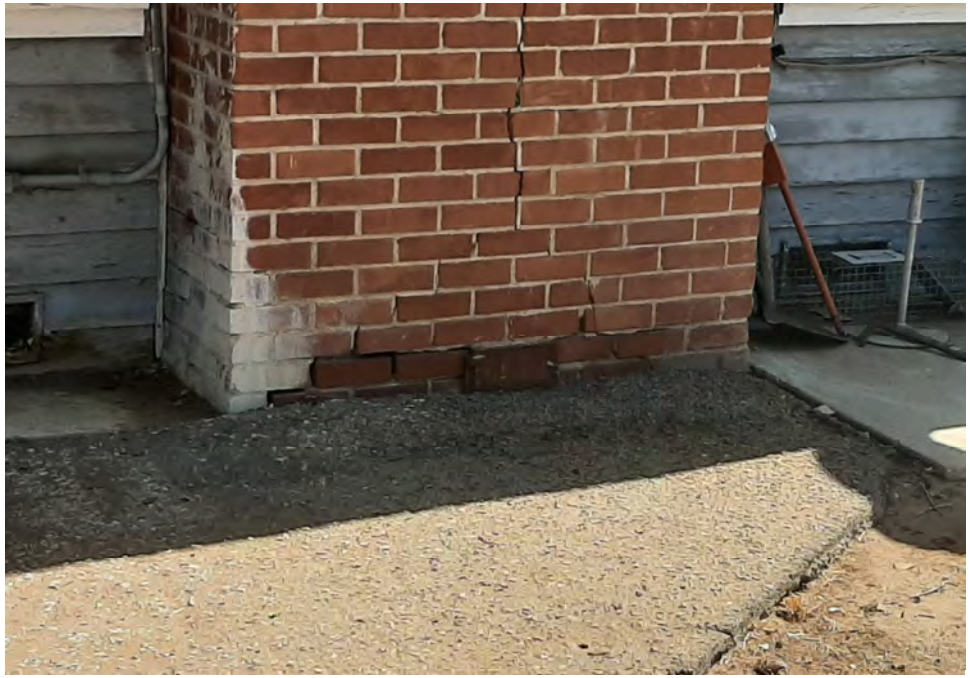

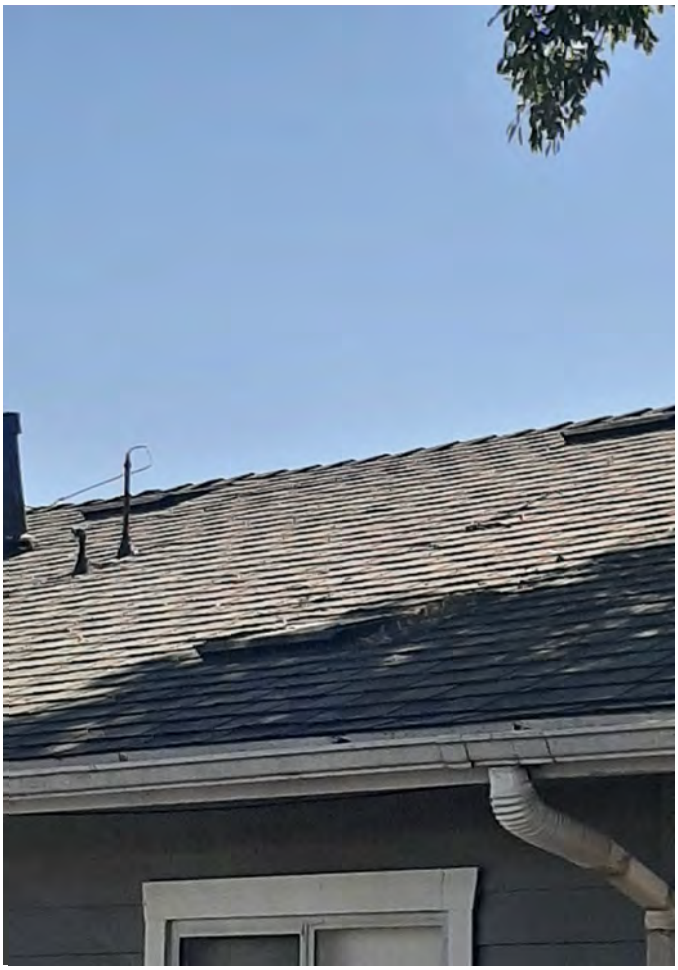

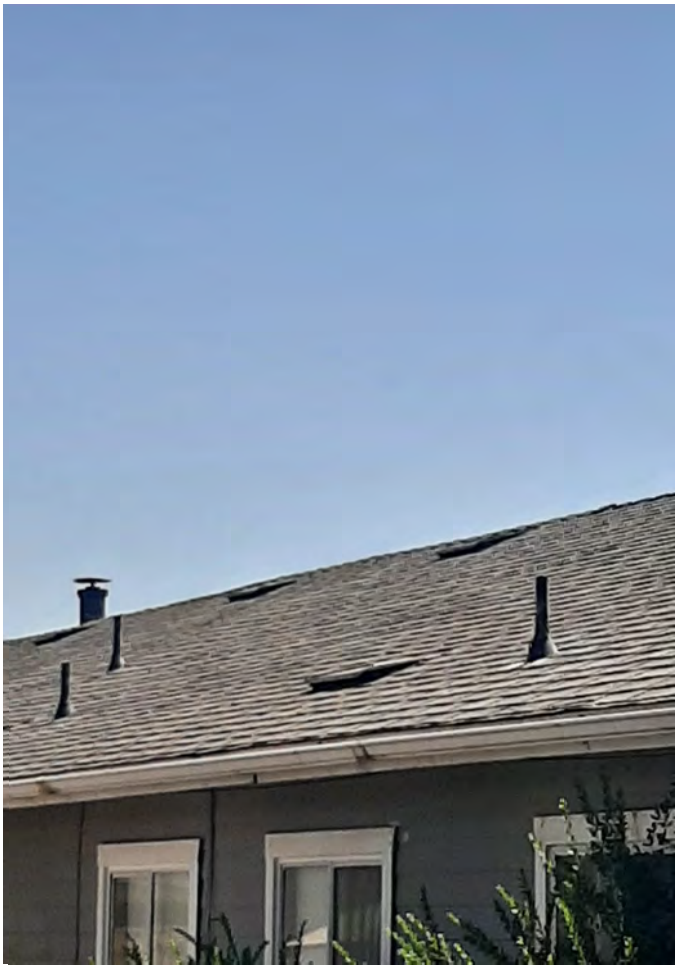

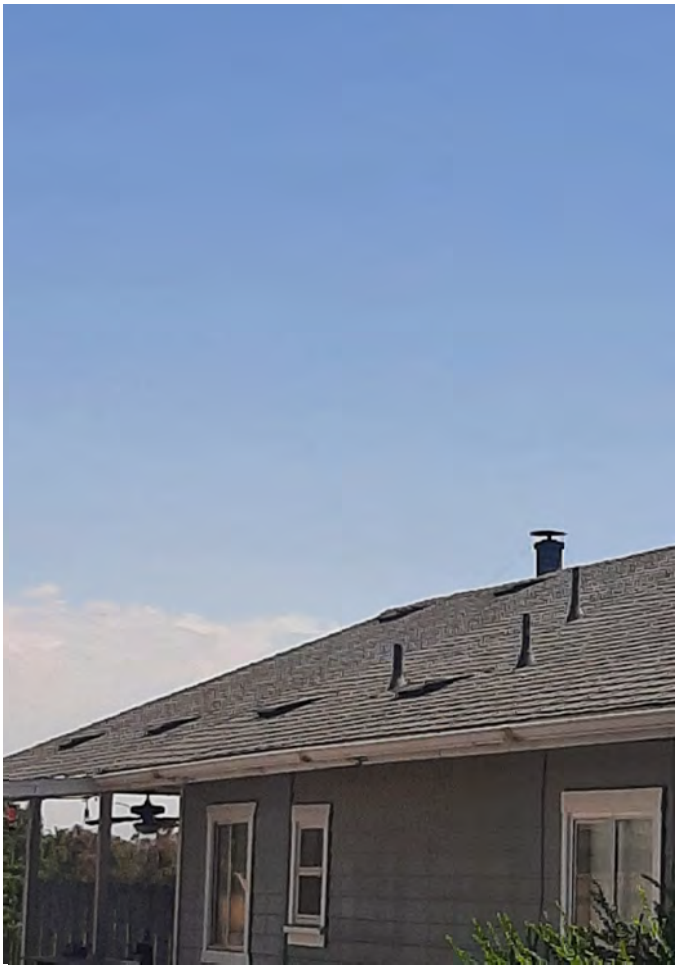

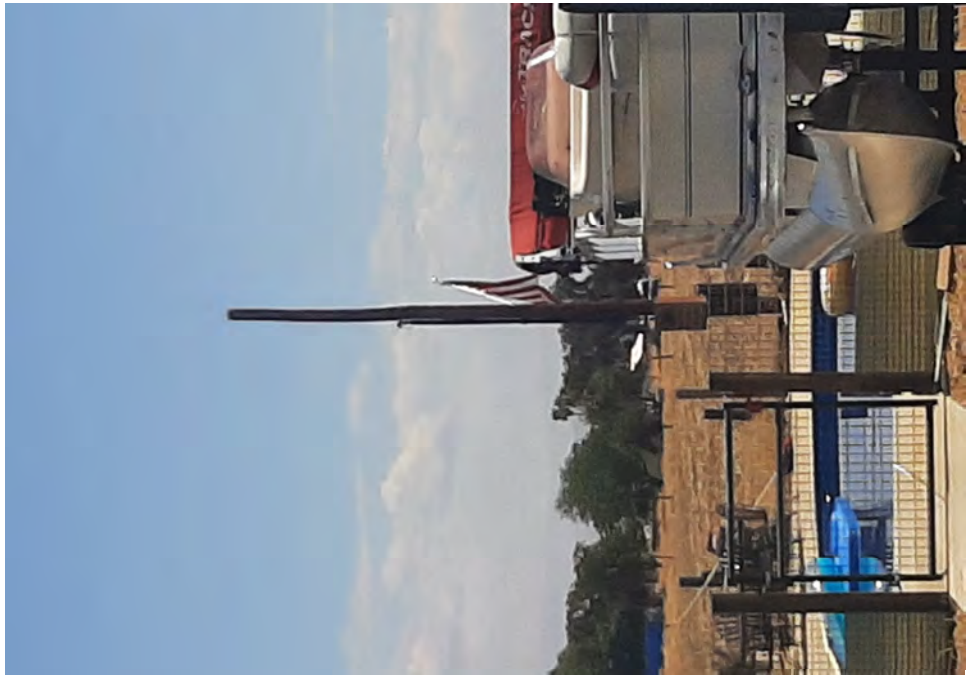

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08	17	EH	TRI-009-S, Feature A: Pipe with valve	Close up	064138
08	17	EH	TRI-009-S, Feature A: Overview pipe with valve	N/NE	064239
08	17	EH	TRI-009-S, Feature A: Closeup Valve	Close up	064546
08	17	EH	TRI-009-S, Feature A: Closeup Valve no cap	Close up	065443
08	17	EH	TRI-019-S, Feature D: Overview	N/NE	073502
08	17	EH	TRI-019-S: Feature D: Overview	N/NE	075135
08	17	EH	TRI-019-S, Feature C: Standpipes	Close up	082818
08	17	EH	TRI-019-S, Feature C: Standpipes	Close up	083124
08	17	EH	TRI-009-S: Feature C Overview	S	101054
08	17	EH	TRI-009 Feature C Overview	Close up	101106
08	17	EH	TRI-009 Feature C Pump Station Overview	N	101058
08	17	EH	TRI-009 Feature C: Pump Station makers mark	Close up	102052
08	17	EH	TRI-009 Feature C: Pump Station Info panel	Close up	102107
08	17	EH	TRI-009-S, Feature D overview	N/NE	103200
08	17	EH	Overview – no ground visibility	S/SE	113841
08	17	EH	Overview – no ground visibility, planted rows with black tarp	S/SE	114223
08	17	EH	TRI-010-S, Feature C: 1954 date nail	Close up	122512
08	17	EH	TRI-012 Glass Bottle base	Close up	122022
08	17	EH	TRI-012 Glass Bottle Scatter threaded seam	Close up	122930
08	17	EH	TRI-012 Glass Bottle Scatter overview	NE	123239
08	17	EH	Entrance	N	131737
08	17	EH	Entrance	N	131740
08	17	EH	Entrance	N	131811
08	17	EH	Site TRI-012 Bottlebase	Plan	121000
08	17	EH	Site TRI-012 Bottleneck	Plan	121008
08	17	EH	Site TRI-012 Bottle lid	Plan	121019
08	17	EH	Site TRI-012 Bottle lid	Plan	121032
08	17	EH	Site TRI-012 Bottle lid seal	Plan	121040
08	17	EH	Site TRI-012 Bottle lid seal	Plan	121047
8	17	SRS	TRI-011-S, Feature A: East-facing side with Shilap & plaster	NW	20220817_ 0183
8	17	SRS	TRI-011-S, Feature A: Close up of window	W	20220817_ 0184
8	17	SRS	TRI-011-S, Feature A: West-facing facade	E	20220817_ 0185
8	17	SRS	TRI-011-S, Feature A: Close up of roof of west side	E	20220817_ 0186
8	17	SRS	TRI-011-S, Feature A: South side with door & steps	N	20220817_ 0187
8	17	SRS	TRI-011-S, Feature A: Close up of door on south side	N	20220817_ 0188
8	17	SRS	TRI-011-S, Feature A: Close up of underside roof	N	20220817_ 0189
8	17	SRS	TRI-011-S, Feature A: East-facing side	SW	20220817_ 0190
8	17	SRS	TRI-011-S, Feature A: Recent damage to roof due to tree	NW	20220817_ 0191
8	17	SRS	TRI-011-S, Structure B Garage of house East side 1	W	20220817_ 0192
8	17	SRS	TRI-011-S, Structure B: Garage of house, north side	S	20220817_ 0193

State of California — The Resources Agency
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8	17	SRS	TRI-011-S, Structure A, North-facing side	S	20220817_ 0195
8	17	SRS	TRI-011-S, Structure A, Closeup of N-Facing Door	S	20220817_ 0196
8	17	SRS	TRI-011-S, Structure B – South-facing	NW	20220817_ 0197
8	17	SRS	TRI-011-S, Structure B – West Side	NE	20220817_ 0198
8	17	SRS,	TRI-011-S, Structure C – South Side Part 1	NW	20220817_ 0199
8	17	SRS,	TRI-011-S, Structure C – South Side Part 2	W	20220817_ 0200
8	17	SRS	TRI-011-S, Structure C – Close up of panel door	NW	20220817_ 0201
8	17	SRS	TRI-011-S, Structure C – Close up of roof, underside	Closeup	20220817_ 0202
8	17	SRS	TRI-011-S, Structure C – East Side	W	20220817_ 0203
8	17	SRS	TRI-011-S, Structure C, North side part 1	SW	20220817_ 0204
8	17	SRS	TRI-011-S, Structure C, North side part 2	S	20220817_ 0205
8	17	SRS	TRI-011-S, Structure C, West side	E	20220817_ 0206
8	17	SRS	TRI-011-S, Structure C, Close up of roof	E	20220817_ 0207
8	17	SRS	TRI-011-S, Structure D, East Side	W	20220817_ 0208
8	17	SRS	TRI-011-S, Structure D, Window sill	Closeup	20220817_ 0209
8	17	SRS	TRI-011-S, Structure D, South Side	NW	20220817_ 0210
8	17	SRS	TRI-011-S, Structure D, Window Sill	Closeup	20220817_ 0211
8	17	SRS	TRI-011-S, Structure D, roof	Closeup	20220817_ 0212
8	17	SRS	TRI-011-S, Structure D, roof with nails	Close up	20220817_ 0213
8	17	SRS	TRI-011-S, Structure D, North Side	SW	20220817_ 0214
8	17	SRS	TRI-011-S, Structure D, North Side	SE	20220817_ 0215
8	17	SRS	TRI-011-S, Structure D, West Side	E	20220817_ 0216
8	17	SRS	TRI-011-S, Structure D, West Side	E	20220817_ 0217
8	17	SRS	TRI-011-S, Structure D, Close Up	Closeup	20220817_ 0218
8	17	SRS	TRI-011-S, Structure E, East Side	N	20220817_ 0219
8	17	SRS	TRI-011-S, Structure E, South Side	NW	20220817_ 0220
8	17	SRS	TRI-011-S, Structure E, West Side	N	20220817_ 0221
8	17	SRS	TRI-011-S, Structure E, roof	Closeup	20220817_ 0222
8	17	SRS	TRI-011-S, Structure E, Door of E Side	W	20220817_ 0223
8	17	SRS	TRI-011-S, Structure E, North Side	SW	20220817_ 0224
8	17	SRS	TRI-011-S, Structure E, North side	S	20220817_ 0225
8	17	SRS	TRI-011-S, Structure F, North side	S	20220817_ 0226
8	17	SRS	TRI-011-S, Structure F, East side	W	20220817_ 0227
8	17	SRS	TRI-011-S, Structure F, East & S Side	NW	20220817_ 0228
8	17	SRS	TRI-011-S, Structure G, East side	W	20220817_ 0229
8	17	SRS	TRI-011-S, Structure G, Close up	Closeup	20220817_ 0230
8	17	SRS	TRI-011-S, Structure G, South side P1	NW	20220817_ 0231
8	17	SRS	TRI-011-S, Structure G, South side P2	NW	20220817_ 0232
8	17	SRS	TRI-011-S, Structure G, West side	E	20220817_ 0233
8	17	SRS	TRI-011-S, Structure G, North side	SE	20220817_ 0234
8	17	SRS	TRI-011-S, Structure G, North side	S	20220817_ 0235

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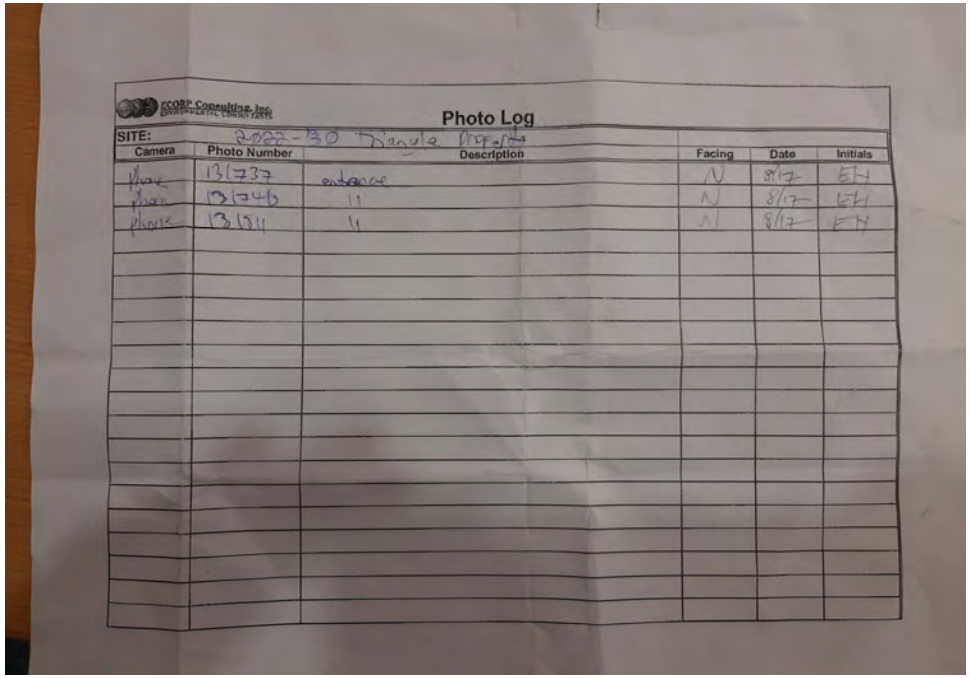

ECORP Consulting, Inc.

Photo Log

SITE: 2022-130 Triangle Property

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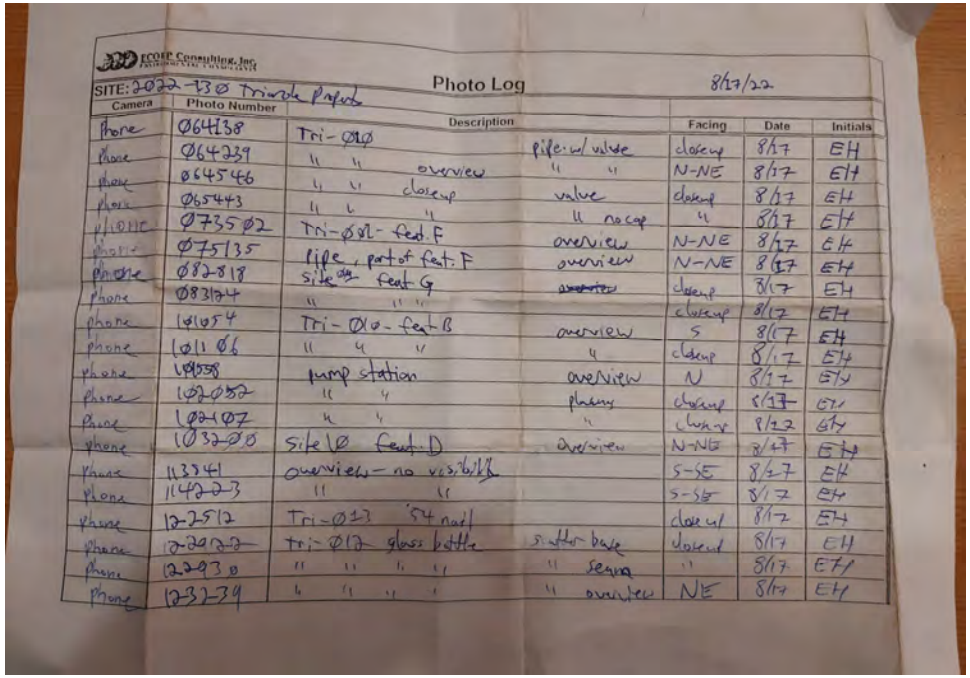
phone	131743	"		N	8/17	EH
phone	131811	"		N	8/17	EH



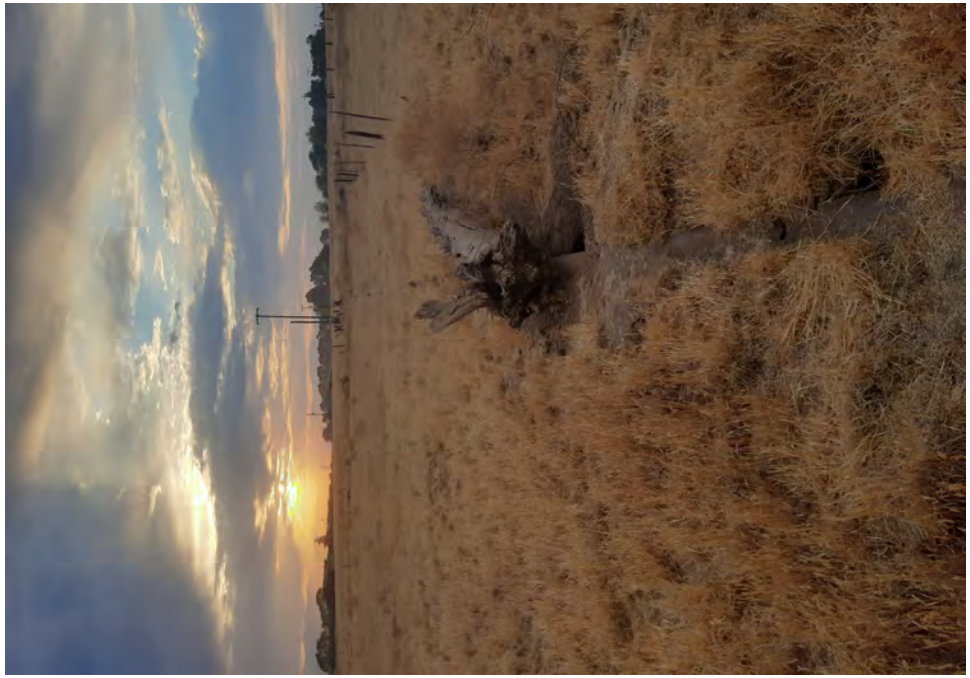
ECORP Consulting, Inc.

Photo Log 8/17/22

SITE: 2022-130 Triangle Property

Camera	Photo Number	Description		Facing	Date	Initials
phone	064138	Tri-010	pipe w/ valve	closeup	8/17	EH
phone	064239	" " overview	" "	N-NE	8/17	EH
phone	064546	" " closeup	valve	closeup	8/17	EH
phone	065443	" " "	" no cap	"	8/17	EH
phone	073502	Tri-01 - feat F	overview	N-NE	8/17	EH
phone	075135	pipe, part of feat F	overview	N-NE	8/17	EH
phone	082818	site 01 feat G	~~overview~~	closeup	8/17	EH
phone	083174	" " "		closeup	8/17	EH
phone	101054	Tri-010 - feat B	overview	S	8/17	EH
phone	101106	" " "	"	closeup	8/17	EH
phone	101558	pump station	overview	N	8/17	EH
phone	102052	" "	plaque	closeup	8/17	EH
phone	102107	" "	"	closeup	8/17	EH
phone	103200	site 10 feat D	overview	N-NE	8/17	EH
phone	113341	overview - no visibility		S-SE	8/17	EH
phone	114223	" "		S-SE	8/17	EH
phone	122512	Tri-013 54 nail		closeup	8/17	EH
phone	122022	Tri-017 glass bottle	scatter base	closeup	8/17	EH
phone	122930	" " " "	" seam	"	8/17	EH
phone	123234	" " " "	" overview	NE	8/17	EH

NO
DUMPIN
OR
RESPASS
PC 602



12 IN

STENBERGER

GENERAL ELECTRIC
MODEL
HP 10
SERVICE FACTOR 15 AT RATED VOLTS 60 CYCLES
TYPE K
CODE C FRAME 284 PHASE 3
VOLTS
RISE CONT AT
CY FL AMP
F L SPEED 3480
50 CY FL AMP
F L SPEED 2880
INDUCTION MOTOR

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PHOTOGRAPH RECORD

Primary #
HRI#
Trinomial

Page of **Resource/Project Name: Triangle Properties** **Year** 2022
Camera: Lens Size: 35mm
Film Type and Speed: Digital Negatives Kept at: ECORP Consulting, Inc.

Mo.	Day	Initials	Subject/Description	View Toward	Accession #
8	18	EH	TRI-014-I Can Top	Close up	20220818_ 063644
8	18	EH	TRI-014-I Can side	Close up	20220818_ 063657
8	18	EH	Overview – dense vegetation	W	20220818_ 064906
8	18	EH	Project Area Overview	SE	20220818_ 073408
8	18	EH	TRI-015-I Basalt shatter	Close up	20220818_ 074232
8	18	EH	TRI-015-I Basalt shatter	Close up	20220818_ 074241
8	18	EH	TRI-016-S Aeromotor Chicago Overview Windmill	N	20220818_ 084956
8	18	EH	TRI-016-S Aeromotor Chicago Overview sign	Close up	20220818_ 085005
8	18	EH	TRI-017-S Temperance Avenue	S	20220818_ 095703
8	18	EH	TRI-019-S, Feature C, Standing Pipe with Cap	Close up	20220818_ 110936
8	18	EH	TRI-019-S, Feature C, Standing Pipe with Cap	Close up	20220818_ 110951
8	18	EH	TRI-018-I Milk glass rim fragment	Detail	20220818_ 113406
8	18	EH	Modern trash dump	N/NE	20220818_ 113713
8	18	EH	Project Area Overview	S	20220818_ 130611
8	18	SRS	TRI-011-S: Feature H, E facing site	SW	IMG_ 0239
8	18	SRS	TRI-011-S: Feature H, E & N Facing side	SW	IMG_ 0240
8	18	SRS	TRI-011-S: Feature H, W & S Facing side	NE	IMG_ 0241
8	18	SRS	TRI-011-S: Feature H, W side inside	W	IMG_ 0242
8	18	SRS	TRI-011-S: Feature H, interior	E	IMG_ 0243
8	18	SRS	TRI-011-S: Feature H, Fire evidence	Closeup	IMG_ 0244
8	18	SRS	TRI-011-S: Feature H, West side	E	IMG_ 0245

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20220818_110951.jpg

20220818_113406.jpg

20220818_113713.jpg

20220818_130611.jpg

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U.S.A.

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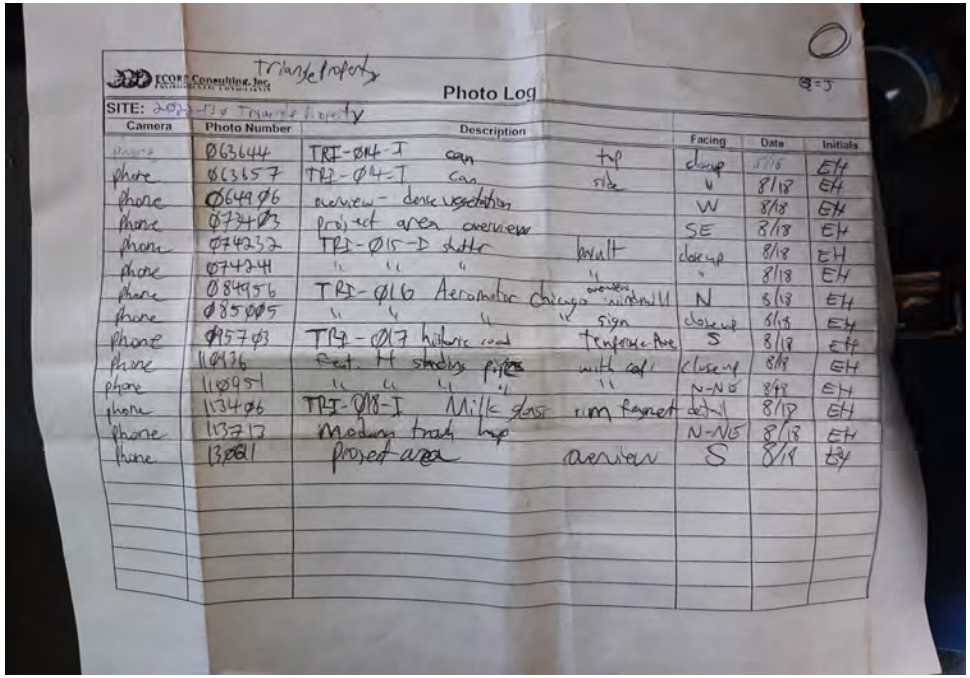
AERMOTOR
CHICAGO

NO. 10-P



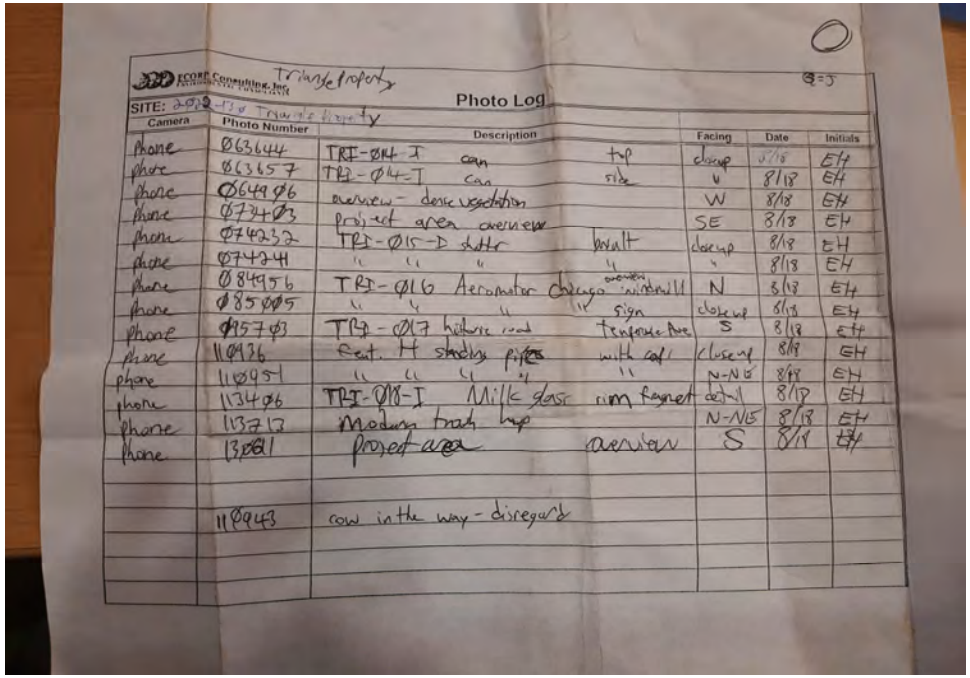
ECORP Consulting, Inc.

Triangle Property

Photo Log

SITE: 2022-13 Triangle Property

Camera	Photo Number	Description		Facing	Date	Initials
phone	063644	TRI-014-I can	top	closeup	8/18	EH
phone	063657	TRI-014-I can	side	"	8/18	EH
phone	064906	overview - dense vegetation		W	8/18	EH
phone	073403	project area overview		SE	8/18	EH
phone	074232	TRI-015-I shutter	bowlt	closeup	8/18	EH
phone	074241	" " "	"	"	8/18	EH
phone	084956	TRI-016 Aeromotor Chicago	overview windmill	N	8/18	EH
phone	085005	" " " "	sign	closeup	8/18	EH
phone	095703	TRI-017 historic road	Temperance Ave	S	8/18	EH
phone	110936	Feat. H standing pipes	with cap	closeup	8/18	EH
phone	110951	" " " "	"	N-NE	8/18	EH
phone	113406	TRI-018-I Milk glass	rim fragment	detail	8/18	EH
phone	113713	Modern track hop		N-NE	8/18	EH
phone	13021	project area	overview	S	8/18	EH



ECORP Consulting, Inc.

Triangle Property

Photo Log

SITE: 2018-138 Triangle Property

Camera	Photo Number	Description		Facing	Date	Initials
Phone	063644	TRI-014-I can	top	closeup	8/18	EH
Phone	063657	TRI-014-I can	side	"	8/18	EH
Phone	064906	overview - dense vegetation		W	8/18	EH
Phone	074403	project area overview		SE	8/18	EH
Phone	074232	TRI-015-I shutter	built	closeup	8/18	EH
Phone	074241	" " "	"	"	8/18	EH
Phone	084956	TRI-016 Aeromotor Chicago windmill	overview	N	8/18	EH
Phone	085005	" " "	" sign	closeup	8/18	EH
Phone	095703	TRI-017 historic road	Tenforde Ave	S	8/18	EH
Phone	110936	Est. H standing pipes	with cap	closeup	8/18	EH
Phone	110951	" " " "	"	N-NE	8/18	EH
Phone	113406	TRI-018-I Milk glass	rim frame	detail	8/18	EH
Phone	113713	Modern trash dump		N-NE	8/18	EH
Phone	130611	Project area	overview	S	8/18	EH
	110943	cow in the way - disregard				

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PHOTOGRAPH RECORD

Primary #
HRI#
Trinomial

Page of **Resource/Project Name: Triangle Properties** **Year** 2022
Camera: Lens Size: 35mm
Film Type and Speed: Digital Negatives Kept at: ECORP Consulting, Inc.

Mo.	Day	Initials	Subject/Description	View Toward	Accession #
08	19	EH	TRI-011-S, Feature I, Structure	NW	20220819_ 071256
08	19	EH	TRI-011-S Feature I, Structure	N/NW	20220819_ 072841
08	19	EH	TRI-011-S Feature K, Structure	E	20220819_ 074808
08	19	EH	TRI-009-S, Feature B: Utility Pole line, overview update with 1945 nail	S	20220819_ 070225
08	19	EH	TRI-009-S, Feature B: Utility Pole line, overview pile in foreground with 1945 date nail	W	20220819_ 070455
08	19	EH	TRI-011-S, Feature I interior turkey coop	N/NW	20220819_ 071604
08	19	EH	TRI-011-S, Feature J Interior collapse	E	20220819_ 071821
08	19	EH	TRI-011-S, Feature L wooden ramp between features I & J	W	20220819_ 072353
08	19	EH	TRI-011-S, Feature J Motor brand mechanism	Detail	20220819_ 073147
08	19	EH	TRI-011-S, Feature J Motor brand mechanism	Detail	20220819_ 073052
08	19	EH	TRI-011-S, Feature J Motor brand mechanism	Detail	20220819_ 073009
08	19	EH	TRI-011-S, “Big Dutchman” motor	Detail	20220819_ 075011
08	19	EH	TRI-011-S, Feature K Overview east end	W	20220819_ 075707
8	19	SRS	TRI-019-S, Structure A – single family east side	W	IMG_0246
8	19	SRS	TRI-019-S, Structure A – NE portion	NW	IMG_0247
8	19	SRS	TRI-019-S, Structure A – wooden addition	S	IMG_0248
8	19	SRS	TRI-019-S, Structure A – E side window	Close up	IMG_0249
8	19	SRS	TRI-019-S, Structure A – E side door	Close up	IMG_0250
8	19	SRS	TRI-019-S, Structure A – underside roof	Close up	IMG_0251
8	19	SRS	TRI-019-S, Structure A – NE portion window	Close up	IMG_0252
8	19	SRS	TRI-019-S, Structure A – N side	SW	IMG_0253
8	19	SRS	TRI-019-S, Structure A – roof	Close up	IMG_0254
8	19	SRS	TRI-019-S, Structure A – West side	E	IMG_0255
8	19	SRS	TRI-019-S, Structure A – close up of wooden panel	NE	IMG_0256
8	19	SRS	TRI-019-S, Structure A – Chimney	E	IMG_0257
8	19	SRS	TRI-019-S, Structure A – West extension	N	IMG_0258
8	19	SRS	TRI-019-S, Structure B – Wooden sheet W side	E	IMG_0259
8	19	SRS	TRI-019-S, Structure B – South side	N	IMG_0261
8	19	SRS	TRI-019-S, Structure B – East side	NE	IMG_0262
8	19	SRS	TRI-019-S, Structure B – Door	Close up	IMG_0263
8	19	SRS	TRI-019-S, Structure B – Window	Close up	IMG_0264
8	19	SRS	TRI-019-S, Structure B – North side	SE	IMG_0265
8	19	SRS	TRI-019-S, Structure A – South side	NE	IMG_0266
8	19	SRS	TRI-019-S, Structure C – Corral	N	IMG_0267
8	19	SRS	TRI-019-S, Structure C Concrete foundation E side	N	IMG_0268
8	19	SRS	TRI-019-S, Close up of Bolts Structure C	Close up	IMG_0269
8	19	SRS	TRI-019-S, Structure C – Foundation footing w side	NW	IMG_0270
8	19	SRS	TRI-019-S: Corral	NW	IMG_0271
8	19	SRS	TRI-019-S: Corral	NE	IMG_0272
8	19	SRS	TRI-019-S: Corral	SW	IMG_0273

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION **PHOTOGRAPH RECORD**	Primary # HRI# Trinomial

Page of **Resource/Project Name: Triangle Properties** **Year** 2022

Camera: Lens Size: 35mm

Film Type and Speed: Digital Negatives Kept at: ECORP Consulting, Inc.

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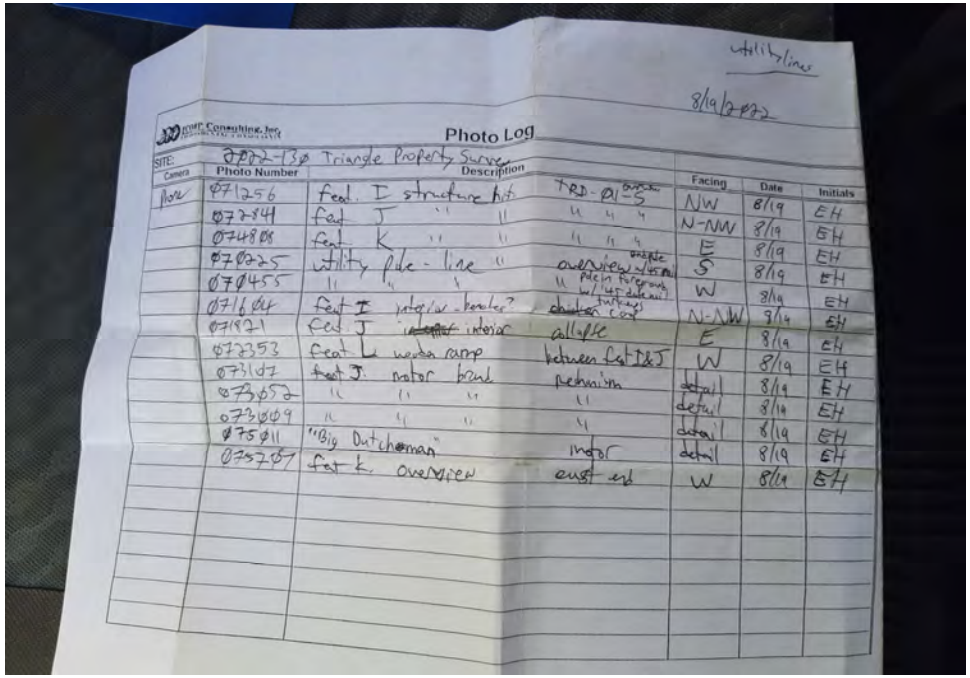


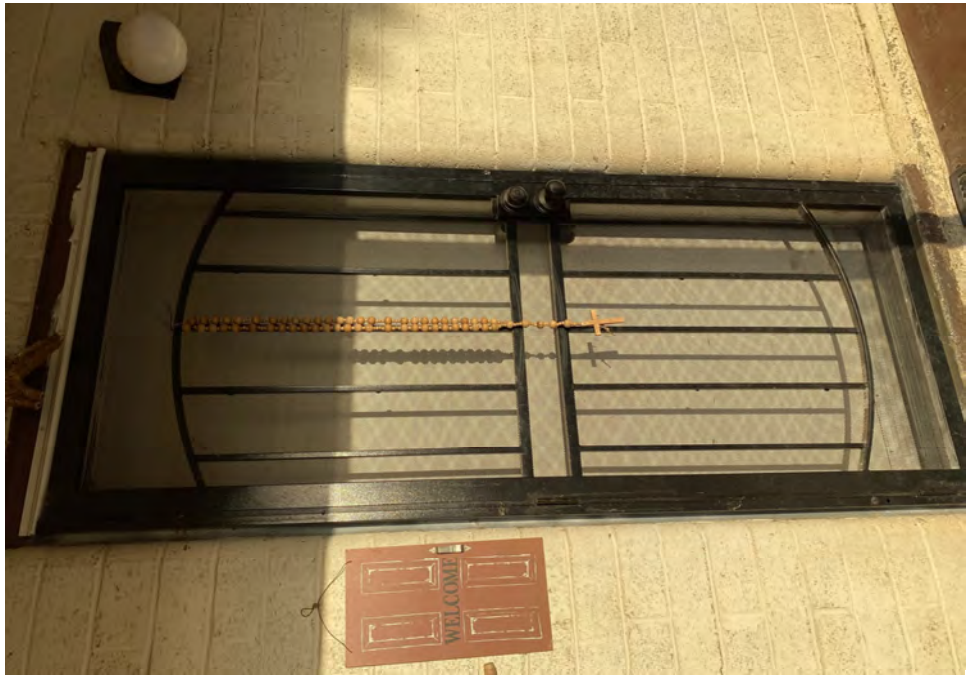
utility lines

8/19/2022

Photo Log

SITE: 2022-130 Triangle Property Survey

Camera	Photo Number	Description		Facing	Date	Initials
Pore	071256	feat. I structure hit	TRD-01-S	NW	8/19	EH
	072841	feat J " "	" " "	N-NW	8/19	EH
	074808	feat K " "	" " "	E	8/19	EH
	070225	utility pole - line "	overview	S	8/19	EH
	070455	" " "	" pole in foreground w/ 45 dutch mill	W	8/19	EH
	071604	feat I interior - boxes?	chicken turkeys coop	N-NW	8/19	EH
	071821	feat J ~~interior~~ interior	collapse	E	8/19	EH
	072353	feat L wooden ramp	between feat I&J	W	8/19	EH
	073107	feat J. motor brand	mechanism	detail	8/19	EH
	073052	" " "	"	detail	8/19	EH
	073009	" " "	"	detail	8/19	EH
	075011	"Big Dutchman"	motor	detail	8/19	EH
	075707	feat K. overview	east end	W	8/19	EH


WELCOME

APPENDIX D

Confidential Cultural Resource Site Locations Map

This Attachment contains information on the specific location of cultural resources. This information is not for publication or release to the general public. It is for planning, management, and research purposes only. Information on the specific location of pre-contact and historic sites is exempt from the Freedom of Information Act and California Public Records Act.

City of Clovis

Department of Planning and Development Services

CITY HALL . 1033 FIFTH STREET . CLOVIS, CA 93612

Native American Tribal Consultation Request

Date: 12/8/2023

Project Title: Vista Ranch Project

Local Government/Lead Agency: City of Clovis Planning Division

Project Manager: McKencie Perez, Senior Planner Phone: (559) 324-2310

Address: 1033 Fifth Street City: Clovis St: CA Zip: 93612

Email: mckenciep@cityofclovis.com Fax:

Project Location: See attached map

Project Proponent: Wilson Premier Homes, Inc.(Applicant)
7550 North Palm Avenue, #102
Fresno, CA 93711

Local Action Type:

- [ ] General Plan Amendment
- [ ] Specific Plan Amendment
- [X] Project Subject to AB52
- [ ] Pre-Planning Outreach

Project Description:

The Vista Ranch Project is located directly northeast of the City of Clovis limit line. The Project site is bounded on the north by East Behymer Avenue, on the east by Big Dry Creek Reservoir, on the south by East Shepherd and East Perrin Avenues, and on the west by North Fowler and North Sunnyside Avenues.

The Project site is approximately 952 acres and includes a City of Clovis Sphere of Influence (SOI) expansion for the entire 952-acre area. Within the Project site there is the Vista Ranch Master Plan area that is approximately 507 acres that would be annexed into the City of Clovis. The Vista Ranch Master Plan is divided into two areas (MPArea 1 and MPArea 2) based on entitlement requests and the level of design available. MPArea 1 is approximately 368 acres proposed for full entitlements to develop immediately. Entitlements within MPArea 1 include an annexation, general plan amendments, pre-zoning, master plan community overlay district and vesting tentative map. The remaining 139 acres in the Vista Ranch Master Plan (MPArea 2) does not include full entitlements and would require further environmental review to enable future development once more detailed design work is performed. There are also approximately 445 acres of land outside of the Vista Ranch Master Plan, but within the Project site. This area is referred to as Non-Development Area and is part of the SOI expansion but does not propose any other entitlements that would enable developmentt.

We request that you respond within 30 days per the requirements of Assembly Bill 52 (AB 52) [Public Resources Code Section 5097.94] and also thank you in advance for your participation in the review process for this project. If you need additional materials or have any questions, please feel free to contact the Project Manager listed above.

City of Clovis

Department of Planning and Development Services

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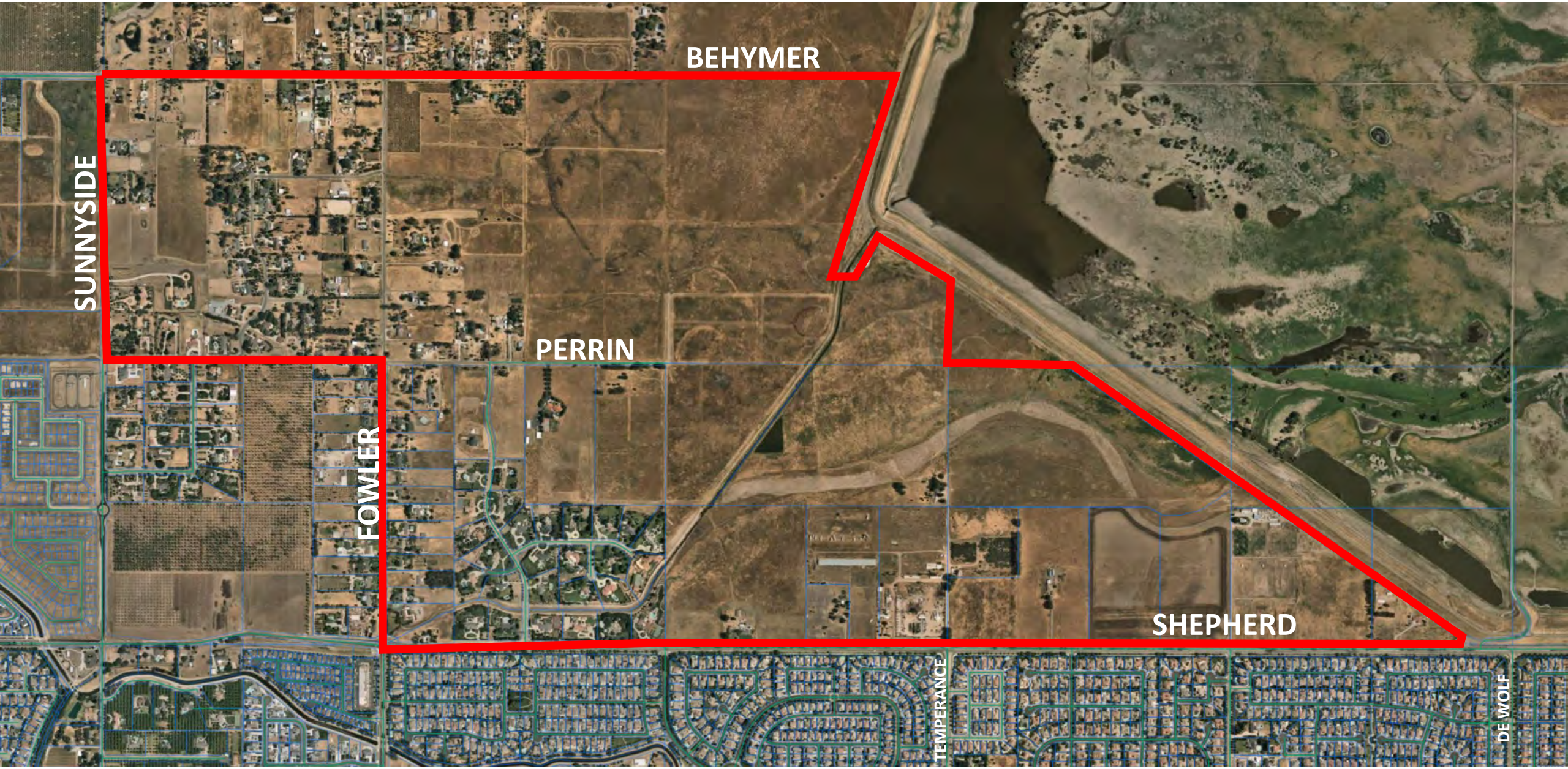
Project Description:

The Vista Ranch Project is located directly northeast of the City of Clovis limit line. The Project site is bounded on the north by East Behymer Avenue, on the east by Big Dry Creek Reservoir, on the south by East Shepherd and East Perrin Avenues, and on the west by North Fowler and North Sunnyside Avenues.

The Project site is approximately 952 acres and includes a City of Clovis Sphere of Influence (SOI) expansion for the entire 952-acre area. Within the Project site there is the Vista Ranch Master Plan area that is approximately 507 acres that would be annexed into the City of Clovis. The Vista Ranch Master Plan is divided into two areas (MPArea 1 and MPArea 2) based on entitlement requests and the level of design available. MPArea 1 is approximately 368 acres proposed for full entitlements to develop immediately. Entitlements within MPArea 1 include an annexation, general plan amendments, pre-zoning, master plan community overlay district and vesting tentative map. The remaining 139 acres in the Vista Ranch Master Plan (MPArea 2) does not include full entitlements and would require further environmental review to enable future development once more detailed design work is performed. There are also approximately 445 acres of land outside of the Vista Ranch Master Plan, but within the Project site. This area is referred to as Non-Development Area and is part of the SOI expansion but does not propose any other entitlements that would enable developmentt.

We request that you respond within 90 days per Government Code Section 65352.3(a)(2) and also thank you in advance for your participation in the review process for this project. If you need additional materials or have any questions, please feel free to contact the Project Manager listed above.

AERIAL OF SUBJECT PROPERTY



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December 7, 2023

McKencie Perez
City of Clovis

Via Email to: mckenciep@cityofclovis.com

Re: Native American Consultation, Pursuant to Senate Bill 18 (SB18), Government Codes §65352.3 and §65352.4, as well as Assembly Bill 52 (AB52), Public Resources Codes §21080.1, §21080.3.1 and §21080.3.2, Vista Ranch Project, Fresno County

Dear Ms. Perez:

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties or projects.

Government Codes §65352.3 and §65352.4 require local governments to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose of avoiding, protecting, and/or mitigating impacts to cultural places when creating or amending General Plans, Specific Plans and Community Plans.

Public Resources Codes §21080.3.1 and §21080.3.2 requires public agencies to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose of avoiding, protecting, and/or mitigating impacts to tribal cultural resources as defined, for California Environmental Quality Act (CEQA) projects.

The law does not preclude local governments and agencies from initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction. The NAHC believes that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

Best practice for the AB52 process and in accordance with Public Resources Code §21080.3.1(d), is to do the following:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The NAHC also recommends, but does not require that lead agencies include in their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential affect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

    - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE, such as known archaeological sites;
    - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
    - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the APE; and
    - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

    - Any report that may contain site forms, site significance, and suggested mitigation measures.

      All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code Section 6254.10.

3. The result of the Sacred Lands File (SFL) check conducted through the Native American Heritage Commission. The request form can be found at http://nahc.ca.gov/wp-content/uploads/2015/08/Local-Government-Tribal-Consultation-List-Request-Form-Update.pdf.

4. Any ethnographic studies conducted for any area including all or part of the potential APE; and

5. Any geotechnical reports regarding all or part of the potential APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event, that they do, having the information beforehand well help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: Cameron.vela@nahc.ca.gov.

Sincerely,

Cameron Vela

Cameron Vela
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Fresno County
12/7/2023

County	Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Fax #	Email Address	Cultural Affiliation	Counties	Last Updated
Fresno	**Dumna Wo-Wah Tribal Government**	N	Robert Ledger, Chairperson	2191 West Pico Ave. Fresno, CA, 93705	(559) 540-6346		ledgerrobert@ymail.com	Foothill Yokut Mono	Fresno,Madera,Merced	
	North Fork Rancheria of Mono Indians	F	Fred Beihn, Chairperson	P.O. Box 929 North Fork, CA, 93643	(559) 877-2461	(559) 877-2467	fbeihn@nfr-nsn.gov	Mono	Fresno,Inyo,Madera,Mariposa,Merced,Mono,Tuolumne	6/26/2023
	North Fork Rancheria of Mono Indians	F	Mary Stalter, Environmental/Heritage Manager	P.O. Box 929 North Fork, CA, 93643	(559) 877-2461		mstalter@nfr-nsn.gov	Mono	Fresno,Inyo,Madera,Mariposa,Merced,Mono,Tuolumne	6/26/2023
	Northern Valley Yokut / Ohlone Tribe	N	Erolinda Perez, Tribal Administrator	P.O. Box 717 Linden, CA, 95236	(209) 649-3155		arr0604w@verizon.net	Costanoan Northern Valley Yokut	Alameda,Calaveras,Contra Costa,Fresno,Madera,Mariposa,Merced,Sacramento,San Benito,San Joaquin,Santa	11/21/2023
	Northern Valley Yokut / Ohlone Tribe	N	Timothy Perez, Tribal Compliance Officer	P.O. Box 717 Linden, CA, 95236	(209) 662-2788		huskanam@gmail.com	Costanoan Northern Valley Yokut	Alameda,Calaveras,Contra Costa,Fresno,Madera,Mariposa,Merced,Sacramento,San Benito,San Joaquin,Santa	11/21/2023
	Northern Valley Yokut / Ohlone Tribe	N	John Murga, Tribal Historian	P.O. Box 717 Linden, CA, 95236	(209) 479-0546		johnmurga824@gmail.com	Costanoan Northern Valley Yokut	Alameda,Calaveras,Contra Costa,Fresno,Madera,Mariposa,Merced,Sacramento,San Benito,San Joaquin,Santa	11/21/2023
	Northern Valley Yokut / Ohlone Tribe	N	Jessica Murga, Tribal Secretary	990 N. Fine Rd Linden, CA, 95236	(209) 401-6250			Costanoan Northern Valley Yokut	Alameda,Calaveras,Contra Costa,Fresno,Madera,Mariposa,Merced,Sacramento,San Benito,San Joaquin,Santa	11/21/2023
	Picayune Rancheria of the Chukchansi Indians	F	Heather Airey, Tribal Historic Preservation Officer	P.O. Box 2226 Oakhurst, CA, 93644	(559) 795-5986		hairey@chukchansi-nsn.gov	Foothill Yokut	Fresno,Madera,Mariposa,Merced,Tuolumne	6/20/2023
	Picayune Rancheria of the Chukchansi Indians	F	Michael Wynn, Tribal Administrator	P.O. Box 2226 Oakhurst, CA, 93644	(559) 795-4228		mwynn@chukchansi-nsn.gov	Foothill Yokut	Fresno,Madera,Mariposa,Merced,Tuolumne	6/20/2023
	Picayune Rancheria of the Chukchansi Indians	F	Janet Bill, Chairperson	P.O. Box 2226 Oakhurst, CA, 93644	(559) 580-4457		council@chukchansi-nsn.gov	Foothill Yokut	Fresno,Madera,Mariposa,Merced,Tuolumne	6/20/2023
	Santa Rosa Rancheria Tachi Yokut Tribe	F	Samantha McCarty, Cultural Specialist II	P.O. Box 8 Lemoore, CA, 93245	(559) 633-3440		smccarty@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis Obispo,Tulare	10/3/2023
	Santa Rosa Rancheria Tachi Yokut Tribe	F	Nichole Escalon, Cultural Specialist I	P.O. Box 8 Lemoore, CA, 93245	(559) 924-1278		nescalone@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis Obispo,Tulare	10/3/2023
	Santa Rosa Rancheria Tachi Yokut Tribe	F	Shana Powers, THPO	P.O. Box 8 Lemoore, CA, 93245	(559) 423-3900		spowers@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis Obispo,Tulare	10/3/2023
	Table Mountain Rancheria	F	Brenda Lavell, Chairperson	P.O. Box 410 Friant, CA, 93626	(559) 822-2587	(559) 822-2693	rpennell@tmr.org	Yokut	Fresno,Madera,Merced	
	Traditional Choinumni Tribe	N	David Alvarez, Chairperson	2415 E. Houston Avenue Fresno, CA, 93720	(559) 217-0396	(559) 292-5057	davealvarez@sbcglobal.net	Foothill Yokut	Fresno	
	Tule River Indian Tribe	F	Neil Peyron, Chairperson	P.O. Box 589 Porterville, CA, 93258	(559) 781-4271	(559) 781-4610	neil.peyron@tulerivertribe-nsn.gov	Yokut	Alameda,Amador,Calaveras,Contra Costa,Fresno,Inyo,Kern,Kings,Madera,Mariposa,Merced,Monterey,Sacramento,San	
	Wuksachi Indian Tribe/Eshom Valley Band	N	Kenneth Woodrow, Chairperson	1179 Rock Haven Ct. Salinas, CA, 93906	(831) 443-9702		kwood8934@aol.com	Foothill Yokut Mono	Alameda,Calaveras,Contra Costa,Fresno,Inyo,Kings,Madera,Marin,Mariposa,Merced,Mono,Monterey,San Benito,San	6/19/2023

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced. 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 Resources Code and Section 5097.98 of the Public Resources Code.

Record: PROJ-2023-005976
Report Type: AB52 SB18 Combo
Counties: Fresno
NAHC Group: All

This list is applicable only for consultation with Native American tribes under Government Code Sections 65352.3, 65352.4 et seq. and Public Resources Code Sections 21080.3.1 for the proposed Vista Ranch Project, Fresno County.

Appendix F

Geotechnical

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED RESIDENTIAL DEVELOPMENT
BEHYMER AND ARMSTRONG AVENUES
CLOVIS, CALIFORNIA

PROJECT NO. 012-21027
MARCH 10, 2021

Prepared for:

MR. JEFFREY HARRIS
WILSON HOMES
7550 N. PALM AVENUE, STE 102
FRESNO, CALIFORNIA 93711

Prepared by:

KRAZAN & ASSOCIATES, INC.
GEOTECHNICAL ENGINEERING DIVISION
215 WEST DAKOTA AVENUE
CLOVIS, CALIFORNIA 93612
(559) 348-2200

Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

March 10, 2021

KA No. 012-21027

Mr. Jeffrey Harris
Wilson Homes
7550 N. Palm Avenue, Ste 102
Fresno, California 93711

RE: Geotechnical Engineering Investigation
Proposed Residential Development
Behymer and Armstrong Avenues
Clovis, California

Dear Mr. Harris:

In accordance with your request, we have completed a Geotechnical Engineering Investigation for the above-referenced site. The results of our investigation are presented in the attached report.

If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (559) 348-2200.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

REGISTERED PROFESSIONAL ENGINEER
DAVID R. JAROSZ II
2698
GEOTECHNICAL
STATE OF CALIFORNIA

David R. Jarosz, II
Managing Engineer
RGE No. 2698/RCE No. 60185

DRJ:ht

TABLE OF CONTENTS

INTRODUCTION 1

PURPOSE AND SCOPE 1

PROPOSED CONSTRUCTION 2

SITE LOCATION, SITE HISTORY AND SITE DESCRIPTION 2

GEOLOGIC SETTING 2

FIELD AND LABORATORY INVESTIGATIONS 4

SOIL PROFILE AND SUBSURFACE CONDITIONS 4

GROUNDWATER 5

CONCLUSIONS AND RECOMMENDATIONS 5

- Administrative Summary 5
- Groundwater Influence on Structures/Construction 7
- Site Preparation 8
- Engineered Fill 9
- Drainage and Landscaping 10
- Utility Trench Backfill 11
- Foundations 11
- Floor Slabs and Exterior Flatwork 12
- Lateral Earth Pressures and Retaining Walls 13
- R-Value Test Results and Pavement Design 14
- Seismic Parameters – 2019 CBC 16
- Soil Cement Reactivity 16
- Compacted Material Acceptance 17
- Testing and Inspection 17

LIMITATIONS 17

SITE PLAN 19

LOGS OF BORINGS (1 TO 38) ..... Appendix A

GENERAL EARTHWORK SPECIFICATIONS ..... Appendix B

GENERAL PAVEMENT SPECIFICATIONS ..... Appendix C

March 10, 2021 KA Project No. 012-21027

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED RESIDENTIAL DEVELOPMENT
BEHYMER AND ARMSTRONG AVENUES
CLOVIS, CALIFORNIA

INTRODUCTION

This report presents the results of our Geotechnical Engineering Investigation for the proposed Residential Development to be located at Behymer Avenue and Armstrong Avenue in Clovis, California. Discussions regarding site conditions are presented herein, together with conclusions and recommendations pertaining to site preparation, Engineered Fill, utility trench backfill, drainage and landscaping, foundations, concrete floor slabs and exterior flatwork, retaining walls, soil cement reactivity and pavement design.

A site plan showing the approximate boring locations is presented following the text of this report. A description of the field investigation, boring logs and the boring log legend are presented in Appendix A. Appendix A contains a description of laboratory testing phase of this study; along with laboratory test results. Appendices B and C contain guides to earthwork and pavement specifications. When conflicts in the text of the report occur with the general specifications in the appendices, the recommendations in the text of the report have precedence.

PURPOSE AND SCOPE

This investigation was conducted to evaluate the soil and groundwater conditions at the site, to make geotechnical engineering recommendations for use in design of specific construction elements and to provide criteria for site preparation and Engineered Fill construction.

Our scope of services was outlined in our proposal dated February 1, 2021 (KA Proposal No. P120-21) and included the following:

- A site reconnaissance by a member of our engineering staff to evaluate the surface conditions at the project site.
- A field investigation consisting of drilling 38 borings to depths ranging from approximately 4½ to 20 feet for evaluation of the subsurface conditions at the project site. Some of the borings were terminated due to auger refusal in very dense weathered rock.
- Performing laboratory tests on representative soil samples obtained from the borings to evaluate the physical and index properties of the subsurface soils.

- Evaluation of the data obtained from the investigation and an engineering analysis to provide recommendations for use in the project design and preparation of construction specifications.

- Preparation of this report summarizing the results, conclusions, recommendations, and findings of our investigation.

PROPOSED CONSTRUCTION

We understand that design of the proposed development is currently underway; structural load information and other final details pertaining to the structures are unavailable. On a preliminary basis, it is understood that development will consist of single-family residential lots. It is understood the buildings will be single- or two-story wood-framed structures utilizing concrete slab-on-grade construction. Footing loads are anticipated to be light to moderate. On-site landscaping and roadways will be associated with the project.

In the event these structural or grading details are inconsistent with the final design criteria, the Soils Engineer should be notified so that we may update this writing as applicable.

SITE LOCATION, SITE HISTORY AND SITE DESCRIPTION

The site is irregular in shape and encompasses approximately 168.68 acres. The center of the site is located at Perrin Road, between Behymer Avenue and Shepherd Avenue in Clovis, California. The site is identified by Assessor's Parcel Numbers (APN) 557-012-02, 28 and 29, 557-022-11, 557-031-24, 25 and 37. The site is surrounded by residential developments and agricultural land.

Site history was obtained by reviewing historical aerial photographs taken in 1998, 2006, 2014 and 2019. Review of the 1998 aerial photograph indicates the project site predominately consisted of agricultural land and rangeland. Rural residential developments were located in the southern and central portions of the site. Associated with the rural residential developments were several barns, sheds and trees.

Review of the 2006, 2014 and 2019 aerial photographs indicate that the project site conditions appeared to be relatively similar to that noted in the 1998 aerial photograph.

Presently, the site conditions appear relatively similar to that noted in the previous aerial photographs. Two rural residential developments with associated barns and sheds are located in the southern and central portions of the site. The remainder of the site is utilized as pastureland. Buried utility lines are located within the site associated with the existing developments. The site is covered by a sparse to moderate weed growth and the surface soils have a loose consistency. The site is relatively level with no major changes in grade and approximately 15 feet of relief across the property.

GEOLOGIC SETTING

The San Joaquin Valley, which includes the Clovis area, is a topographic and structural basin that is bounded on the east by the Sierra Nevada and on the west by the Coast Ranges. The Sierra Nevada, a fault block dipping gently southwestward, is made up of igneous and metamorphic rocks of pre-Tertiary

age that comprise the basement complex beneath the Valley. The Coast Ranges contain folded and faulted sedimentary rocks of Mesozoic and Cenozoic age, which are similar to those rocks that underlie the Valley at depth and nonconformably overlie the basement complex; gently dipping to nearly horizontal sedimentary rocks of Tertiary and Quaternary age overlie the older rocks. These younger rocks are mostly of continental origin and in the Clovis area, they were derived from the Sierra Nevada.

The San Joaquin River is the principal river in the area. Alluvial fans formed by this river are the largest geomorphic features in the Clovis area. The formation of the fans has resulted in rather flat regional topography.

The Coast Ranges evolved as a result of folding, faulting and accretion of diverse geologic terrains. They are composed chiefly of sedimentary and metamorphic rocks that are sharply deformed into complex structures. They are broken by numerous faults, the San Andreas Fault being the most notable structural feature.

Both the Sierra Nevada and Coast Range are geologically young mountain ranges and possess active and potentially active fault zones. Major active faults and fault zones occur at some distance to the east, west and south of the Clovis area. The Owens Valley Fault Zone bounds the eastern edge of the Sierra Nevada block and contains both active and potentially active faults.

Portions of the Ortigalita, Calaveras, Hayward and Rinconada Faults, which are to the west, are considered potentially active. The San Andreas Fault is possibly the best-known fault and is located approximately 60 to 70 miles to the west.

There are no active fault traces in the project vicinity. Accordingly, the project area is not within an Earth Quake Fault Zone (Special Studies Zone) and will not require a special site investigation by an Engineering Geologist.

Clovis residents could feel the effects of a large seismic event on one of the nearby active or potentially active fault zones. Clovis has experienced groundshaking from earthquakes in the historical past. According to the Five County Seismic Safety Element, groundshaking of VII intensity (Modified Mercali Scale) was felt in Clovis from the 1872 Owens Valley Earthquake. This is the largest known earthquake event affecting the Clovis area.

Secondary hazards from earthquakes include rupture, seiche, landslides, liquefaction and subsidence. Since there are no known faults within the immediate area, ground rupture from surface faulting should not be a potential problem. Seiche and landslides are not hazards in the area either. Liquefaction potential (sudden loss of shear strength in a saturated cohesionless soil) should be low since groundwater occurs below 60 feet. Lastly, deep subsidence problems may be low to moderate according to the conclusions of the Five County Seismic Safety Element. However, there are no known occurrences of structural or architectural damage due to deep subsidence in the Clovis area.

FIELD AND LABORATORY INVESTIGATIONS

Subsurface soil conditions were explored by drilling 38 borings to depths ranging from approximately 4½ to 20 feet below existing site grade, using a truck-mounted drill rig. Some of the borings were terminated due to auger refusal in very dense weathered rock. In addition, 12 bulk subgrade samples were obtained from the site for laboratory R-value testing. The approximate boring and bulk sample locations are shown on the site plan. During drilling operations, penetration tests were performed at regular intervals to evaluate the soil consistency, obtain information regarding the engineering properties of the subsoils and to retain soil samples for laboratory testing. The soils encountered were continuously examined and visually classified in accordance with the Unified Soil Classification System. A more detailed description of the field investigation is presented in Appendix A.

Laboratory tests were performed on selected soil samples to evaluate their physical characteristics and engineering properties. The laboratory-testing program was formulated with emphasis on the evaluation of natural moisture, density, gradation, shear strength, consolidation potential, expansion potential, plasticity, R-value and moisture-density relationships of the materials encountered. In addition, chemical tests were performed to evaluate the soil-cement reactivity. Details of the laboratory test program and the results of laboratory test are summarized in Appendix A. This information, along with the field observations, was used to prepare the final boring logs in Appendix A.

SOIL PROFILE AND SUBSURFACE CONDITIONS

Based on our findings, the subsurface conditions encountered appear typical of those found in the geologic region of the site. The upper soils are identified as by the Soil Conservation Service as belonging to the Atwater, Grangeville, Hanford, Ramona, San Joaquin, Visalia and several other Series. These Series are often underlain at a shallow depth by a clayey or cemented substratum locally referred to as "hardpan." The soils within these Series generally consist of sands, silts, and occasional clays.

More specifically, the surface soils consisted of approximately 6 to 12 inches of very loose silty sand, sand, clayey sand and sandy clay. These soils are disturbed, have low strength characteristics, and are highly compressible when saturated.

Below the loose surface soils, approximately 1 to 7½ feet of loose to dense silty sand, sandy silt, sand, clayey sand and clayey silt or firm to hard sandy clay were encountered. Some of these soils were weakly cemented in parts. Field and laboratory tests suggest that these soils are moderately strong and slightly compressible. The clayey soils have a low to moderate potential for expansion. Penetration resistance ranged from 8 to 54 blows per foot. Dry densities ranged from 96 to 126 pcf. Representative soil samples consolidated approximately 1 percent to 2 percent under a 2 ksf load when saturated. Representative soil samples had angles of internal friction of 34 to 36 degrees. Representative samples of the clayey soils had expansion indices ranging from 0 to 68. A plan showing the expansion index at various locations is included in the appendix of this report.

Below 1 to 2½ feet in some of the borings, very dense weakly cemented silty sand, sandy silt and clayey sand, locally referred to as hardpan, were encountered. The cemented nature of the subsoil hampered recovery of undisturbed soil samples. However, these cemented soils can be generally characterized as

relatively strong, slightly compressible, and have a low permeability. Penetration resistance was generally greater than 50 blows per 6 inches. These soils had higher strength characteristics than the upper soils.

Below 4 to 8½ feet, alternating layers of predominately loose to very dense silty sand, sandy silt, silty sand/clayey sand, clayey sand, sand, clayey sandy silt, sandy clayey silt, clayey silt, or weathered decomposed granite and very stiff to hard silty clay and sandy clay were encountered. Field and laboratory tests suggest that these soils/weathered rock had slightly stronger strength characteristics than the upper soils. Penetration resistance ranged from 7 blows per foot to greater than 50 blows per 6 inches. Dry densities ranged from 91 to 129 pcf. These soils/weathered rock extended to the termination depth of our borings. The weathered rock was predominately encountered in the northern portion of the site.

For additional information about the soils encountered, please refer to the boring logs in Appendix A.

GROUNDWATER

Test boring locations were checked for the presence of groundwater during and immediately following the drilling operations. Free groundwater was not encountered.

Cemented silty sands, locally referred to as "hardpan," were encountered below 1 to 2½ feet in several of the borings. This cementation retards the free percolation of the surface water into the soil stratum below the hardpan frequently resulting in a temporary perched water table condition at or near the ground surface.

It should be recognized that water table elevations may fluctuate with time, being dependent upon seasonal precipitation, irrigation, land use and climatic conditions as well as other factors. Therefore, water level observations at the time of the field investigation may vary from those encountered during the construction phase of the project. The evaluation of such factors is beyond the scope of this report.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of our field and laboratory investigations, along with previous geotechnical experience in the project area, the following is a summary of our evaluations, conclusions, and recommendations.

Administrative Summary

In brief, the subject site and soil conditions, with the exception of the loose surface soils, expansive nature of the clayey soils, previous development, existing development and shallow weathered rock appear to be conducive to the development of the project. The surface soils have a loose consistency. These soils are disturbed, have low strength characteristics and are highly compressible when saturated. Accordingly, it is recommended that the surface soils be recompacted. This compaction effort should stabilize the surface soils and locate any unsuitable or pliant areas not found during our field investigation.

The on-site upper soils consist of silty sand, clayey sand, sandy clay and sand. The clayey soils appeared to have a low to moderate swell potential. The estimated swell pressures of the clayey soils may cause minor movement effecting slabs and possible stucco or similar brittle exterior finishes. To reduce potential soil movement, it is recommended the upper 18 inches of soil within slab-on-grade and exterior flatwork areas consist of non-expansive Engineered Fill. Preliminary testing indicates the on-site soils will be suitable for reuse as non-expansive Engineered Fill, provided they are cleansed of excessive organics and debris. During construction, it is recommended that additional tests be performed on the on-site soils to verify their physical and index properties.

Fill material was not encountered in our borings. However, fill may be encountered between the boring locations. It is anticipated fill soils will consist of silty sands, sandy silts, clayey sands and sandy clays. The thickness and extent of fill material was determined based on limited test borings and visual observation. Verification of the extent of fill should be determined during site grading. It is recommended that fill soils that have not been properly compacted and certified be excavated and recompacted. Prior to backfilling, the bottom of the excavation should be observed by Krazan & Associates, Inc. to verify no additional removal is required.

Trees are located within the project site and vicinity. Tree removal operations should include roots greater than 1 inch in diameter. The resulting excavations should be backfilled with Engineered Fill compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Two rural residential developments are located within the site. Associated with these developments are buried structures, such as utility lines, irrigation lines, drainage lines, septic systems and possible water wells. Demolition activities should include proper removal all buried structures. Water wells should be abandoned in accordance with county standards. The resulting excavations should be backfilled with Engineered Fill. It is suspected that demolition activities of the existing structures will disturb the upper soils. Following demolition activities, it is recommended that the disturbed soils be removed and/or recompacted. Any buried structures or loosely backfilled excavations encountered during construction should be properly removed and the resulting excavations backfilled with Engineered Fill. Disturbed areas caused by demolition activities should be recompacted.

Cemented silty sands, sandy silts and clayey sands, locally referred to as hardpan, were encountered below 1 to 2½ feet in some of the borings. Hardpan is an excellent foundation-bearing material because of its apparent rock-like properties caused by particle cementation. However, this same cementation also retards the free percolation of the surface water into the soil stratum below the hardpan, frequently resulting in a temporary perched water table condition at or near the ground surface. This perched water condition has a substantial affect on the strength characteristics of the surface soils. As a mitigation measure, very positive drainage should be established around the proposed structures.

Shallow decomposed rock was encountered within some of the borings located in the northern portion of the project site. In order to reduce post-construction differential settlement, it is recommended that the native soil and rock in areas of proposed structures that are in a soil/rock transition zone be cut a minimum of 2 feet below the proposed bottoms of footings. The excavation should be extended a

minimum of 5 feet beyond structural elements. The resulting excavation should be backfilled with Engineered Fill. In lieu of over-excavation, the footings of all connected structures may be embedded a minimum of 6 inches into the native decomposed rock.

Decomposed granite was encountered below 1 to 14 feet in some of the borings located in the northern portion of the site. In general, rock material should be able to be excavated to at least a depth of 10 feet, using a D10N or heavier tractor utilizing a single ripper. Areas resistant to excavation should be anticipated and would likely require the use of air-spade or possible blasting.

Relatively clean sands were encountered at various locations throughout the site. The possibility exists that site grading operations could expose these soils in areas of proposed buildings, pavements, and/or retaining walls. The Contractor should note that these soils lack the cohesion necessary to stand vertically, even in shallow excavations such as footing trenches. If these conditions are encountered, it will be necessary to over-excavate the affected area(s) to a minimum of 2 feet below the proposed bearing surface. These areas may be backfilled using a mix of the silty sand and sand soils that contains at least 20 percent fines and meeting the requirements for Engineered Fill. This material may be obtained from elsewhere at the site, imported to the site from an approved off-site source, or manufactured through blending of the excavated clean sand with other suitable material containing a higher percentage of fines to result in material meeting the requirements for Engineered Fill.

After completion of the recommended site preparation, the site should be suitable for shallow footing support. The proposed structure footings may be designed utilizing an allowable bearing pressure of 2,000 psf for dead-plus-live loads. Footings should have a minimum embedment of 12 inches.

Groundwater Influence on Structures/Construction

Although groundwater was not encountered during our field investigation or anticipated to rise within the zone of structural influence within the project area, it is common for surface runoff water to infiltrate the upper sandy soils and perch above the underlying lower permeable hardpan for extended periods during the winter and spring months. This condition, if encountered, could seriously impede grading by causing an unstable subgrade condition. Typical remedial measures include discing and aerating the soils during soil during dry weather, mixing the soil with dryer materials, removing and replacing the soil with an approved fill material, or mixing the soil with an approved lime or cement product. Our firm should be consulted prior to implementing remedial measures to observe the unstable subgrade conditions and provide appropriate recommendations.

Some structures in the Clovis area are founded on hardpan have experienced standing water for extended periods of time in crawl spaces below wooden floors or within sunken floor slab areas. The sources of the water were natural precipitation and landscape irrigation, and consequently, wood floor and sunken floor slab construction in hardpan soils are discouraged.

Site Preparation

General site clearing should include removal of vegetation; existing utilities; concrete structures including foundations; basement walls and floors; existing stockpiled soil; trees and associated root systems; rubble; rubbish; and any loose and/or saturated materials. Site stripping should extend to a minimum depth of 2 to 4 inches, or until all organics in excess of 3 percent by volume are removed. Deeper stripping may be required in localized areas. These materials will not be suitable for use as Engineered Fill. However, stripped topsoil may be stockpiled and reused in landscape or non-structural areas.

Fill material was not encountered in our borings. However, fill may be encountered between and beyond the boring locations. It is anticipated fill soils will consist of silty sands, sandy silts, clayey sands and sandy clays. The thickness and extent of fill material was determined based on limited test borings and visual observation. Verification of the extent of fill should be determined during site grading. It is recommended that fill soils that have not been properly compacted and certified be excavated and recompacted. Prior to backfilling, the bottom of the excavation should be observed by Krazan & Associates, Inc. to verify no additional removal is required.

The site is presently occupied by two rural residential developments with associated barns and sheds. Associated with these developments are buried structures, such as utility lines, irrigation lines, septic systems, and water wells. Demolition activities should include proper removal of any buried structures. Any buried structures or loosely backfilled excavations encountered during construction should be properly removed and the resulting excavations backfilled. Excavations, depressions, or soft and pliant areas extending below planned finish subgrade level should be cleaned to firm undisturbed soil, and backfilled with Engineered Fill. In general, any septic tanks, debris pits, cesspools, or similar structures should be entirely removed. Concrete footings should be removed to an equivalent depth of at least 3 feet below proposed footing elevations or as recommended by the Soils Engineer. Water wells should be abandoned in accordance with county standards. Any other buried structures should be removed in accordance with the recommendations of the Soils Engineer. Resulting excavations should be backfilled with Engineered Fill.

Trees are located within the site. Tree removal operations should include roots greater than 1 inch in diameter. The resulting excavations should be backfilled with Engineered Fill compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Following stripping, fill removal, tree removal and demolition activities, the exposed subgrade within proposed building, exterior flatwork, and pavement areas should be excavated/scarified to a depth of at least 12 inches, worked until uniform and free from large clods, moisture-conditioned as necessary, and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. Limits of recompaction should extend 5 feet beyond structural elements.

The on-site upper soils predominately consist of silty sand, clayey sand, sandy clay and sand. The clayey soils appeared to have a low to moderate swell potential. The estimated swell pressures of the clayey soils may cause minor movement effecting slabs and possible stucco or similar brittle exterior

finishes. To reduce potential soil movement, it is recommended the upper 18 inches of soil within slab-on-grade and exterior flatwork areas consist of non-expansive Engineered Fill. Preliminary testing indicates the on-site soils that do not contain clay will be suitable for reuse as non-expansive Engineered Fill, provided they are cleansed of excessive organics and debris. During construction, it is recommended that additional tests be performed on the on-site soils to verify their physical and index properties.

Shallow decomposed rock was encountered within some of the borings located in the northern portion of the project site. In order to reduce post-construction differential settlement, it is recommended that the native soil and rock in areas of proposed structures that are in a soil/rock transition zone be cut a minimum of 2 feet below the proposed bottoms of footings. The excavation should be extended a minimum of 5 feet beyond structural elements. The resulting excavation should be backfilled with Engineered Fill. In lieu of over-excavation, the footings of all connected structures may be embedded a minimum of 6 inches into the native decomposed rock.

The upper soils, during wet winter months, become very moist due to the absorptive characteristics of the soil. Earthwork operations performed during winter months may encounter very moist unstable soils, which may require removal to grade a stable building foundation. Project site winterization consisting of placement of aggregate base and protecting exposed soils during the construction phase should be performed.

A representative of our firm should be present during all site clearing and grading operations to test and observe earthwork construction. This testing and observation is an integral part of our service as acceptance of earthwork construction is dependent upon compaction of the material and the stability of the material. The Soils Engineer may reject any material that does not meet compaction and stability requirements. Further recommendations of this report are predicated upon the assumption that earthwork construction will conform to recommendations set forth in this section and the Engineered Fill section.

Engineered Fill

The on-site, upper native soils are predominately silty sands, clayey sands, sandy clays, decomposed granite and sand. These soils will be suitable for reuse as Engineered Fill, provided they are cleansed of excessive organics, debris and fragments greater than 4 inches in maximum dimension. Soils with an expansion index greater than 20 will not be suitable for reuse as non-expansive Engineered Fill and should not be used in the upper 18 inches of slab-on-grade and exterior flatwork areas. These soils may be used for General Engineered Fill within non-structural areas, paved areas, and within slab-on-grade and exterior flatwork areas below 18 inches from finished pad grade, provided they are cleansed of excessive organics and debris. Clayey soils should be moisture-conditioned to at least 2 percent above optimum moisture content during placement. During construction it is recommended that additional tests be performed on the on-site soils to verify their physical and index properties.

Relatively clean sands were encountered at various locations throughout the site. The possibility exists that site grading operations could expose these soils in areas of proposed buildings, pavements, and/or retaining walls. The Contractor should note that these soils lack the cohesion necessary to stand vertically, even in shallow excavations such as footing trenches. If these conditions are encountered, it will be necessary to over-excavate the affected area(s) to a minimum of 2 feet below the proposed bearing surface. These areas may be backfilled using a mix of the silty sand and sand soils that contains at least 20 percent fines and meeting the requirements for Engineered Fill. This material may be obtained from elsewhere at the site, imported to the site from an approved off-site source, or manufactured through blending of the excavated clean sand with other suitable material containing a higher percentage of fines to result in material meeting the requirements for Engineered Fill.

The preferred materials specified for Engineered Fill are suitable for most applications with the exception of exposure to erosion. Project site winterization and protection of exposed soils during the construction phase should be the sole responsibility of the Contractor, since he has complete control of the project site at that time.

Imported Fill should consist of a well-graded, slightly cohesive, fine silty sand or sandy silt, with relatively impervious characteristics when compacted. This material should be approved by the Soils Engineer prior to use and should typically possess the following characteristics:

Percent Passing No. 200 Sieve	20 to 50
Plasticity Index	10 maximum
UBC Standard 29-2 Expansion Index	20 maximum

Fill soils should be placed in lifts approximately 6 inches thick, moisture-conditioned as necessary, and compacted to achieve at least 90 percent of maximum density based on ASTM D1557. Additional lifts should not be placed if the previous lift did not meet the required dry density or if soil conditions are not stable.

Drainage and Landscaping

The ground surface should slope away from building pad and pavement areas toward appropriate drop inlets or other surface drainage devices. In accordance with Section 1804 of the 2019 California Building Code, it is recommended that the ground surface adjacent to foundations be sloped a minimum of 5 percent for a minimum distance of 10 feet away from structures, or to an approved alternative means of drainage conveyance. Swales used for conveyance of drainage and located within 10 feet of foundations should be sloped a minimum of 2 percent. Impervious surfaces, such as pavement and exterior concrete flatwork, within 10 feet of building foundations should be sloped a minimum of 1 percent away from the structure. Drainage gradients should be maintained to carry all surface water to collection facilities and off-site. These grades should be maintained for the life of the project.

Slots or weep holes should be placed in drop inlets or other surface drainage devices in pavement areas to allow free drainage of adjoining base course materials. Cutoff walls should be installed at pavement edges adjacent to vehicular traffic areas, these walls should extend to a minimum depth of 12 inches below pavement subgrades to limit the amount of seepage water that can infiltrate the pavements. Where cutoff walls are undesirable subgrade drains can be constructed to transport excess water away from planters to drainage interceptors. If cutoff walls can be successfully used at the site, construction of subgrade drains is considered unnecessary.

Utility Trench Backfill

Utility trenches should be excavated according to accepted engineering practice following OSHA (Occupational Safety and Health Administration) standards by a Contractor experienced in such work. The responsibility for the safety of open trenches should be borne by the Contractor. Traffic and vibration adjacent to trench walls should be reduced and cyclic wetting and drying of excavation side slopes should be avoided. Depending upon the location and depth of some utility trenches, groundwater flow into open excavations could be experienced, especially during or shortly following periods of precipitation.

Sandy soil conditions were encountered at the site. These cohesionless soils have a tendency to cave in trench wall excavations. Shoring or sloping back trench sidewalls may be required within these sandy soils.

Utility trench backfill placed in or adjacent to buildings and exterior slabs should be compacted to at least 90 percent of maximum density based on ASTM Test Method D1557. The utility trench backfill placed in pavement areas should be compacted to at least 90 percent of maximum density based on ASTM Test Method D1557. Pipe bedding should be in accordance with pipe manufacturer's recommendations.

The Contractor is responsible for removing all water sensitive soils from the trench regardless of the backfill location and compaction requirements. The Contractor should use appropriate equipment and methods to avoid damage to the utilities and/or structures during fill placement and compaction.

Foundations

The proposed structures may be supported on a shallow foundation system bearing on undisturbed native soil or Engineered Fill. Spread and continuous footings can be designed for the following maximum allowable soil bearing pressures:

Load	Allowable Loading
Dead Load Only	1,500 psf
Dead-Plus-Live Load	2,000 psf
Total Load, including wind or seismic loads	2,650 psf

The footings should have a minimum depth of 12 inches below pad subgrade (soil grade) or adjacent exterior grade, whichever is lower. Footings should have a minimum width of 12 inches, regardless of load.

The footing excavations should not be allowed to dry out at any time prior to pouring concrete. It is recommended that all footings be reinforced by at least one No. 4 reinforcing bar in both top and bottom.

The total movement is not expected to exceed 1 inch. Differential movement should be less than 1 inch. Most of the settlement is expected to occur during construction as the loads are applied. However, additional post-construction settlement may occur if the foundation soils are flooded or saturated.

Resistance to lateral footing displacement can be computed using an allowable friction factor of 0.35 acting between the base of foundations and the supporting subgrade. Lateral resistance for footings can alternatively be developed using an allowable equivalent fluid passive pressure of 300 pounds per cubic foot acting against the appropriate vertical footing faces. The frictional and passive resistance of the soil may be combined without reduction in determining the total lateral resistance. A ⅓ increase in the above value may be used for short duration, wind, or seismic loads.

Floor Slabs and Exterior Flatwork

The 2010 California Residential Code (CRC) Section R506.2.3 specifies that "a 6-mil polyethylene or *approved* vapor retarder with joints lapped not less than 6 inches shall be placed between the concrete floor slab and the base course or the prepared subgrade where no base course exists." Prior to adoption of this code section, traditional construction practice in the Fresno/Clovis area was to place an additional layer of sand or rock dust (per American Concrete Institute) to act as a blotting layer between the vapor retarder and the underside of the concrete slab. This blotting layer acted not only to protect the vapor barrier from punctures or tears during construction, but also served to promote even curing of the concrete slab. In the semi-arid climate of the Fresno/Clovis area, placement of the vapor retarder directly beneath the concrete slab has been known to result in rapid curing of the upper slab surface, especially during periods of elevated temperatures and/or sustained wind, as compared to the lower slab surface. Uneven curing of the upper and lower slab surfaces can result in excessive slab cracking and/or slab curling.

Based on our conversations, it is our understanding that Wilson Homes has developed a standard design for residential interior concrete slab-on-grade floors. The design incorporates a 2-inch layer of sand as a capillary break over the compacted subgrade soil. The sand layer is overlain by a layer of 10-mil PVC vapor retarder membrane, which is overlain by a 2-inch layer of sand, and finally by a minimum 3½-inch thick concrete slab. This system has reportedly been utilized by Wilson Homes with success in the past and has resulted in adequate performance of interior flooring materials.

It is recommended that the concrete slabs be reinforced at a minimum with #3 bars at 18 inches on center to reduce crack separation and possible vertical offset at the cracks. Thicker floor slabs with increased concrete strength and reinforcement should be designed wherever heavy concentrated loads, heavy equipment, or machinery is anticipated.

After reviewing Wilson Homes' standard design for residential interior concrete slab-on-grade floors for use in the Fresno/Clovis area, it is our opinion that this design, while deviating from Section R506.2.3 of the 2010 CRC, is an acceptable equivalent alternative to the criteria specified in the 2010 CRC. Based on our recommendation, Krazan & Associates requests that the local building official, i.e., City of Clovis, allow this standard design to be utilized for the subject residential tract.

Because this standard design does potentially allow for excessive moisture to be contained in the upper sand or rock dust layer from either rainfall or excessive moistening prior to pouring the slab, Krazan & Associates recommends that the upper sand layer be inspected prior to concrete placement to confirm that no ponding or standing water is present.

Lateral Earth Pressures and Retaining Walls

Walls retaining horizontal backfill and capable of deflecting a minimum of 0.1 percent of its height at the top may be designed using an equivalent fluid active pressure of 40 pounds per square foot per foot of depth. Walls incapable of this deflection or are fully constrained walls against deflection may be designed for an equivalent fluid at-rest pressure of 60 pounds per square foot per foot of depth. Expansive soils should not be used for backfill against walls. The wedge of non-expansive backfill material should extend from the bottom of each retaining wall outward and upward at a slope of 2:1 (horizontal to vertical) or flatter. The stated lateral earth pressures do not include the effects of hydrostatic water pressures generated by infiltrating surface water that may accumulate behind the retaining walls; or loads imposed by construction equipment, foundations, or roadways.

Retaining and/or below grade walls should be drained with either perforated pipe encased in free-draining gravel or a prefabricated drainage system. The gravel zone should have a minimum width of 12 inches wide and should extend upward to within 12 inches of the top of the wall. The upper 12 inches of backfill should consist of native soils, concrete, asphaltic concrete, or other suitable backfill to reduce surface drainage into the wall drain system. The aggregate should conform to Class 2 permeable materials graded in accordance with CalTrans Standard Specifications (2018). Prefabricated drainage systems, such as Miradrain®, Enkadrain®, or an equivalent substitute, are acceptable alternatives in lieu of gravel provided they are installed in accordance with the manufacturer's recommendations. If a prefabricated drainage system is proposed, our firm should review the system for final acceptance prior to installation.

Drainage pipes should be placed with perforations down and should discharge in a non-erosive manner away from foundations and other improvements. The pipes should be placed no higher than 6 inches above the heel of the wall, in the center line of the drainage blanket and should have a minimum diameter of four inches. Collector pipes may be either slotted or perforated. Slots should be no wider than ⅛ inch in diameter, while perforations should be no more than ¼ inch in diameter. If retaining walls are less than 6 feet in height, the perforated pipe may be omitted in lieu of weep holes on 4 feet maximum spacing. The weep holes should consist of 4-inch diameter holes (concrete walls) or unmortared head joints (masonry walls) and not be higher than 18 inches above the lowest adjacent

grade. Two 8-inch square overlapping patches of geotextile fabric (conforming to CalTrans Standard Specifications for "edge drains") should be affixed to the rear wall opening of each weep hole to retard soil piping.

During grading and backfilling operations adjacent to any walls, heavy equipment should not be allowed to operate within a lateral distance of 5 feet from the wall, or within a lateral distance equal to the wall height, whichever is greater, to avoid developing excessive lateral pressures. Within this zone, only hand-operated equipment ("whackers," vibratory plates, or pneumatic compactors) should be used to compact the backfill soils.

R-Value Test Results and Pavement Design

Twelve subgrade soil samples were obtained from the project site for R-value testing at the locations shown on the attached site plan. The samples were tested in accordance with the State of California Materials Manual Test Designation 301. Results of the tests are as follows:

Sample	Depth	Description	R-Value at Equilibrium
1	12-24"	Silty Sand (SM)	59
2	12-24"	Silty Sand (SM)	48
3	12-24"	Clayey Sand/Sandy Clay (SC/CL)	16
4	12-24"	Sandy Clay (CL)	Less than 5
5	12-24"	Sandy Clay (CL)	Less than 5
6	12-24"	Sandy Clay (CL)	Less than 5
7	12-24"	Silty Sand (SM)	41
8	12-24"	Clayey Sand (SC)	26
9	12-24"	Silty Sand (SM)	53
10	12-24"	Silty Sand (SM)	46
11	12-24"	Silty Sand (SM)	59
12	12-24"	Silty Sand (SM)	58

The test results are low to moderate and indicate poor to good subgrade support characteristics under dynamic traffic loads. The following table shows the recommended pavement sections for various traffic indices based on an R-value of less than 5.

Traffic Index	Asphaltic Concrete	Class II Aggregate Base*	Class III Aggregate Subbase	Compacted Subgrade**
4.0	2.0"	8.5"	--	12.0"
4.0	2.0"	4.5"	4.5"	12.0"
4.5	3.0"	9.0"	--	12.0"
4.5	3.0"	4.0"	5.5"	12.0"

5.0	3.0"	11.0"	--	12.0"
5.0	3.0"	5.0"	6.5"	12.0"
5.5	3.0"	11.5"	--	12.0"
5.5	3.0"	5.0"	7.0"	12.0"
6.0	3.0"	13.5"	--	12.0"
6.0	3.0"	6.5"	8.0"	12.0"
6.5	3.5"	14.0"	--	12.0"
6.5	3.5"	6.0"	9.0"	12.0"
7.0	4.0"	15.5"	--	12.0"
7.0	4.0"	6.5"	10.0"	12.0"
7.5	4.0"	17.0"	--	12.0"
7.5	4.0"	7.5"	10.5"	12.0"

**** 95% compaction based on ASTM Test Method D1557 or CAL 216***
***** 90% compaction based on ASTM Test Method D1557 or CAL 216***

The following table shows the recommended pavement sections for various traffic indices based on an R-value of 53.

Traffic Index	Asphaltic Concrete	Class II Aggregate Base*	Compacted Subgrade**
4.0	2.0"	4.0"	12.0"
4.5	2.5"	4.0"	12.0"
5.0	2.5"	4.0"	12.0"
5.5	3.0"	4.0"	12.0"
6.0	3.0"	4.0"	12.0"
6.5	3.5"	4.0"	12.0"
7.0	4.0"	4.0"	12.0"
7.5	4.0"	4.0"	12.0"

**** 95% compaction based on ASTM Test Method D1557 or CAL 216***
***** 90% compaction based on ASTM Test Method D1557 or CAL 216***

If traffic indices are not available, an estimated (typical value) index of 4.5 may be used for light automobile traffic, and an index of 7.0 may be used for light truck traffic.

The following recommendations are for light-duty and heavy-duty Portland Cement Concrete Pavement Sections based on the design procedures developed by the Portland Cement Association.

PORTLAND CEMENT PAVEMENT
LIGHT DUTY

Traffic Index	Portland Cement Concrete***	Class II Aggregate Base*	Compacted Subgrade**
4.5	6.0"	5.0"	12.0"

HEAVY DUTY

Traffic Index	Portland Cement Concrete***	Class II Aggregate Base*	Compacted Subgrade**
7.0	7.0"	6.0"	12.0"

**** 95% compaction based on ASTM Test Method D1557 or CAL 216***
***** 90% compaction based on ASTM Test Method D1557 or CAL 216***
******Minimum Compressive Strength of 3000 psi***

It is recommended that any uncertified fill material encountered within pavement areas be removed and/or recompacted. The fill materials should be moisture-conditioned to near optimum moisture and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. As an alternative, the Owner may elect not to recompact the existing fill within paved areas. However, the Owner should be aware that the paved areas may settle which may require annual maintenance. At a minimum, it is recommended that the upper 12 inches of subgrade soil be moisture-conditioned to a minimum of 2 percent above optimum moisture content and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Seismic Parameters – 2019 California Building Code

The Site Class per Section 1613 of the 2019 California Building Code (2019 CBC) and ASCE 7-16, Chapter 20 is based upon the site soil conditions. It is our opinion that a Site Class D is most consistent with the subject site soil conditions. For seismic design of the structures based on the seismic provisions of the 2019 CBC, we recommend the following parameters:

Seismic Item	Value	CBC Reference
Site Class	D	Section 1613.2.2
Site Coefficient F_a	1.385	Table 1613.2.3 (1)
S_s	0.519	Section 1613.2.1
S_{MS}	0.719	Section 1613.2.3
S_{DS}	0.479	Section 1613.2.4
Site Coefficient F_v	2.180	Table 1613.2.3 (2)
S_1	0.210	Section 1613.2.1
S_{M1}	0.458	Section 1613.2.3
S_{D1}	0.305	Section 1613.2.4
T_S	0.637	Section 1613.2

* Based on Equivalent Lateral Force (ELF) Design Procedure being used.

Soil Cement Reactivity

Excessive sulfate in either the soil or native water may result in an adverse reaction between the cement in concrete (or stucco) and the soil. HUD/FHA and UBC have developed criteria for evaluation of sulfate levels and how they relate to cement reactivity with soil and/or water.

Soil samples were obtained from the site and tested in accordance with State of California Materials Manual Test Designation 417. The sulfate concentrations detected in these soil samples were less than 0.02 percent and are below the maximum allowable values established by HUD/FHA and UBC. Therefore, no special design requirements are necessary to compensate for sulfate reactivity with the cement.

Compacted Material Acceptance

Compaction specifications are not the only criteria for acceptance of the site grading or other such activities. However, the compaction test is the most universally recognized test method for assessing the performance of the Grading Contractor. The numerical test results from the compaction test cannot be used to predict the engineering performance of the compacted material. Therefore, the acceptance of compacted materials will also be dependent on the stability of that material. The Soils Engineer has the option of rejecting any compacted material regardless of the degree of compaction if that material is considered to be unstable or if future instability is suspected. A specific example of rejection of fill material passing the required percent compaction is a fill which has been compacted with an in situ moisture content significantly less than optimum moisture. This type of dry fill (brittle fill) is susceptible to future settlement if it becomes saturated or flooded.

Testing and Inspection

A representative of Krazan & Associates, Inc. should be present at the site during the earthwork activities to confirm that actual subsurface conditions are consistent with the exploratory fieldwork. This activity is an integral part of our service, as acceptance of earthwork construction is dependent upon compaction testing and stability of the material. This representative can also verify that the intent of these recommendations is incorporated into the project design and construction. Krazan & Associates, Inc. will not be responsible for grades or staking, since this is the responsibility of the Prime Contractor.

LIMITATIONS

Soils Engineering is one of the newest divisions of Civil Engineering. This branch of Civil Engineering is constantly improving as new technologies and understanding of earth sciences advance. Although your site was analyzed using the most appropriate and most current techniques and methods, undoubtedly there will be substantial future improvements in this branch of engineering. In addition to advancements in the field of Soils Engineering, physical changes in the site, either due to excavation or fill placement, new agency regulations, or possible changes in the proposed structure after the soils report is completed may require the soils report to be professionally reviewed. In light of this, the Owner should be aware that there is a practical limit to the usefulness of this report without critical review. Although the time limit for this review is strictly arbitrary, it is suggested that 2 years be considered a reasonable time for the usefulness of this report.

Foundation and earthwork construction is characterized by the presence of a calculated risk that soil and groundwater conditions have been fully revealed by the original foundation investigation. This risk is derived from the practical necessity of basing interpretations and design conclusions on limited sampling of the earth. The recommendations made in this report are based on the assumption that soil conditions

do not vary significantly from those disclosed during our field investigation. If any variations or undesirable conditions are encountered during construction, the Soils Engineer should be notified so that supplemental recommendations may be made.

The conclusions of this report are based on the information provided regarding the proposed construction. If the proposed construction is relocated or redesigned, the conclusions in this report may not be valid. The Soils Engineer should be notified of any changes so the recommendations may be reviewed and re-evaluated.

This report is a Geotechnical Engineering Investigation with the purpose of evaluating the soil conditions in terms of foundation design. The scope of our services did not include any Environmental Site Assessment for the presence or absence of hazardous and/or toxic materials in the soil, groundwater, or atmosphere; or the presence of wetlands. Any statements, or absence of statements, in this report or on any boring log regarding odors, unusual or suspicious items, or conditions observed, are strictly for descriptive purposes and are not intended to convey engineering judgment regarding potential hazardous and/or toxic assessment.

The geotechnical engineering information presented herein is based upon professional interpretation utilizing standard engineering practices and a degree of conservatism deemed proper for this project. It is not warranted that such information and interpretation cannot be superseded by future geotechnical engineering developments. We emphasize that this report is valid for the project outlined above and should not be used for any other sites.

If you have any questions or if we may be of further assistance, please do not hesitate to contact our office at (559) 348-2200.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

Steve Nelson
Project Engineer

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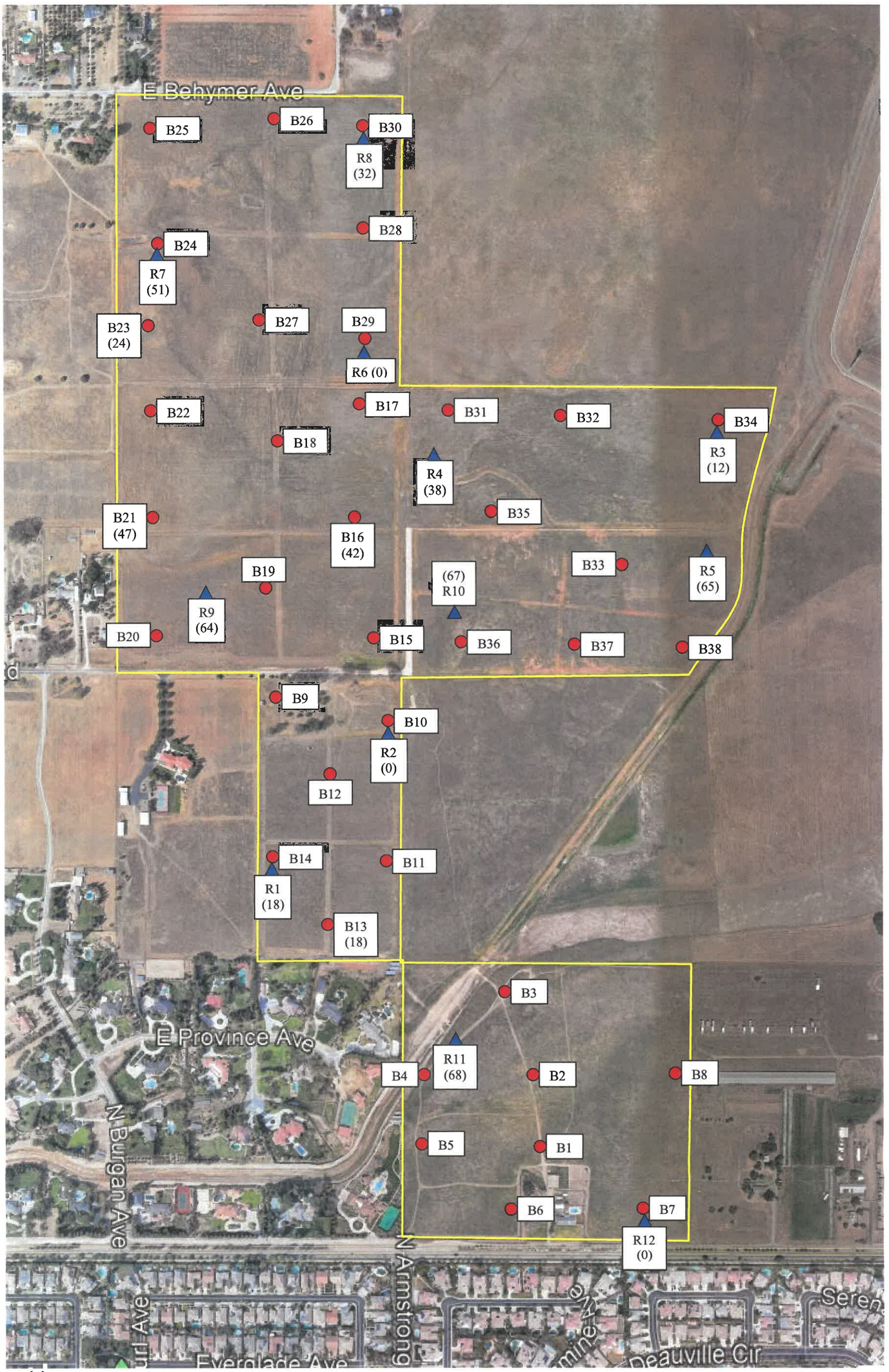


[ ] EXPANSION INDEX

● APPROXIMATE BORING LOCATION

▲ APPROXIMATE R-VALUE LOCATION

SITE MAP	Scale: NTS	Date: March 2021	Krazan GEOTECHNICAL ENGINEERING
Residential Development Behymer and Armstrong Avenues Clovis, California	Drawn by: HT	Approved by: DJ	
	Project No. 012-21027	Figure No. 1	

APPENDIX A

FIELD AND LABORATORY INVESTIGATIONS

Field Investigation

The field investigation consisted of a surface reconnaissance and a subsurface exploratory program. Thirty-eight 4½-inch exploratory borings were advanced. The boring locations are shown on the site plan.

The soils encountered were logged in the field during the exploration and, with supplementary laboratory test data, are described in accordance with the Unified Soil Classification System.

Modified standard penetration tests were performed at selected depths. This test represents the resistance to driving a 2½-inch diameter core barrel sampler. The driving energy was provided by a hammer weighing 140 pounds falling 30 inches. Relatively undisturbed soil samples were obtained while performing this test. Bag samples of the disturbed soil were obtained from the auger cuttings. All samples were returned to our Clovis laboratory for evaluation.

Laboratory Investigation

The laboratory investigation was programmed to determine the physical and mechanical properties of the foundation soil underlying the site. Test results were used as criteria for determining the engineering suitability of the surface and subsurface materials encountered.

In situ moisture content, dry density, consolidation, direct shear and sieve analysis tests were determined for the undisturbed samples representative of the subsurface material. Atterberg limits, expansion index and R-value tests were completed for select bag samples obtained from the auger cuttings. These tests, supplemented by visual observation, comprised the basis for our evaluation of the site material.

The logs of the exploratory borings and laboratory determinations are presented in this Appendix.

UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)		
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)	
	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
	GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	
	GM	Silty gravels, gravel-sand-silt mixtures
	GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)	
	SW	Well-graded sands, gravelly sands, little or no fines
	SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	
	SM	Silty sands, sand-silt mixtures
	SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)		
SILTS AND CLAYS Liquid limit less than 50%	ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity
	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
	CH	Inorganic clays of high plasticity, fat clays
	OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS	PT	Peat and other highly organic soils

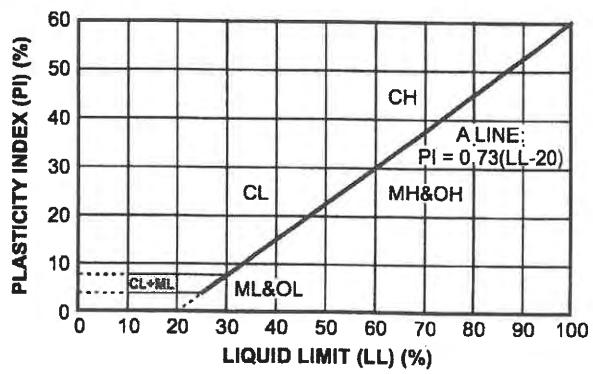
CONSISTENCY CLASSIFICATION

Description	Blows per Foot
Granular Soils	
Very Loose	< 5
Loose	5 – 15
Medium Dense	16 – 40
Dense	41 – 65
Very Dense	> 65
Cohesive Soils	
Very Soft	< 3
Soft	3 – 5
Firm	6 – 10
Stiff	11 – 20
Very Stiff	21 – 40
Hard	> 40

GRAIN SIZE CLASSIFICATION

Grain Type	*Standard Sieve Size*	*Grain Size in Millimeters*
Boulders	Above 12 inches	Above 305
Cobbles	12 to 13 inches	305 to 76.2
Gravel	3 inches to No. 4	76.2 to 4.76
Coarse-grained	3 to ¾ inches	76.2 to 19.1
Fine-grained	¾ inches to No. 4	19.1 to 4.76
Sand	No. 4 to No. 200	4.76 to 0.074
Coarse-grained	No. 4 to No. 10	4.76 to 2.00
Medium-grained	No. 10 to No. 40	2.00 to 0.042
Fine-grained	No. 40 to No. 200	0.042 to 0.074
Silt and Clay	Below No. 200	Below 0.074

PLASTICITY CHART



Log of Boring B1

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-1

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** None **At Completion:** None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily						
2		Loose below 12 inches Medium dense below 2 feet	116.9	7.7		22		
4								
		Dense below 5 feet	114.7	4.0		53		
6								
8								
10		Medium dense below 10 feet	112.3	5.8		26		
12								
14		***CLAYEY SAND (SC)*** Very dense, fine- to coarse-grained; reddish-brown, damp, drills firmly						
16			118.8	6.0		50+		
18								
20								

Drill Method: Solid Flight

Drill Date: 2-11-21

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 20 Feet

Sheet: 1 of 1

Log of Boring B2

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-2

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches						
2		***SANDY SILT (ML)*** Medium dense, fine- to medium-grained; brown, damp, drills easily	104.8	10.6		20		
4		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained; brown, damp, drills easily	112.4	4.8		30		
6								
8		Dense below 8 feet	113.7	5.0		46		
10								
12								
14								
16		End of Borehole						
18								
20								

Drill Method: Solid Flight

Drill Date: 2-11-21

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B3

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-3

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches						
2		***SAND (SP)*** Loose, fine- to medium-grained; brown, damp, drills easily	102.9	2.3		10		
4		Medium dense below 5 feet						
6			107.7	3.4		17		
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-11-21

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B4

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-4

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; dark brown, damp, drills easily Loose below 12 inches Medium dense below 2 feet						
2			99.3	8.0		21		
4								
6			114.8	8.0		21		
		Brown below 7 feet						
8								
10			108.7	9.2		24		
12								
14								
16			107.8	11.8		21		
18								
20								

Drill Method: Solid Flight

Drill Date: 2-11-21

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 20 Feet

Sheet: 1 of 1

Log of Boring B5

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-5

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches Medium dense below 2 feet						
2			114.0	6.4		24		
4								
6			110.6	2.1		43		
8		***SANDY SILT (ML)*** Very dense, fine- to medium-grained, weakly cemented; brown, damp, drills firmly	112.3	5.0		50+		
10								
12		***SANDY SILT (ML)*** Very dense, fine- to medium-grained; brown, damp, drills firmly						
14								
16		End of Borehole						
18								
20								

Drill Method: Solid Flight

Drill Date: 2-11-21

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B6

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-6

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily						
2		Loose below 12 inches Medium dense below 2 feet	114.4	8.2		29		
4		Dense below 5 feet	108.7	5.0		46		
6								
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-11-21

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B7

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-7

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches Medium dense below 2 feet						
2			105.1	5.1		24		
4								
6			107.5	4.5		27		
8								
		CLAYEY SAND (SC) Dense, fine- to coarse-grained; brown, damp, drills firmly						
10			114.5	4.0		61		
12								
14		***CLAYEY SANDY SILT (ML)*** Very dense, fine- to medium-grained; brown, damp, drills firmly						
16			109.1	6.2		66		
18								
20								

Drill Method: Solid Flight

Drill Date: 2-11-21

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 20 Feet

Sheet: 1 of 1

Log of Boring B8

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-8

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches						
2			112.3	7.8		12		
4		Dense below 5 feet						
6			112.4	4.5		60		
8		Medium dense below 8 feet	97.5	3.7		22		
10								
12								
14								
16		End of Borehole						
18								
20								

Drill Method: Solid Flight

Drill Date: 2-11-21

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B9

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-9

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: R. Alexander

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches						
2		***SILTY SAND (SM)*** Very dense, fine- to medium-grained, weakly cemented; light orangish-brown, damp, drills hard	118.4	9.5		50+		
4		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained with trace CLAY; light brown, damp, drills easily	124.2	2.9		26		
6								
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-11-21

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B10

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-10

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: R. Alexander

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches						
2			123.3	6.8		14		
4		Medium dense and orangish-brown below 5 feet	125.7	6.3		36		
6								
8		***CLAYEY SAND (SC)*** Medium dense, fine- to medium-grained; light brown, damp, drills firmly						
10		***SILTY SAND (SM)*** Very dense, fine- to medium-grained; brown, damp, drills hard	126.7	8.0		50+		
12								
14		Medium dense and drills easily below 15 feet	118.6	8.7		28		
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-11-21

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 20 Feet

Sheet: 1 of 1

Log of Boring B11

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-11

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: R. Alexander

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches						
2		***SILTY SAND (SM)*** Very dense, fine- to medium-grained, weakly cemented; light orangish-brown, damp, drills hard	105.7	12.2		50+		
4		***CLAYEY SAND (SC)*** Dense, fine- to medium-grained; light brown, damp, drills firmly	110.5	6.7		42		
6		***SILTY SAND (SM)*** Dense, fine- to medium-grained; brown, damp, drills firmly Medium dense below 8 feet						
8			124.4	13.4		31		
10								
12								
14								
		End of Borehole						
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-11-21

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B12

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-12

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: R. Alexander

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches						
2			113.0	7.2		54		
		SILTY SAND (SM) Dense, fine- to medium-grained, weakly cemented; brown, damp, drills hard						
4								
		SILTY SAND (SM) Very dense, fine- to medium-grained; brown, damp, drills firmly	128.9	6.8		66		
6								
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-11-21

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B13

Project: Residential Development | **Project No:** 012-21027

Client: Wilson Homes | **Figure No.:** A-13

Location: Behymer and Armstrong Avenues, Clovis, California | **Logged By:** R. Alexander

Depth to Water> | **Initial:** None | **At Completion:** None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily						
2		***SAND (SP)*** Loose, fine- to medium-grained; tan, damp, drills easily	102.0	10.3		8		
4		***CLAYEY SAND (SC)*** Loose, fine- to medium-grained; brown, damp, drills easily						
6		***SAND (SP)*** Medium dense, fine- to medium-grained; tan, damp, drills easily	122.9	12.5		40		
8		***SANDY CLAY (CL)*** Very stiff, fine- to medium-grained; brown, damp, drills firmly						
10		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained; brown, damp, drills easily	126.1	10.9		36		
12								
14		***CLAYEY SAND (SC)*** Dense, fine- to medium-grained; brown, damp, drills firmly						
16		***SILTY SAND (SM)*** Dense, fine- to medium-grained; brown, damp, drills firmly	123.1	11.9		49		
18								
20								

Drill Method: Solid Flight | **Drill Date:** 2-11-21

Drill Rig: CME 45B | **Hole Size:** 4½ Inches

Driller: Brent Snyder | **Elevation:** 20 Feet

Krazan and Associates

Log of Boring B14

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-14

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: R. Alexander

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily						
2		***SAND (SP)*** Medium dense, fine- to medium-grained; tan, damp, drills easily	112.2	7.4		39		
4		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained; light brown, damp, drills firmly	123.7	4.2		36		
8		***SILTY SAND (SM)*** Dense, fine- to medium-grained; brown, damp, drills firmly	125.7	10.0		48		
10								
12								
14								
		End of Borehole						
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-11-21

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Log of Boring B15

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-15

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: Wayne Andrade

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		CLAYEY SAND (SC) Very loose, fine- to medium-grained; brown, moist, drills easily Loose below 12 inches						
2		***SILTY SAND (SM)*** Very dense, fine- to medium-grained with trace CLAY, weakly cemented; light brown, damp, drills hard		7.3		50+		
4		***CLAYEY SAND (SC)*** Medium dense, fine- to medium-grained; brown, damp, drills easily	100.4	8.6		36		
6								
8		***SANDY CLAYEY SILT (ML)*** Dense, fine-grained; brown, moist, drills firmly						
10			125.5	9.8		42		
12								
14		Very dense and drills hard below 14 feet						
16			112.8	15.9		50+		
18								
20								

Drill Method: Solid Flight

Drill Date: 2-15-21

Drill Rig: CME 45C-1

Krazan and Associates

Hole Size: 4½ Inches

Driller: Chris Wyneken

Elevation: 20 Feet

Sheet: 1 of 1

Log of Boring B16

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-16

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: Wayne Andrade

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		CLAYEY SAND (SC) Very loose, fine- to medium-grained; brown, moist, drills easily						
2		Loose below 12 inches						
		Dense with increased CLAY below 1½ feet	124.4	7.6		46		
4		***SILTY SAND/CLAYEY SAND (SM/SC)*** Very dense, fine- to medium-grained; light brown, damp, drills hard						
			113.0	5.7		50+		
6		Dense below 7 feet						
8			114.8	3.9		54		
10								
12								
14								
		End of Borehole						
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-15-21

Drill Rig: CME 45C-1

Krazan and Associates

Hole Size: 4½ Inches

Driller: Chris Wyneken

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B17

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-17

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: Wayne Andrade

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		CLAYEY SAND (SC) Very loose, fine-grained; dark brown, moist, drills easily Loose below 12 inches						
2		***CLAYEY SAND (SC)*** Very dense, fine-grained; brown, damp, drills hard	111.9	14.3		65		
4		***DECOMPOSED GRANITE (DG)*** Dense, highly weathered; light gray, damp, drills firmly	126.4	8.5		61		
6								
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-15-21

Drill Rig: CME 45C-1

Krazan and Associates

Hole Size: 4½ Inches

Driller: Chris Wyneken

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B18

Project: Residential Development | **Project No:** 012-21027

Client: Wilson Homes | **Figure No.:** A-18

Location: Behymer and Armstrong Avenues, Clovis, California | **Logged By:** Wayne Andrade

Depth to Water> | **Initial:** None | **At Completion:** None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		CLAYEY SAND (SC) Very loose, fine-grained; brown, moist, drills easily						
2		Loose below 12 inches Medium dense below 2 feet	100.2	7.9		16		
4		***DECOMPOSED GRANITE (DG)*** Very dense, highly weathered; light gray, damp, drills hard	111.8	6.6		50+		
6								
8		***DECOMPOSED GRANITE (DG)*** Very dense, moderately weathered; gray, damp, drills hard						
10						50+		
12		Auger refusal at 12 feet						
		End of Borehole						
14								
16								
18								
20								

Drill Method: Solid Flight | **Drill Date:** 2-15-21

Drill Rig: CME 45C-1 | **Krazan and Associates** | **Hole Size:** 4½ Inches

Driller: Chris Wyneken | **Elevation:** 12 Feet

Sheet: 1 of 1

Log of Boring B19

Project: Residential Development | **Project No:** 012-21027

Client: Wilson Homes | **Figure No.:** A-19

Location: Behymer and Armstrong Avenues, Clovis, California | **Logged By:** Wayne Andrade

Depth to Water> | **Initial:** None | **At Completion:** None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		CLAYEY SAND (SC) Very loose, fine-grained; brown, moist, drills easily						
2		Loose below 12 inches						
		SILTY SAND (SM) Very dense, fine-grained, weakly cemented; orangish-brown, damp, drills hard		26.7		50+		
4								
		SILTY SAND (SM) Medium dense, fine-grained; light brown, damp, drills easily	125.4	8.3		32		
6								
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight | **Drill Date:** 2-15-21

Drill Rig: CME 45C-1 | **Hole Size:** 4½ Inches

Driller: Chris Wyneken | **Elevation:** 10 Feet

Krazan and Associates

Log of Boring B20

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-20

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: Wayne Andrade

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		CLAYEY SAND (SC) Very loose, fine- to medium-grained; brown, moist, drills easily						
2		***SILTY SAND (SM)*** Dense, fine-grained with trace CLAY; orangish-brown, damp, drills firmly		6.2		25		
4		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained; light brown, damp, drills easily						
6		***CLAYEY SAND (SC)*** Loose, fine- to medium-grained; brown, moist, drills easily	115.1	12.5		7		
8		Medium dense below 8 feet	123.7	13.6		24		
10								
12								
14								
16		End of Borehole						
18								
20								

Drill Method: Solid Flight

Drill Date: 2-15-21

Drill Rig: CME 45C-1

Krazan and Associates

Hole Size: 4½ Inches

Driller: Chris Wyneken

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B21

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-21

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: Wayne Andrade

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		CLAYEY SAND (SC) Very loose, fine- to medium-grained; brown, moist, drills easily Loose below 12 inches						
2		***DECOMPOSED GRANITE (DG)*** Very dense, highly weathered; light gray, damp, drills hard		7.3		50+		
4		***DECOMPOSED GRANITE (DG)*** Very dense, moderately weathered; light gray, damp, drills hard				50+		
6								
8								
10		Auger refusal at 10 feet						
		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-15-21

Drill Rig: CME 45C-1

Krazan and Associates

Hole Size: 4½ Inches

Driller: Chris Wyneken

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B22

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-22

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: Wayne Andrade

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		CLAYEY SAND (SC) Very loose, fine- to medium-grained; brown, moist, drills easily						
2		***DECOMPOSED GRANITE (DG)*** Very dense, moderately weathered; light gray, damp, drills hard		6.8		50+	▲	■
4		Auger refusal at 4½ feet						
		End of Borehole						
6								
8								
10								
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-15-21

Drill Rig: CME 45C-1

Krazan and Associates

Hole Size: 4½ Inches

Driller: Chris Wyneken

Elevation: 4½ Feet

Sheet: 1 of 1

Log of Boring B23

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-23

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: Wayne Andrade

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		CLAYEY SAND (SC) Very loose, fine- to medium-grained; brown, moist, drills easily Loose below 12 inches						
2		***SILTY SAND (SM)*** Very dense, fine- to medium-grained with trace CLAY, weakly cemented; light brown, damp, drills hard	111.1	11.4		50+		
4		***SILTY SAND (SM)*** Very dense, fine- to medium-grained with trace CLAY; brown, damp, drills hard	127.1	7.1		50+		
6								
8		***CLAYEY SAND (SC)*** Very dense, fine- to medium-grained; brown, damp, drills hard						
10			126.7	11.1		50+		
12								
14		***DECOMPOSED GRANITE (DG)*** Very dense, highly weathered; light brown, damp, drills hard	107.7	11.1		50+		
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-15-21

Drill Rig: CME 45C-1

Krazan and Associates

Hole Size: 4½ Inches

Driller: Chris Wyneken

Elevation: 20 Feet

Sheet: 1 of 1

Log of Boring B24

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-24

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: Carlos Jimenez

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		CLAYEY SAND (SC) Very loose, fine- to medium-grained; brown, moist, drills easily Loose below 12 inches						
2		***SILTY SAND (SM)*** Very dense, fine-grained, weakly cemented; light brown, damp, drills hard	119.0	13.6		41		
4								
6			123.2	13.3		50+		
		SILTY SAND (SM) Very dense, fine-grained with trace CLAY; light brown, moist, drills hard						
8			116.9	11.5		50+		
10								
12								
14								
		End of Borehole						
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-15-21

Drill Rig: CME 45C-1

Krazan and Associates

Hole Size: 4½ Inches

Driller: Chris Wyneken

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B25

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-25

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: Carlos Jimenez

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		CLAYEY SAND (SC) Very loose, fine- to medium-grained; brown, moist, drills easily						
2		***SILTY SAND (SM)*** Very dense, fine-grained, weakly cemented; light brown, damp, drills hard				50+		
4		***CLAYEY SILT (ML)*** Very dense; brown, damp, drills hard						
6			109.8	20.8		72		
8		***CLAYEY SAND (SC)*** Very dense, fine- to medium-grained; brown, damp, drills hard						
10			125.5	8.3		50+		
12								
14		***SILTY SAND (SM)*** Very dense, fine-grained with trace CLAY; brown, damp, drills hard						
16			128.0	8.2		50+		
18								
20								

Drill Method: Solid Flight

Drill Date: 2-15-21

Drill Rig: CME 45C-1

Krazan and Associates

Hole Size: 4½ Inches

Driller: Chris Wyneken

Elevation: 20 Feet

Sheet: 1 of 1

Log of Boring B26

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-26

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: Carlos Jimenez

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		CLAYEY SAND (SC) Very loose, fine- to medium-grained; brown, moist, drills easily						
2		***CLAYEY SILT (ML)*** Very dense, weakly cemented; light brown, damp, drills hard	114.1	8.7		50+		
4								
6			119.9	6.3		50+		
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-15-21

Drill Rig: CME 45C-1

Krazan and Associates

Hole Size: 4½ Inches

Driller: Chris Wyneken

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B27

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-27

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: R. Alexander

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***CLAYEY SAND (SC)*** Very loose, fine-grained; brown, moist, drills easily Loose below 12 inches						
2		***SILTY SAND (SM)*** Very dense, fine- to medium-grained, weakly cemented; reddish-brown, damp, drills hard		16.7		50+		
4		***DECOMPOSED GRANITE (DG)*** Dense, highly weathered; light brown, damp, drills hard	122.2	9.1		58		
6								
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-19-21

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B28

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-28

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: R. Alexander

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SANDY CLAY (CL) Very loose, fine- to medium-grained; brown, damp, drills easily						
2		Stiff below 12 inches						
		Very stiff and drills firmly below 2 feet	121.7	10.8		39		
		DECOMPOSED GRANITE (DG) Very dense, highly weathered; gray-tan, damp, drills hard						
4								
			102.8	10.2		50+		
6								
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-19-21

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B29

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-29

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: R. Alexander

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SANDY CLAY (CL)*** Very loose, fine- to medium-grained; brown, damp, drills easily						
2		Stiff below 12 inches						
		Hard and drills firmly below 2 feet	124.1	14.5		42		
4								
			123.9	8.3		50+		
6		***SILTY SAND (SM)*** Very dense, fine- to medium-grained; gray, damp, drills hard						
8								
10			91.2	8.2		50+		
12								
14								
		End of Borehole						
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-19-21

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B30

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-30

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: R. Alexander

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SANDY CLAY (CL)*** Very loose, fine- to medium-grained; brown, damp, drills easily Firm below 12 inches Very stiff and drills firmly below 2 feet						
2			116.6	13.8		36		
4		***DECOMPOSED GRANITE (DG)*** Very dense, highly weathered; light gray, damp, drills hard						
6			103.4	7.9		50+		
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-19-21

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 10 Feet

Log of Boring B31

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-31

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: R. Alexander

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SANDY CLAY (CL) Very loose, fine-grained; brown, damp, drills easily						
2		Stiff below 12 inches						
		Hard below 2 feet	107.8	15.3		44		
4		***SILTY CLAY (CL)*** Hard; reddish-brown, damp, drills firmly						
			114.7	14.4		44		
6		***SILTY SAND (SM)*** Dense, fine- to medium-grained; brown, damp, drills firmly						
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-19-21

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B32

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-32

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: R. Alexander

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SANDY CLAY (CL) Very loose, fine- to medium-grained; brown, damp, drills easily Stiff below 12 inches						
2		***SILTY SAND (SM)*** Very dense, fine- to medium-grained; brown, damp, drills hard Medium dense below 3½ feet	125.7	7.9		50+		
4								
						33		
6								
8								
		SILTY CLAY (CL) Hard; brown, moist, drills firmly						
10			115.6	15.3		41		
12								
14		***SANDY CLAY (CL)*** Hard, fine-grained; brown, damp, drills firmly						
			124.4	13.4		47		
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-19-21

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 20 Feet

Sheet: 1 of 1

Log of Boring B33

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-33

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: R. Alexander

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained with CLAY; brown, damp, drills easily Loose below 12 inches						
2		***SILTY SAND (SM)*** Very dense, fine- to medium-grained, weakly cemented; light brown, damp, drills hard				50+		
4		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained; brown, damp, drills firmly	129.5	9.6		39		
6								
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-19-21

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B34

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-34

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: R. Alexander

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained with CLAY; reddish-brown, damp, drills easily Loose below 12 inches						
2		***CLAYEY SAND (SC)*** Very dense, fine- to medium-grained, weakly cemented; brown, damp, drills hard	105.1	10.0		50+		
4								
6			119.6	10.1		50+		
8		***SILTY CLAY (CL)*** Hard; reddish-brown, damp, drills firmly						
10		***DECOMPOSED GRANITE (DG)*** Very dense, highly weathered; gray, damp, drills hard		8.6		50+		
12								
14								
16		End of Borehole						
18								
20								

Drill Method: Solid Flight

Drill Date: 2-19-21

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B35

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-35

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: R. Alexander

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches						
2		***SILTY SAND (SM)*** Very dense, fine- to medium-grained, weakly cemented; light brown, damp, drills hard	109.5	5.8		50+		
4								
6		***SILTY SAND (SM)*** Dense, fine- to medium-grained; brown, damp, drills firmly	120.5	4.7		48		
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-19-21

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B36

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-36

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: R. Alexander

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches						
2		***SANDY CLAY (CL)*** Very stiff, fine- to medium-grained; dark brown, damp, drills firmly	96.4	8.4		32		
4		***SILTY SAND (SM)*** Very dense, fine- to medium-grained, weakly cemented; brown, damp, drills hard	123.3	11.6		50+		
6								
8								
10			116.5	7.3		50+		
12								
		SANDY CLAY (CL) Hard, fine-grained; brown, damp, drills hard						
14		***SILTY SAND (SM)*** Very dense, fine- to medium-grained; brown, damp, drills firmly	123.6	11.9		50+		
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-19-21

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 20 Feet

Sheet: 1 of 1

Log of Boring B37

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-37

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: R. Alexander

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with CLAY; brown, damp, drills easily						
2		Loose, fine-grained and light brown below 6 inches	104.9	5.8		50+		
		Very dense and drills hard below 2 feet						
4		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained; brown, damp, drills firmly						
6			125.6	9.8		37		
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 2-19-21

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B38

Project: Residential Development

Project No: 012-21027

Client: Wilson Homes

Figure No.: A-38

Location: Behymer and Armstrong Avenues, Clovis, California

Logged By: R. Alexander

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily Medium dense below 12 inches Very dense, with trace CLAY and drills hard below 18 inches	115.3	5.0		50+		
		SILTY SAND (SM) Very dense, fine- to medium-grained; brown, damp, drills hard	113.3	6.4		50+		
		SAND (SP) Medium dense, fine- to medium-grained; brown, damp, drills easily	110.8	4.4		30		
		End of Borehole						

2, 4, 6, 8, 10, 12, 14, 16, 18, 20

Drill Method: Solid Flight

Drill Date: 2-19-21

Drill Rig: CME 45B

Krazan and Associates

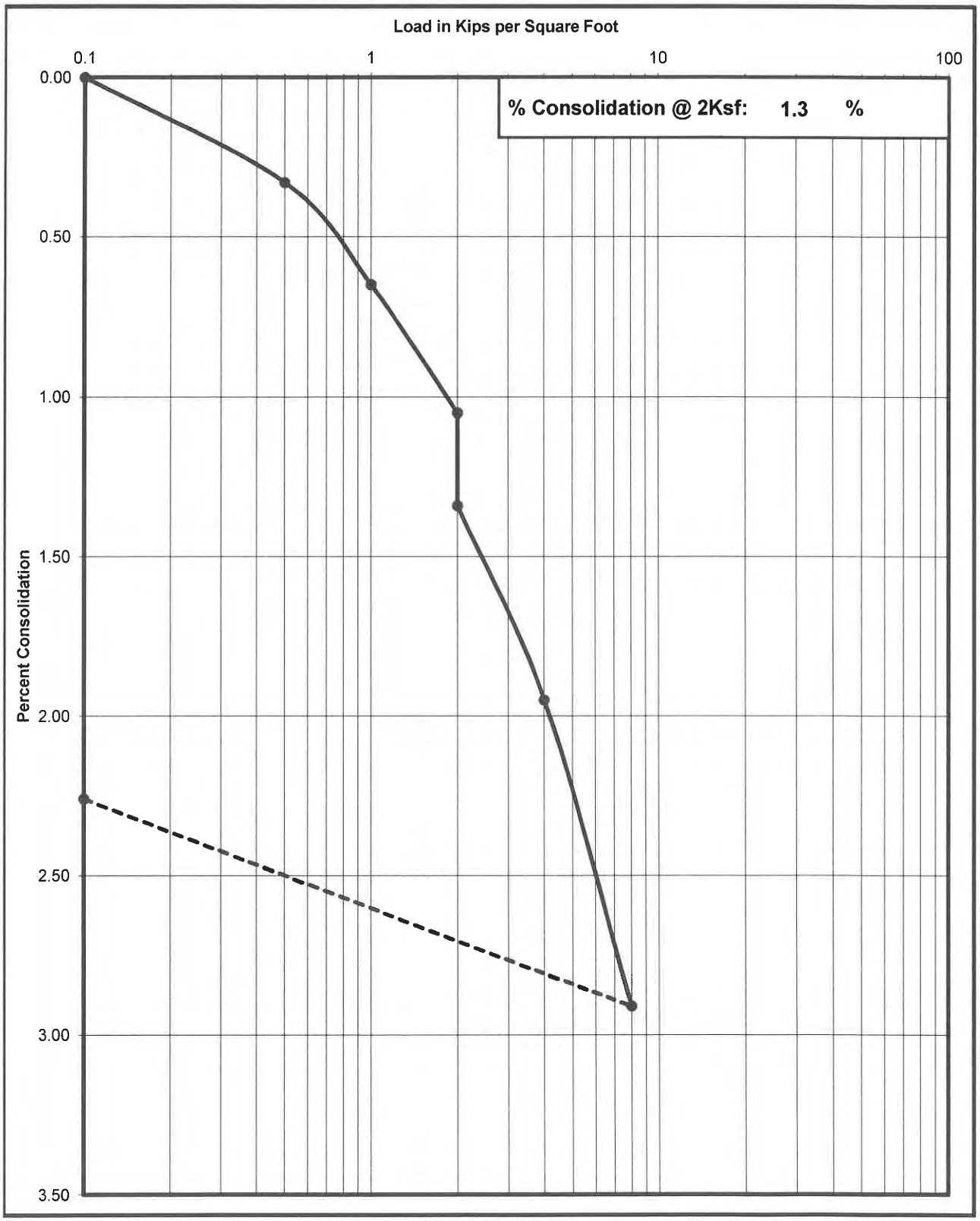
Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Consolidation Test

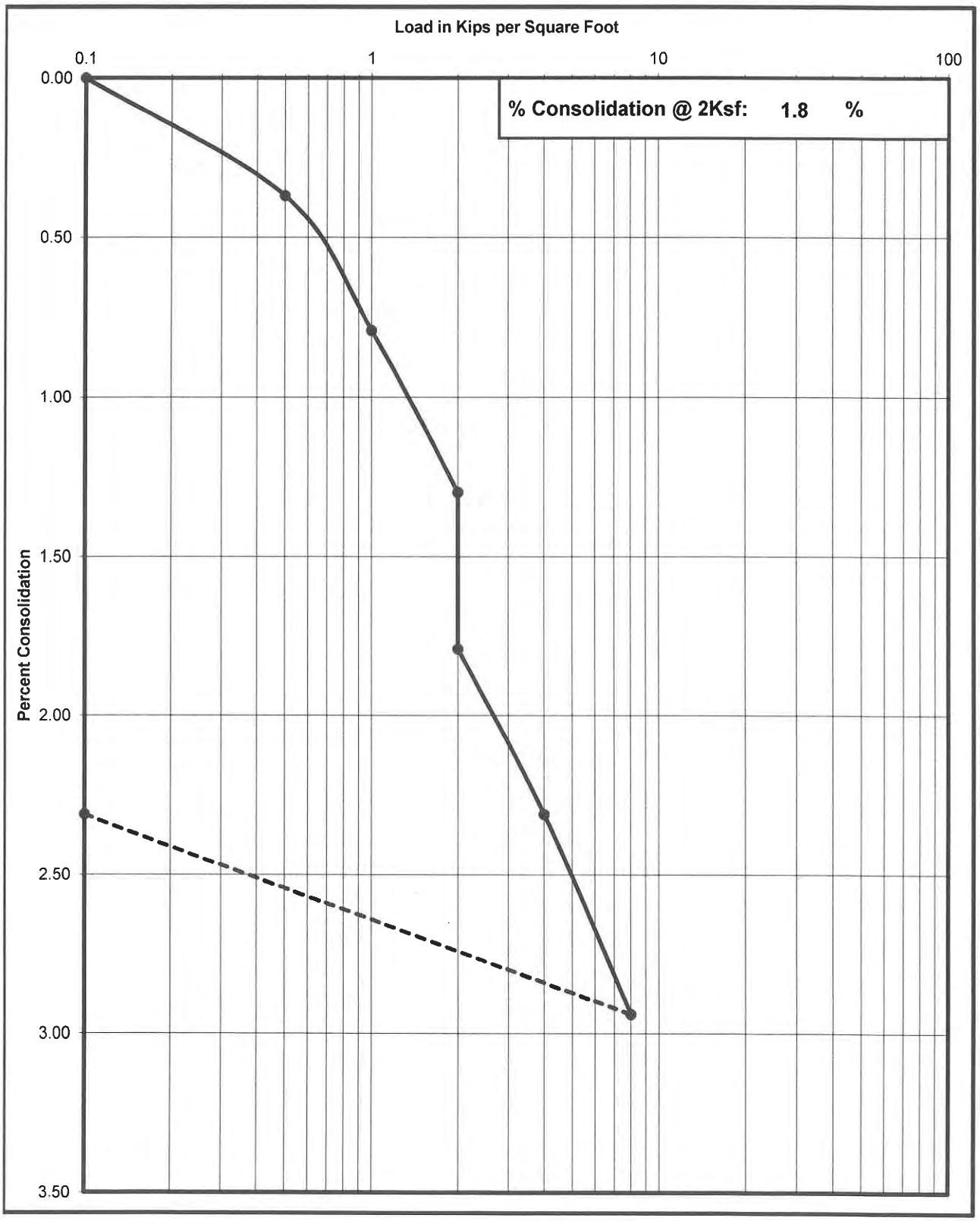
Project No	Boring No. & Depth	Date	Soil Classification
012-21027	B3 @ 2-3'	2/22/2021	SP



Krazan Testing Laboratory

Consolidation Test

Project No	Boring No. & Depth	Date	Soil Classification
012-21027	B8 @ 2-3'	2/22/2021	SM



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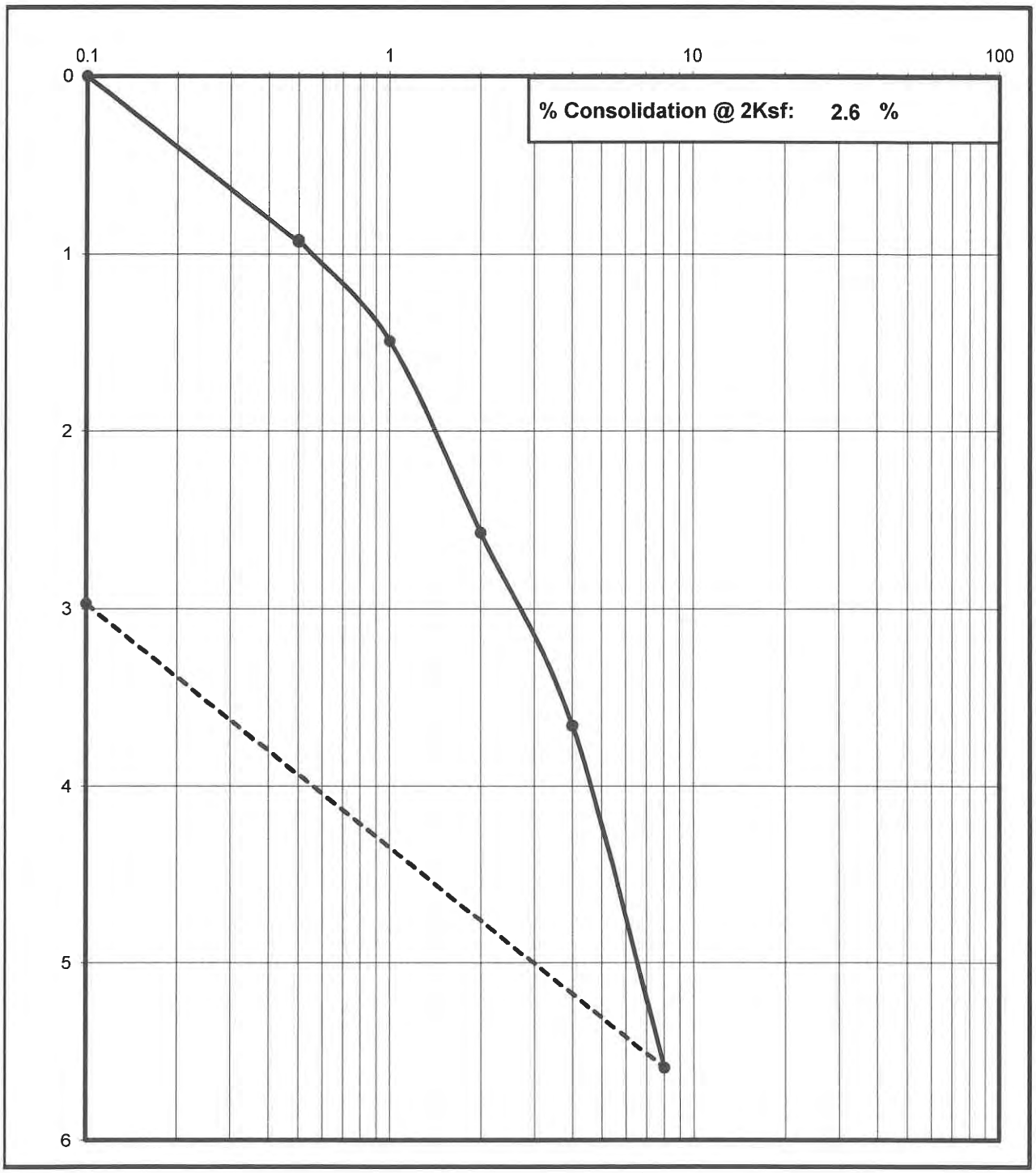
Consolidation Test

Project No	Boring No. & Depth	Date	Soil Classification
012-21027	B13 @ 2-3'	2/24/2021	SC



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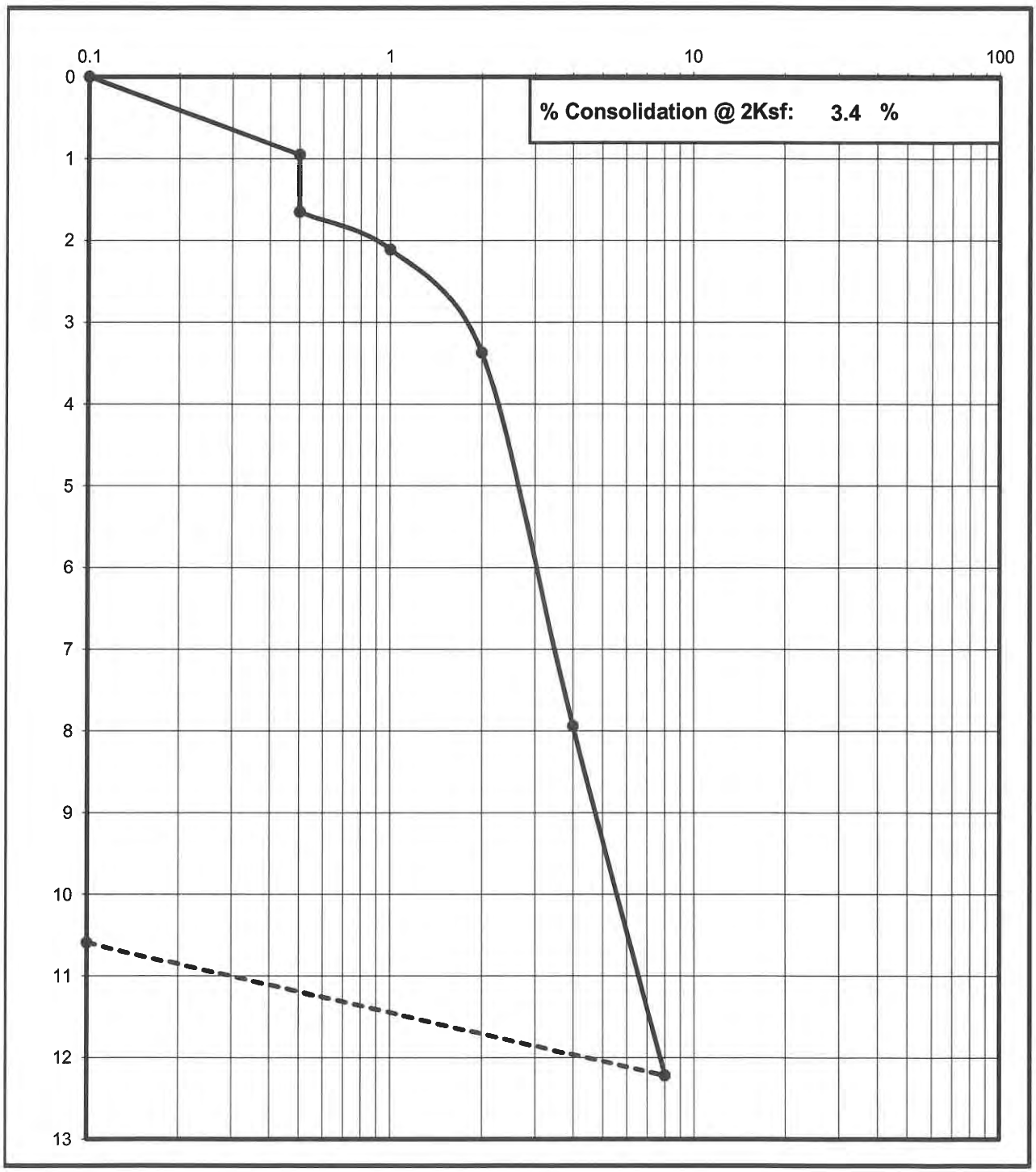
Consolidation Test

Project No	Boring No. & Depth	Date	Soil Classification
012-21027	B18 @ 2-3'	2/22/2021	SC



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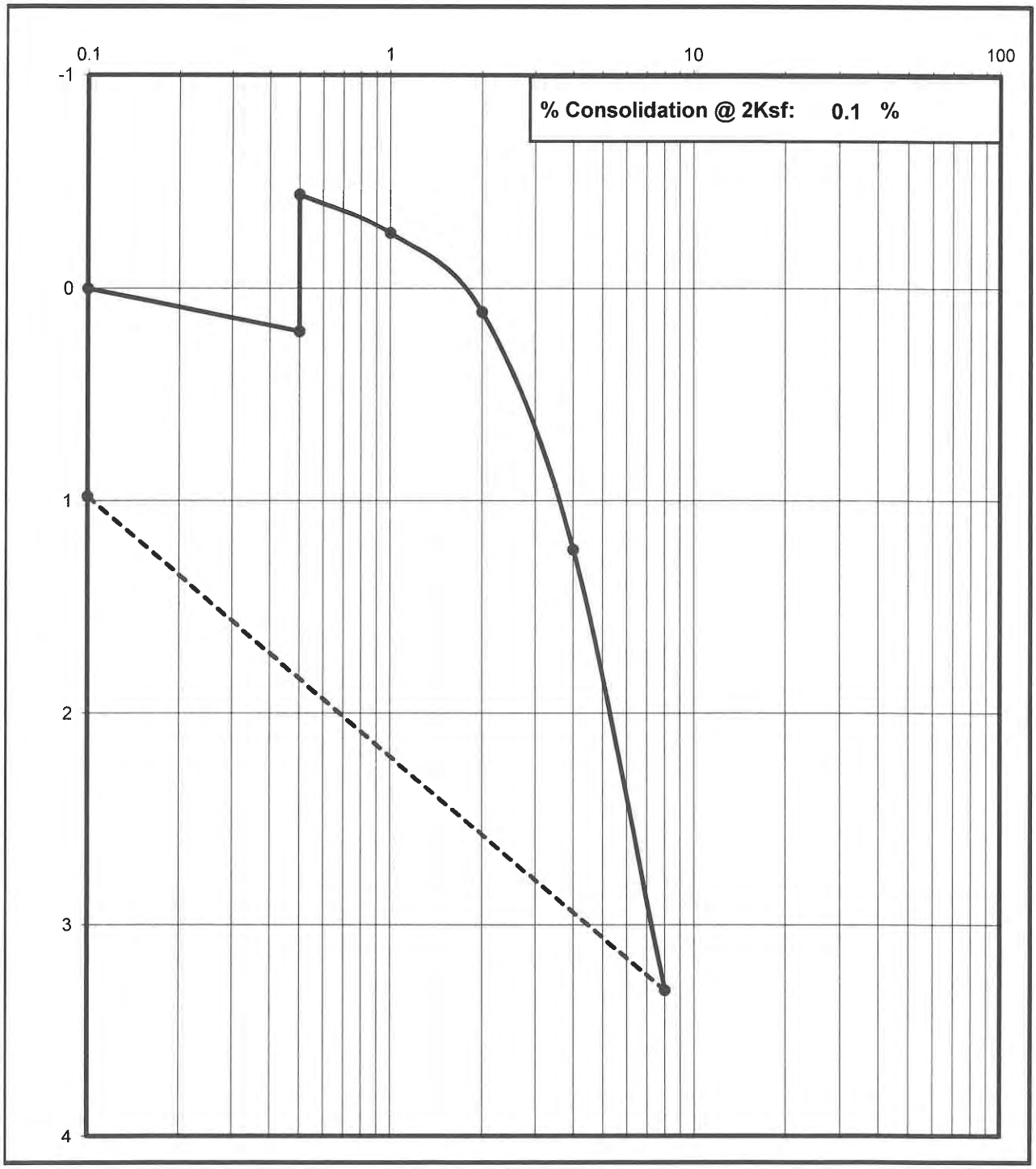
Consolidation Test

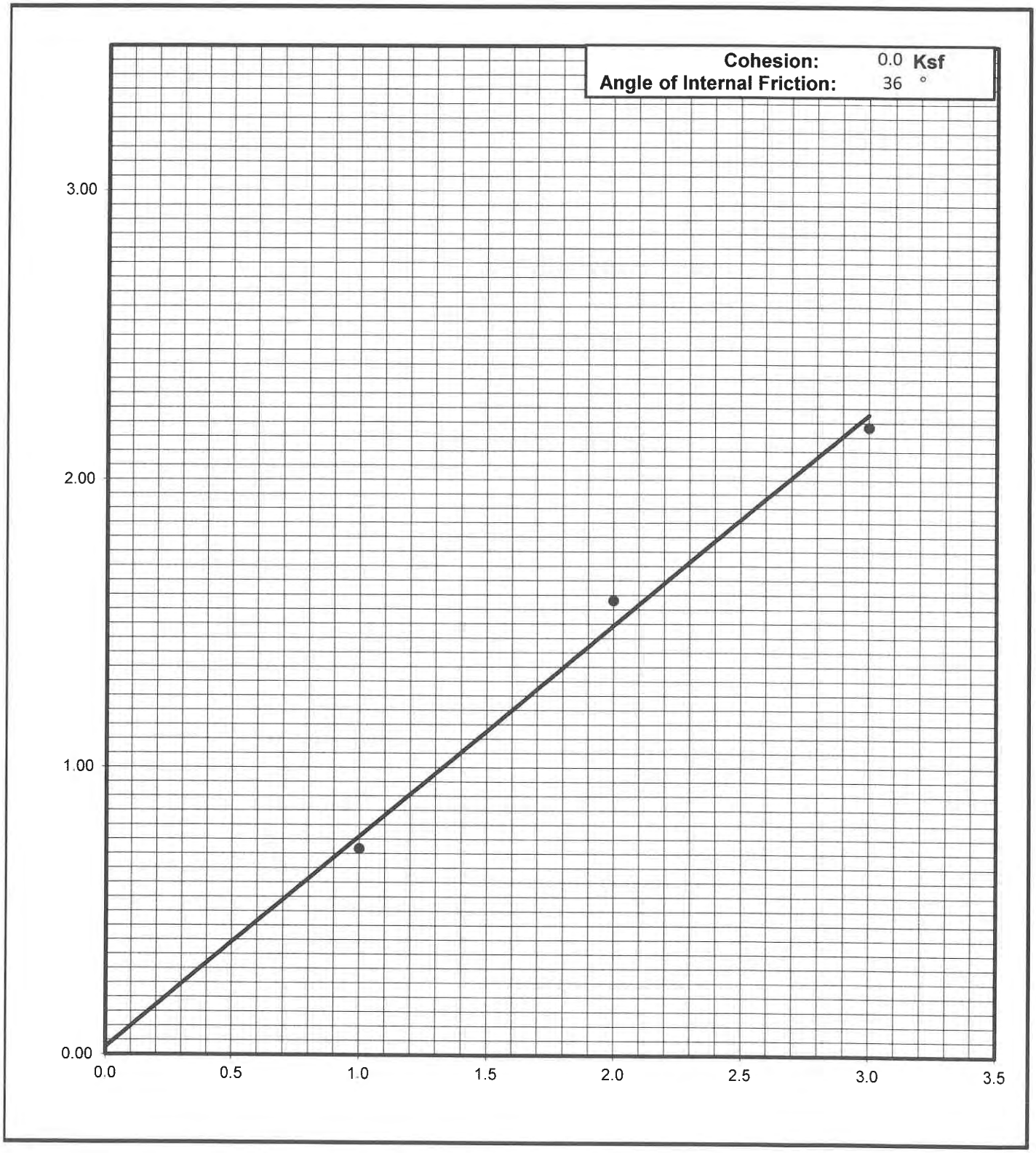
Project No	Boring No. & Depth	Date	Soil Classification
012-21027	B28 @ 2-3'	3/5/2021	CL



Krazan Testing Laboratory

Shear Strength Diagram (Direct Shear)
ASTM D - 3080 / AASHTO T - 236

Project Number	Boring No. & Depth	Soil Type	Date
012-21027	B6 @ 2-3'	SM	2/22/2021



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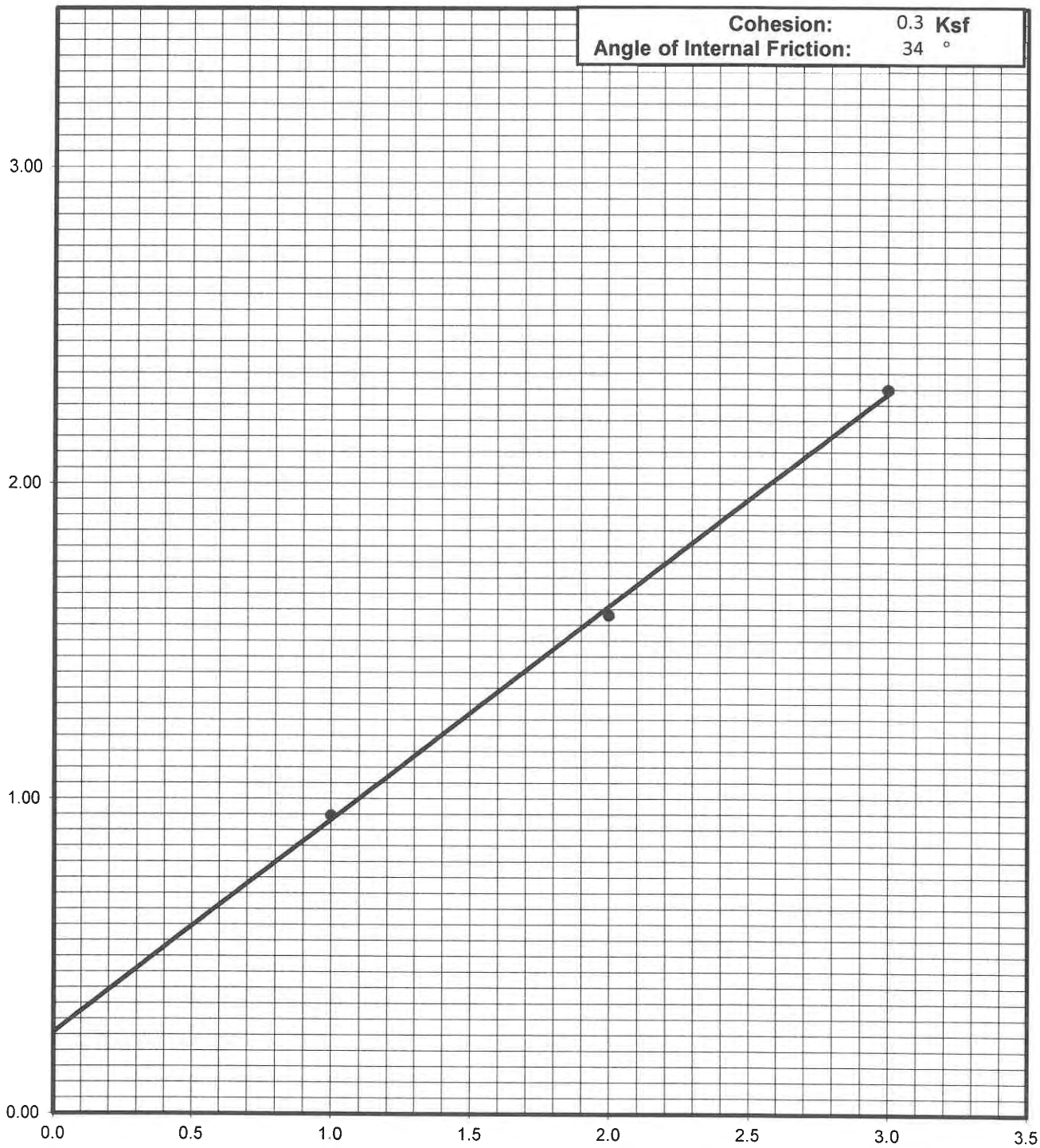
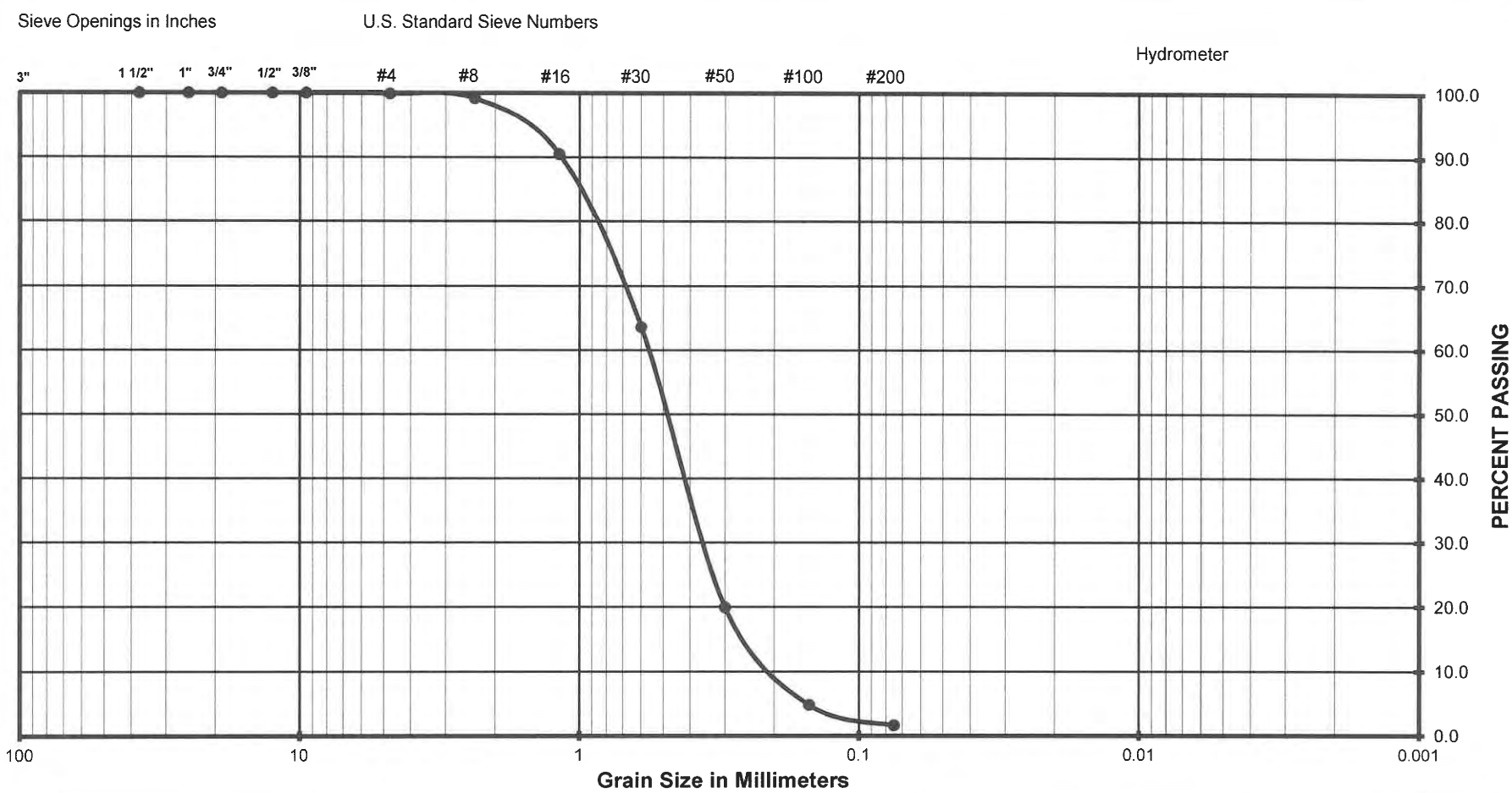
Shear Strength Diagram (Direct Shear)
ASTM D - 3080 / AASHTO T - 236

Project Number	Boring No. & Depth	Soil Type	Date
012-21027	B20 @ 5-6'	SC	2/22/2021



Krazan Testing Laboratory

Grain Size Analysis



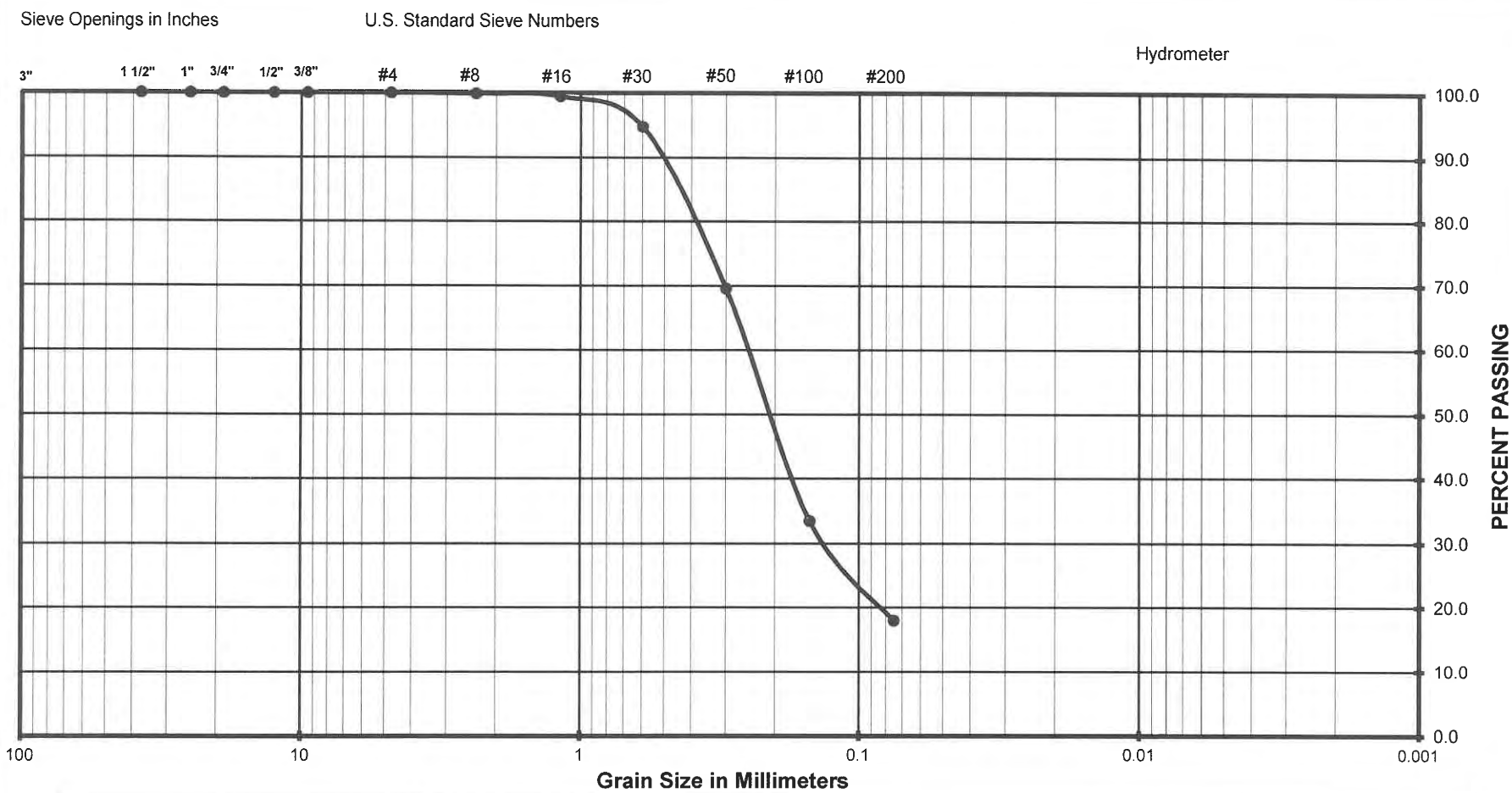
Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Residental Development
Project Number	012-21027
Soil Classification	SP
Sample Number	B3 @ 2-3'

Krazan Testing Laboratory

Grain Size Analysis



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Residental Development
Project Number	012-21027
Soil Classification	SM
Sample Number	B8 @ 2-3'

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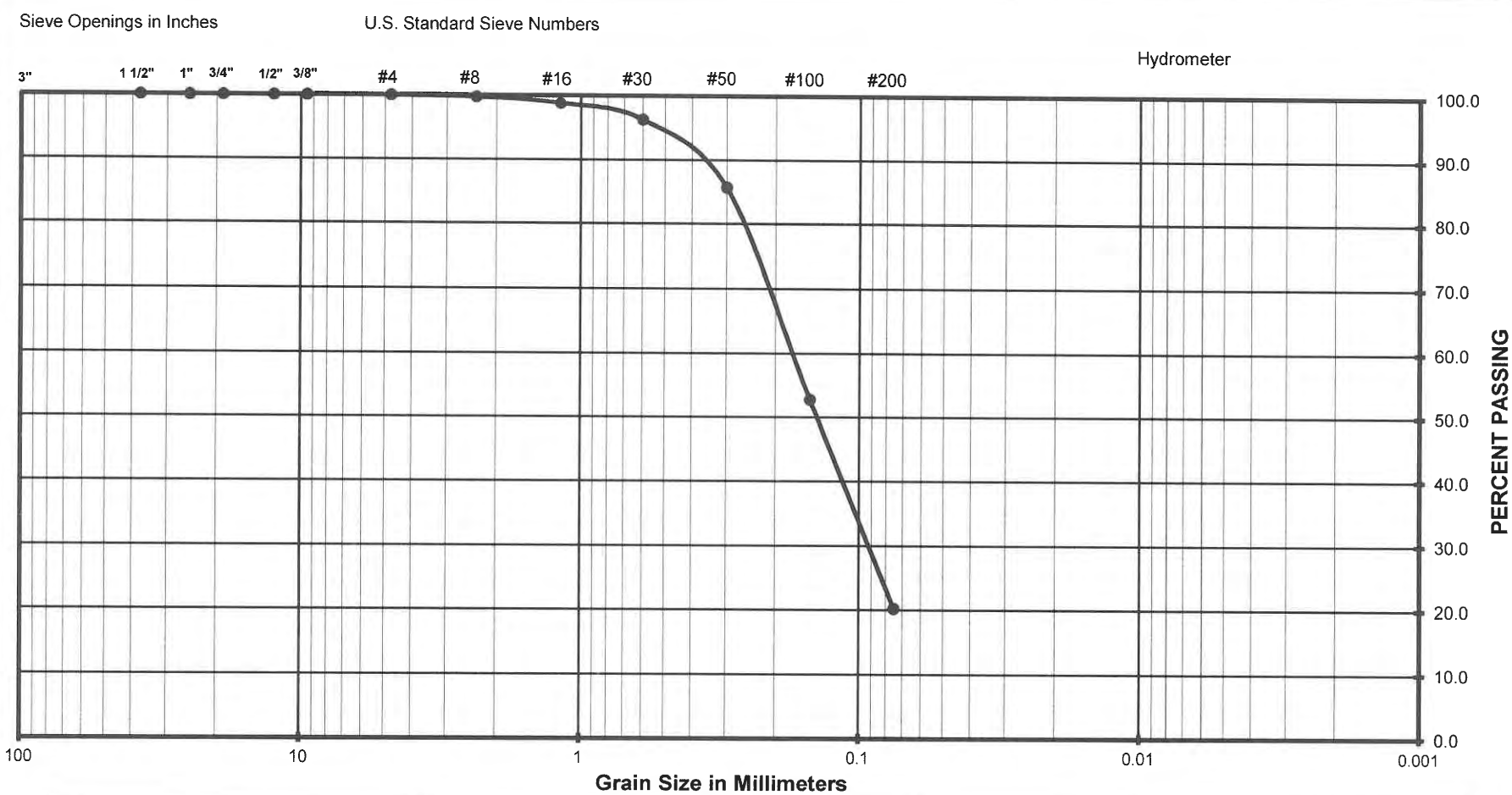
Grain Size Analysis



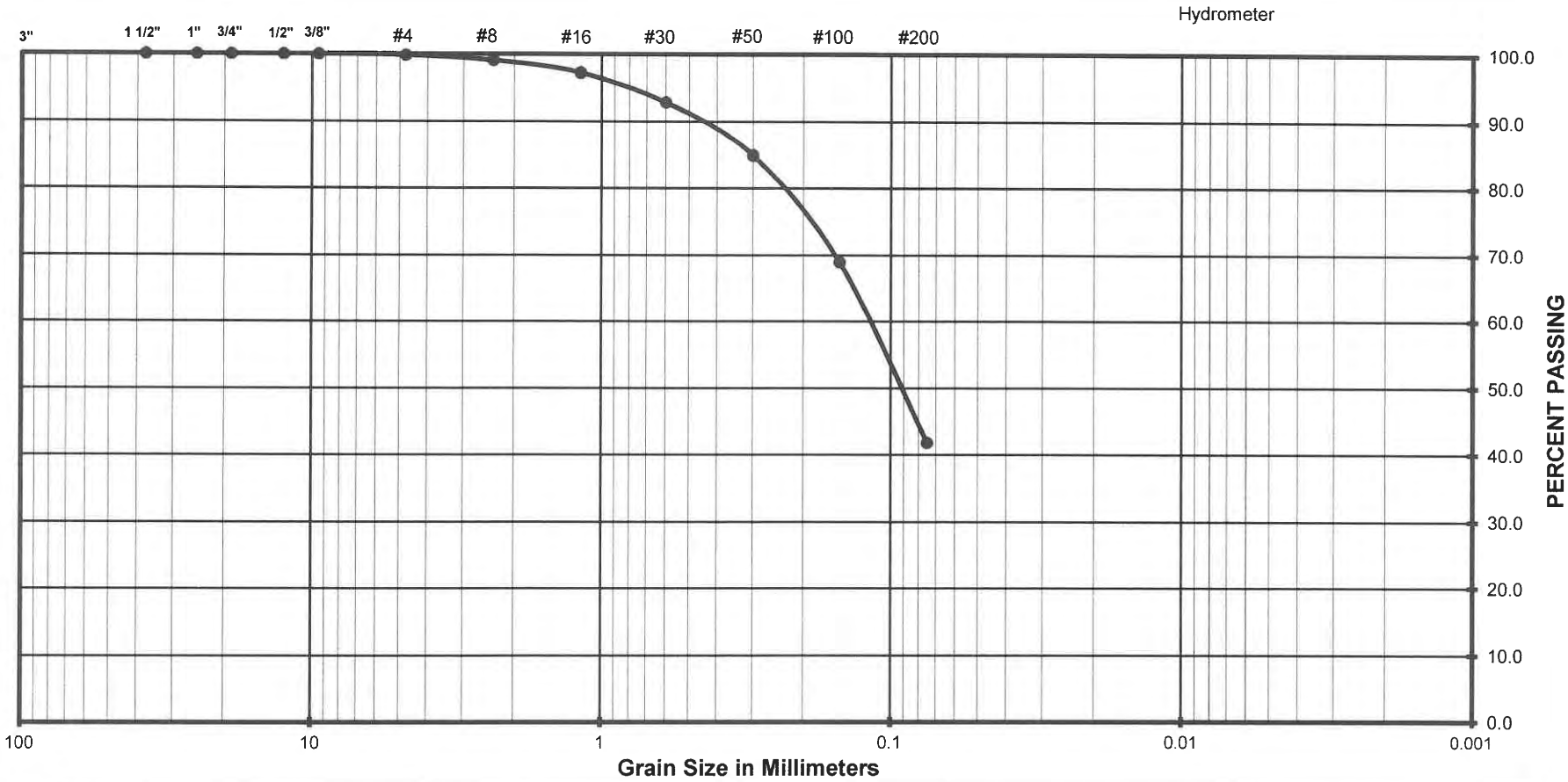
Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Residental Development
Project Number	012-21027
Soil Classification	SC
Sample Number	B13 @ 2-3'

Krazan Testing Laboratory

Grain Size Analysis



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Residental Development
Project Number	012-21027
Soil Classification	SC
Sample Number	B18 @ 2-3'

Krazan Testing Laboratory

Grain Size Analysis

Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Residental Development
Project Number	022-21027
Soil Classification	CL
Sample Number	B28 @ 2-3'

Krazan Testing Laboratory

Expansion Index Test

ASTM D - 4829

Project Number	: 012-21027
Project Name	: Residental Development
Date	: 2/22/2021
Sample location/ Depth	: B16 @ 0-2'
Sample Number	: X1A
Soil Classification	: SC

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	770.8		
Weight of Mold, gms	368.3		
Weight of Soil, gms	402.5		
Wet Density, Lbs/cu.ft.	121.4		
Weight of Moisture Sample (Wet), gms	200.0		
Weight of Moisture Sample (Dry), gms	182.0		
Moisture Content, %	9.9		
Dry Density, Lbs/cu.ft.	110.5		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	50.8		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	0.042

Expansion Index $_{measured}$ = 42

Expansion Index = 42

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

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Expansion Index Test

ASTM D - 4829

Project Number	: 012-21027
Project Name	: Residental Development
Date	: 2/22/2021
Sample location/ Depth	: B21 @ 0-2'
Sample Number	: X2A
Soil Classification	: SC

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	771.4		
Weight of Mold, gms	368.5		
Weight of Soil, gms	402.9		
Wet Density, Lbs/cu.ft.	121.5		
Weight of Moisture Sample (Wet), gms	200.0		
Weight of Moisture Sample (Dry), gms	182.4		
Moisture Content, %	9.6		
Dry Density, Lbs/cu.ft.	110.8		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	50.1		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	0.0472

Expansion Index $_{measured}$ = 47.2

Expansion Index = 47

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

Krazan Testing Laboratory

Expansion Index Test

ASTM D - 4829

Project Number	: 012-21027
Project Name	: Residental Development
Date	: 2/22/2021
Sample location/ Depth	: 0-2'
Sample Number	: B23
Soil Classification	: SC

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	783.4		
Weight of Mold, gms	368.5		
Weight of Soil, gms	414.9		
Wet Density, Lbs/cu.ft.	125.1		
Weight of Moisture Sample (Wet), gms	200.0		
Weight of Moisture Sample (Dry), gms	184.8		
Moisture Content, %	8.2		
Dry Density, Lbs/cu.ft.	115.6		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	48.6		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	0.0239

Expansion Index $_{measured}$ = 23.9

Expansion Index = 24

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

Krazan Testing Laboratory

Expansion Index Test

ASTM D - 4829

Project Number	: 012-21027
Project Name	: Residental Development
Date	: 2/15/2021
Sample location/ Depth	: 2.5'
Sample Number	: B13
Soil Classification	: SM w/ clay

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	787.6		
Weight of Mold, gms	367.3		
Weight of Soil, gms	420.3		
Wet Density, Lbs/cu.ft.	126.8		
Weight of Moisture Sample (Wet), gms	200.0		
Weight of Moisture Sample (Dry), gms	185.0		
Moisture Content, %	8.1		
Dry Density, Lbs/cu.ft.	117.3		
Specific Gravity of Soil			
Degree of Saturation, %	#VALUE!		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	0.0178

Expansion Index $_{measured}$ = 17.8

Expansion Index = 18

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

Krazan Testing Laboratory

Expansion Index Test

ASTM D - 4829

Project Number	: 012-21027
Project Name	: Residental Development
Date	: 2/15/2021
Sample location/ Depth	: 2.5'
Sample Number	: X2
Soil Classification	: SM

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	805.3		
Weight of Mold, gms	368.3		
Weight of Soil, gms	437.0		
Wet Density, Lbs/cu.ft.	131.8		
Weight of Moisture Sample (Wet), gms	200.0		
Weight of Moisture Sample (Dry), gms	187.0		
Moisture Content, %	7.0		
Dry Density, Lbs/cu.ft.	123.2		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	51.1		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	0

Expansion Index $_{measured}$ = 0

Expansion Index = 0

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

Krazan Testing Laboratory

Expansion Index Test

ASTM D - 4829

Project Number	: 012-21027
Project Name	: Residental Development
Date	: 2/15/2021
Sample location/ Depth	: 1.5'
Sample Number	: X3
Soil Classification	: ML

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	781.2		
Weight of Mold, gms	369.8		
Weight of Soil, gms	411.4		
Wet Density, Lbs/cu.ft.	124.1		
Weight of Moisture Sample (Wet), gms	200.0		
Weight of Moisture Sample (Dry), gms	183.2		
Moisture Content, %	9.2		
Dry Density, Lbs/cu.ft.	113.7		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	51.3		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	0.0121

Expansion Index $_{measured}$ = 12.1

Expansion Index = 12

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

Krazan Testing Laboratory

Expansion Index Test

ASTM D - 4829

Project Number	: 012-21027
Project Name	: Residental Development
Date	: 2/15/2021
Sample location/ Depth	: 1.5'
Sample Number	: X4
Soil Classification	: SC

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	785.2		
Weight of Mold, gms	367.4		
Weight of Soil, gms	417.8		
Wet Density, Lbs/cu.ft.	126.0		
Weight of Moisture Sample (Wet), gms	200.0		
Weight of Moisture Sample (Dry), gms	184.3		
Moisture Content, %	8.5		
Dry Density, Lbs/cu.ft.	116.1		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	51.0		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	0.0382

Expansion Index $_{measured}$ = 38.2

Expansion Index = 38

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

Krazan Testing Laboratory

Expansion Index Test

ASTM D - 4829

Project Number	: 012-21027
Project Name	: Residental Development
Date	: 2/15/2021
Sample location/ Depth	: 1.5'
Sample Number	: X5
Soil Classification	: CL

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	737.5		
Weight of Mold, gms	367.5		
Weight of Soil, gms	370.0		
Wet Density, Lbs/cu.ft.	111.6		
Weight of Moisture Sample (Wet), gms	200.0		
Weight of Moisture Sample (Dry), gms	177.6		
Moisture Content, %	12.6		
Dry Density, Lbs/cu.ft.	99.1		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	48.6		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	0.0645

Expansion Index $_{measured}$ = 64.5

Expansion Index = 65

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

Krazan Testing Laboratory

Expansion Index Test

ASTM D - 4829

Project Number	: 012-21027
Project Name	: Residental Development
Date	: 2/15/2021
Sample location/ Depth	: 3'
Sample Number	: X6
Soil Classification	: SM

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	808.6		
Weight of Mold, gms	368.6		
Weight of Soil, gms	440.0		
Wet Density, Lbs/cu.ft.	132.7		
Weight of Moisture Sample (Wet), gms	200.0		
Weight of Moisture Sample (Dry), gms	187.3		
Moisture Content, %	6.8		
Dry Density, Lbs/cu.ft.	124.3		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	51.5		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	0

Expansion Index $_{measured}$ = 0

Expansion Index = 0

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

Krazan Testing Laboratory

Expansion Index Test

ASTM D - 4829

Project Number	: 012-21027
Project Name	: Residental Development
Date	: 2/15/2021
Sample location/ Depth	: 1'
Sample Number	: X7
Soil Classification	: SC-CL

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	762.2		
Weight of Mold, gms	368.3		
Weight of Soil, gms	393.9		
Wet Density, Lbs/cu.ft.	118.8		
Weight of Moisture Sample (Wet), gms	200.0		
Weight of Moisture Sample (Dry), gms	181.3		
Moisture Content, %	10.3		
Dry Density, Lbs/cu.ft.	107.7		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	49.3		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	0.0509

Expansion Index $_{measured}$ = 50.9

Expansion Index = 51

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

Krazan Testing Laboratory

Expansion Index Test

ASTM D - 4829

Project Number	: 012-21027
Project Name	: Residental Development
Date	: 2/15/2021
Sample location/ Depth	: 1'
Sample Number	: X8
Soil Classification	: SC

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	778.6		
Weight of Mold, gms	368.6		
Weight of Soil, gms	410.0		
Wet Density, Lbs/cu.ft.	123.7		
Weight of Moisture Sample (Wet), gms	200.0		
Weight of Moisture Sample (Dry), gms	183.6		
Moisture Content, %	8.9		
Dry Density, Lbs/cu.ft.	113.5		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	49.8		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	0.0324

Expansion Index $_{measured}$ = 32.4

Expansion Index = 32

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

Krazan Testing Laboratory

Expansion Index Test

ASTM D - 4829

Project Number	: 012-21027
Project Name	: Residental Development
Date	: 2/15/2021
Sample location/ Depth	: 1.5'
Sample Number	: X9
Soil Classification	: CL

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	745.3		
Weight of Mold, gms	368.6		
Weight of Soil, gms	376.7		
Wet Density, Lbs/cu.ft.	113.6		
Weight of Moisture Sample (Wet), gms	200.0		
Weight of Moisture Sample (Dry), gms	178.0		
Moisture Content, %	12.4		
Dry Density, Lbs/cu.ft.	101.1		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	50.1		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	0.0641

Expansion Index $_{measured}$ = 64.1

Expansion Index = 64

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

Krazan Testing Laboratory

Expansion Index Test

ASTM D - 4829

Project Number	: 012-21027
Project Name	: Residental Development
Date	: 2/15/2021
Sample location/ Depth	: 1.5'
Sample Number	: X10
Soil Classification	: CL

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	756.6		
Weight of Mold, gms	367.8		
Weight of Soil, gms	388.8		
Wet Density, Lbs/cu.ft.	117.3		
Weight of Moisture Sample (Wet), gms	200.0		
Weight of Moisture Sample (Dry), gms	181.0		
Moisture Content, %	10.5		
Dry Density, Lbs/cu.ft.	106.1		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	48.2		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	0.0672

Expansion Index $_{measured}$ = 67.2

Expansion Index = 67

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

Krazan Testing Laboratory

Expansion Index Test

ASTM D - 4829

Project Number	: 012-21027
Project Name	: Residental Development
Date	: 2/15/2021
Sample location/ Depth	: 1.5'
Sample Number	: X11
Soil Classification	: CL

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	766.8		
Weight of Mold, gms	367.5		
Weight of Soil, gms	399.3		
Wet Density, Lbs/cu.ft.	120.4		
Weight of Moisture Sample (Wet), gms	200.0		
Weight of Moisture Sample (Dry), gms	181.0		
Moisture Content, %	10.5		
Dry Density, Lbs/cu.ft.	109.0		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	51.9		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	0.0682

Expansion Index $_{measured}$ = 68.2

Expansion Index = 68

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

Krazan Testing Laboratory

Expansion Index Test

ASTM D - 4829

Project Number	: 012-21027
Project Name	: Residental Development
Date	: 2/15/2021
Sample location/ Depth	: 2'
Sample Number	: X12
Soil Classification	: SM

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	810.2		
Weight of Mold, gms	369.9		
Weight of Soil, gms	440.3		
Wet Density, Lbs/cu.ft.	132.8		
Weight of Moisture Sample (Wet), gms	200.0		
Weight of Moisture Sample (Dry), gms	187.6		
Moisture Content, %	6.6		
Dry Density, Lbs/cu.ft.	124.6		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	50.6		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	0

Expansion Index $_{measured}$ = 0

Expansion Index = 0

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

Krazan Testing Laboratory

Expansion Index Test

ASTM D - 4829

Project Number	: 012-21027
Project Name	: Residental Development
Date	: 2/15/2021
Sample location/ Depth	: 3'
Sample Number	: X13
Soil Classification	: SM/SP

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	758.7		
Weight of Mold, gms	369.8		
Weight of Soil, gms	388.9		
Wet Density, Lbs/cu.ft.	117.3		
Weight of Moisture Sample (Wet), gms	200.0		
Weight of Moisture Sample (Dry), gms	180.8		
Moisture Content, %	10.6		
Dry Density, Lbs/cu.ft.	106.0		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	48.7		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	0

Expansion Index $_{measured}$ = 0

Expansion Index = 0

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

Krazan Testing Laboratory

Expansion Index Test

ASTM D - 4829

Project Number	: 012-21027
Project Name	: Residental Development
Date	: 2/15/2021
Sample location/ Depth	: 3'
Sample Number	: X14
Soil Classification	: SM

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	799.1		
Weight of Mold, gms	367.6		
Weight of Soil, gms	431.5		
Wet Density, Lbs/cu.ft.	130.1		
Weight of Moisture Sample (Wet), gms	200.0		
Weight of Moisture Sample (Dry), gms	186.4		
Moisture Content, %	7.3		
Dry Density, Lbs/cu.ft.	121.3		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	50.6		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	0

Expansion Index $_{measured}$ = 0

Expansion Index = 0

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

Krazan Testing Laboratory

Expansion Index Test

ASTM D - 4829

Project Number	: 012-21027
Project Name	: Residental Development
Date	: 3/5/2021
Sample location/ Depth	: 2-3'
Sample Number	: X34
Soil Classification	: CL

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	761.1		
Weight of Mold, gms	369.8		
Weight of Soil, gms	391.3		
Wet Density, Lbs/cu.ft.	118.0		
Weight of Moisture Sample (Wet), gms	200.0		
Weight of Moisture Sample (Dry), gms	181.0		
Moisture Content, %	10.5		
Dry Density, Lbs/cu.ft.	106.8		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	49.1		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	--

Expansion Index $_{measured}$ = 0

Expansion Index = 0

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

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Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

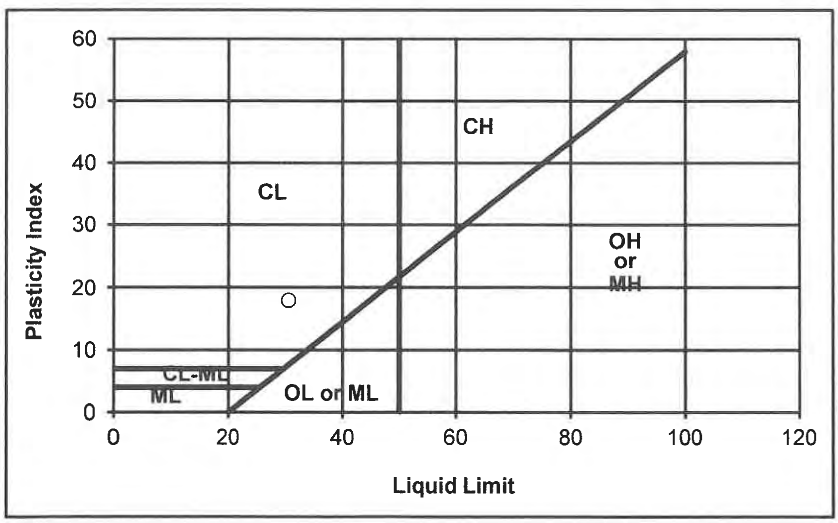
Project: **Residental Development**
Project Number: **012-21027**
Date Sampled: 2/14/2021
Sampled By: RA
Sample Number: X1
Sample Location: 2.5-3.5'
Sample Description: CL

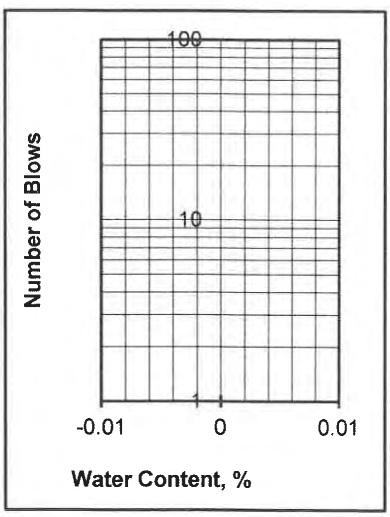
Date Tested: 2/23/2021
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	37.12	29.57		25.57	29.11	
Weight of Dry Soil & Tare (g)	34.71	27.72		22.47	25.67	
Weight of Tare (g)	17.00	13.67		12.62	14.18	
Weight of water (g)	2.42	1.85		3.09	3.44	
Weight of Dry Soil (g)	17.71	14.05		9.85	11.49	
Water Content (% of dry wt.)	13.7%	13.1%		31.4%	29.9%	
Number of Blows				22	28	

Plastic Limit : 13 **Liquid Limit : 31**

Plasticity Index : 18
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

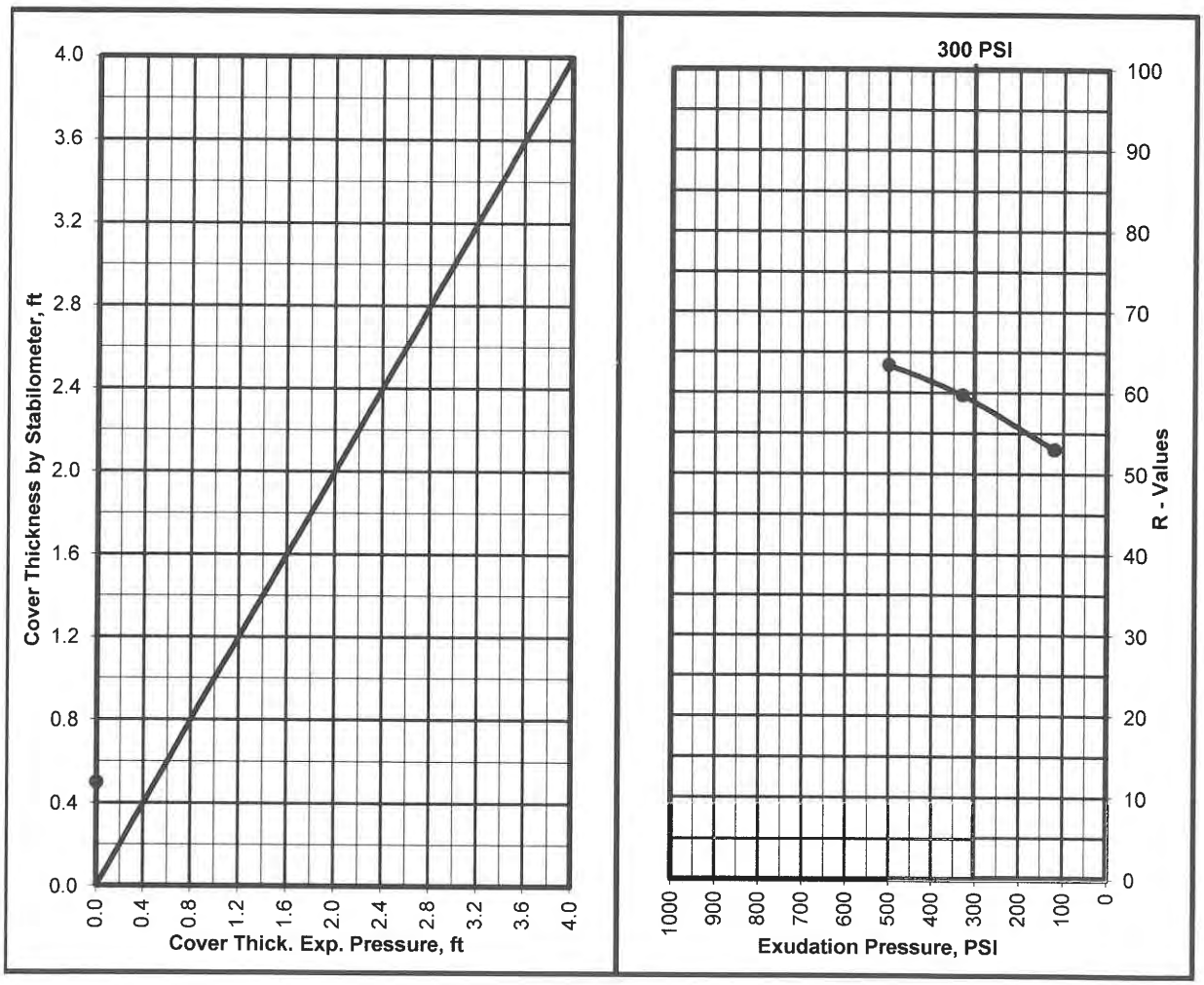
Unusual Conditions, Other Notes:

R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	012-21027
Project Name	:	Residental Development
Date	:	2/24/2021
Sample Location/Curve Number	:	RV#1
Soil Classification	:	SM/SP

TEST	A	B	C
Percent Moisture @ Compaction, %	11.7	11.2	10.7
Dry Density, lbm/cu.ft.	120.4	121.9	122.3
Exudation Pressure, psi	120	330	500
Expansion Pressure, (Dial Reading)	0	0	0
Expansion Pressure, psf	0	0	0
Resistance Value R	53	60	63

R Value at 300 PSI Exudation Pressure	**59**
R Value by Expansion Pressure (TI =): 5	**Expansion Pressure nil**



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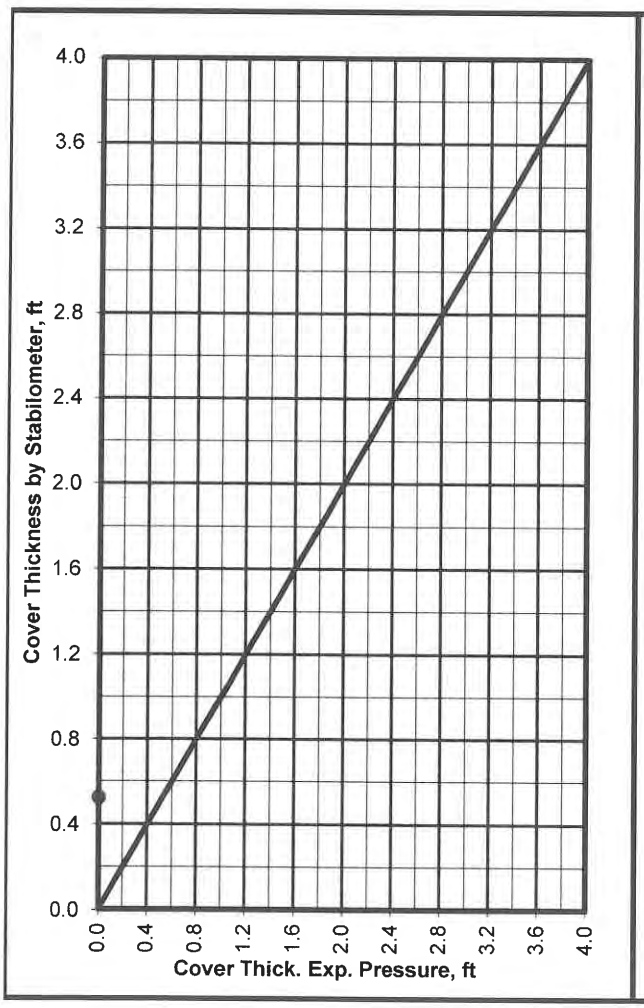
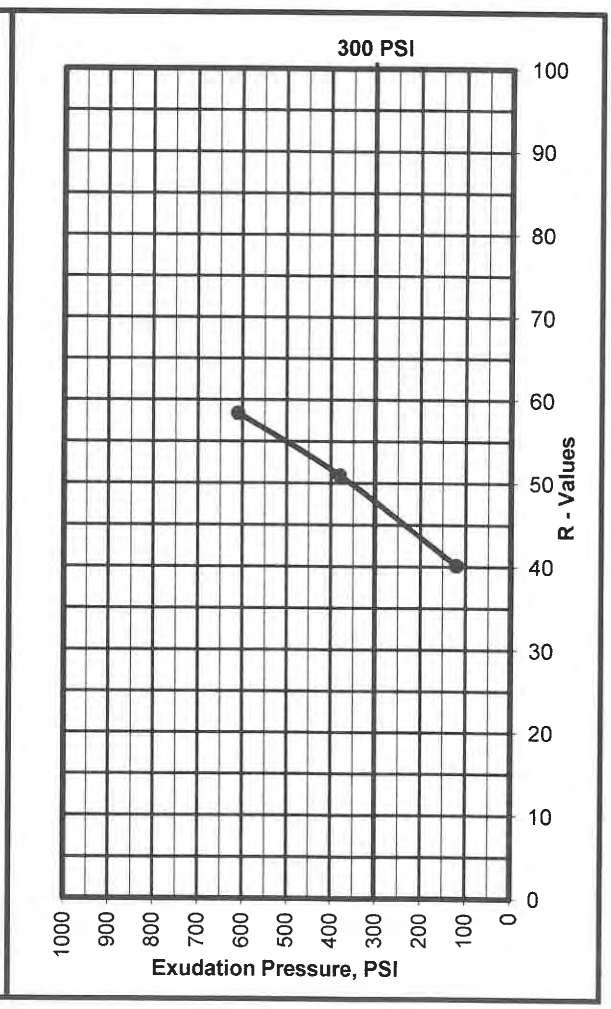
R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	012-21027
Project Name	:	Residental Development
Date	:	2/24/2021
Sample Location/Curve Number	:	RV#2
Soil Classification	:	SM

TEST	A	B	C
Percent Moisture @ Compaction, %	9.6	10.5	9.0
Dry Density, lbm/cu.ft.	132.7	131.1	133.8
Exudation Pressure, psi	380	120	610
Expansion Pressure, (Dial Reading)	0	0	0
Expansion Pressure, psf	0	0	0
Resistance Value R	51	40	58

R Value at 300 PSI Exudation Pressure	**48**
R Value by Expansion Pressure (TI =): 5	**Expansion Pressure nil**





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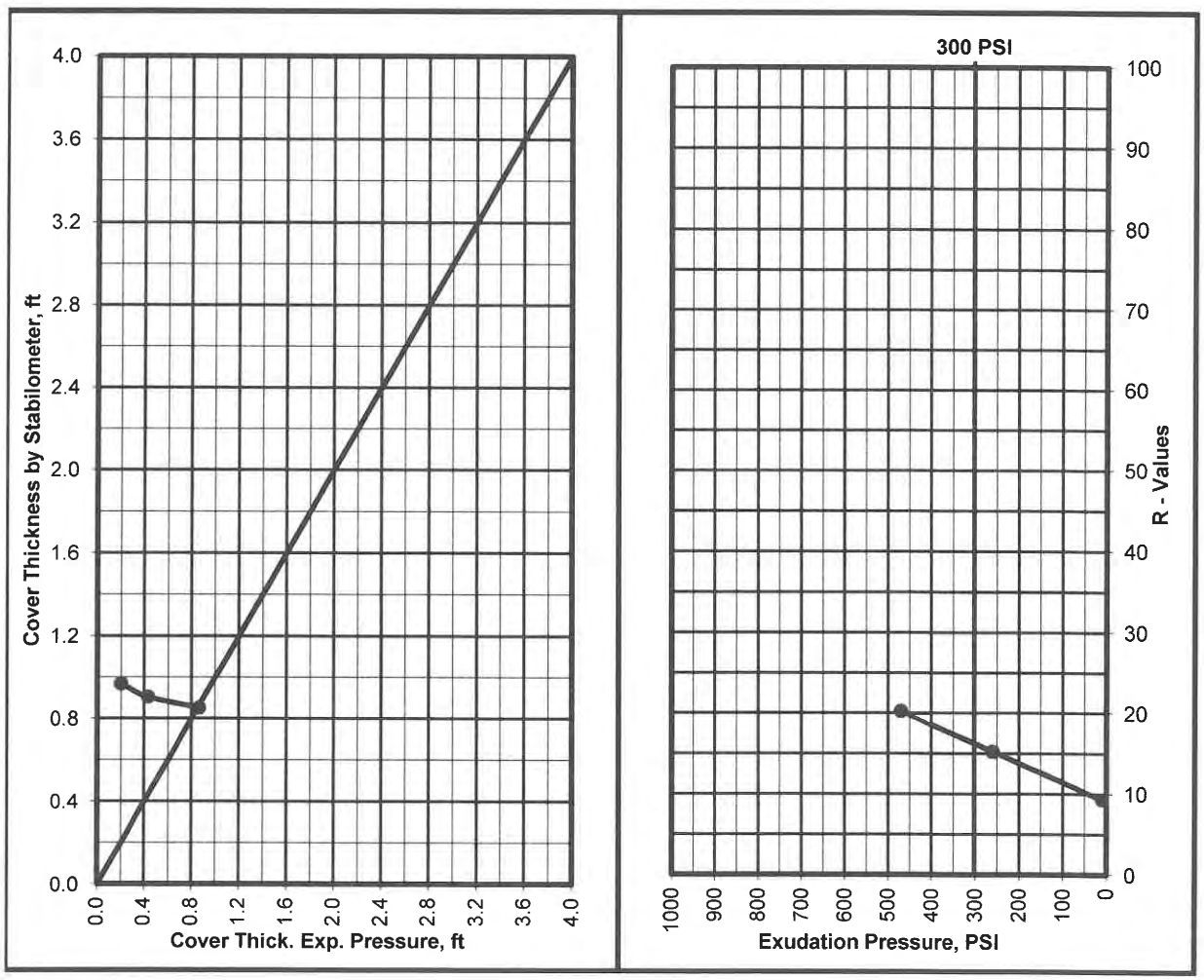
R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	012-21027
Project Name	:	Residental Development
Date	:	3/1/2021
Sample Location/Curve Number	:	RV#3
Soil Classification	:	SC-CL

TEST	A	B	C
Percent Moisture @ Compaction, %	11.8	12.8	13.5
Dry Density, lbm/cu.ft.	122.6	120.9	119.9
Exudation Pressure, psi	470	260	10
Expansion Pressure, (Dial Reading)	26	13	6
Expansion Pressure, psf	113	56	26
Resistance Value R	20	15	9

R Value at 300 PSI Exudation Pressure	**16**
R Value by Expansion Pressure (TI =): 5	**20**



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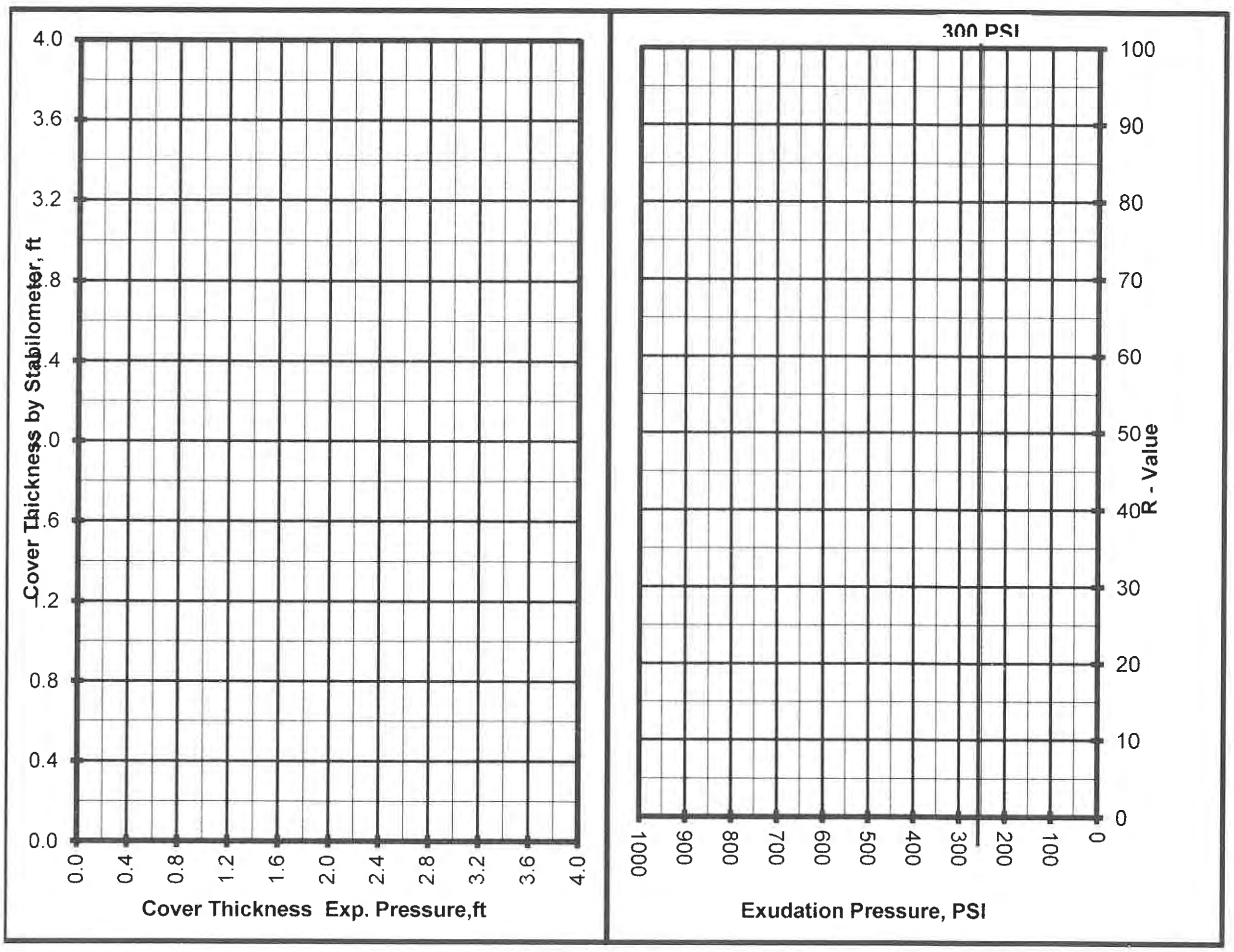
R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	012-21027
Project Name	:	Residental Development
Date	:	3/11/2021
Sample Location/Curve Number	:	RV#4
Soil Classification	:	CL

TEST	A	B	C
Percent Moisture @ Compaction, %			
Dry Density, lbm/cu.ft.	R - Value less than 5 Sample Exuded from bottom of Mold During test		
Exudation Pressure, psi			
Expansion Pressure, (Dial Reading)			
Expansion Pressure, psf			
Resistance Value R			

R - Value at 300 PSI Exudation Pressure	**< 5**
R - Value by Expansion Pressure	

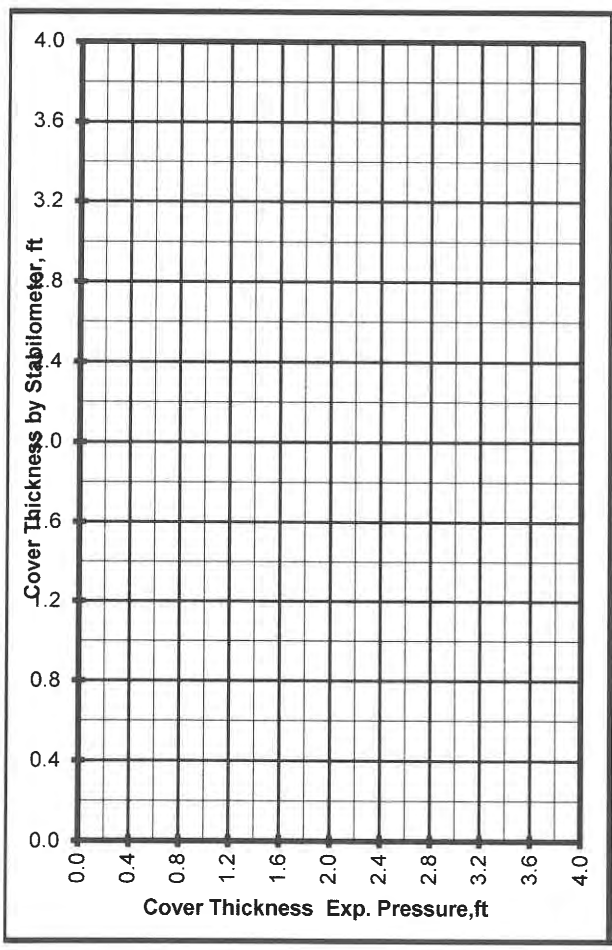


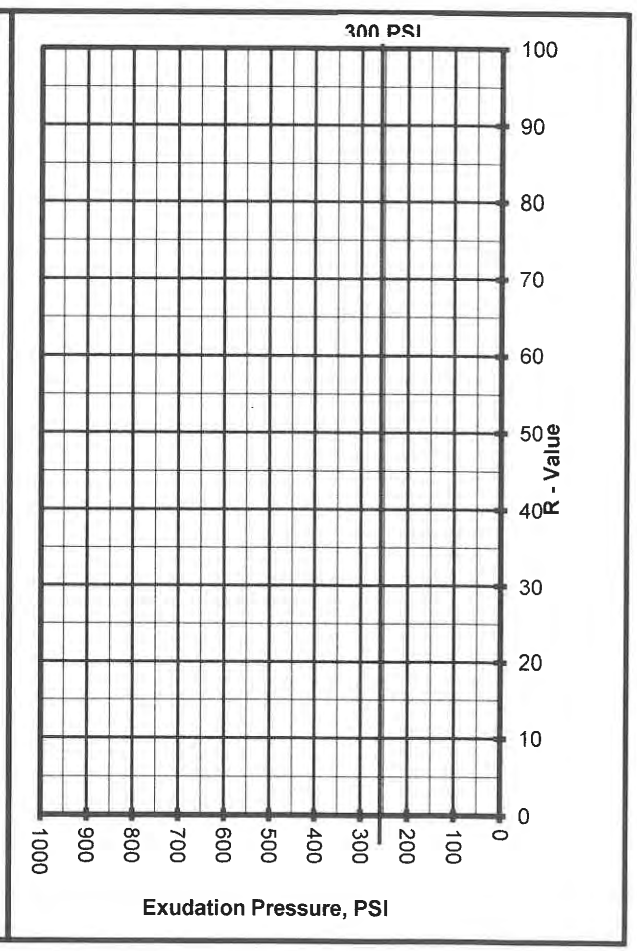
R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	012-21027
Project Name	:	Residental Development
Date	:	3/10/2021
Sample Location/Curve Number	:	RV#5
Soil Classification	:	CL

TEST	A	B	C
Percent Moisture @ Compaction, %			
Dry Density, lbm/cu.ft.	R - Value less than 5 Sample Exuded from bottom of Mold During test		
Exudation Pressure, psi			
Expansion Pressure, (Dial Reading)			
Expansion Pressure, psf			
Resistance Value R			

R - Value at 300 PSI Exudation Pressure	< 5
R - Value by Expansion Pressure	



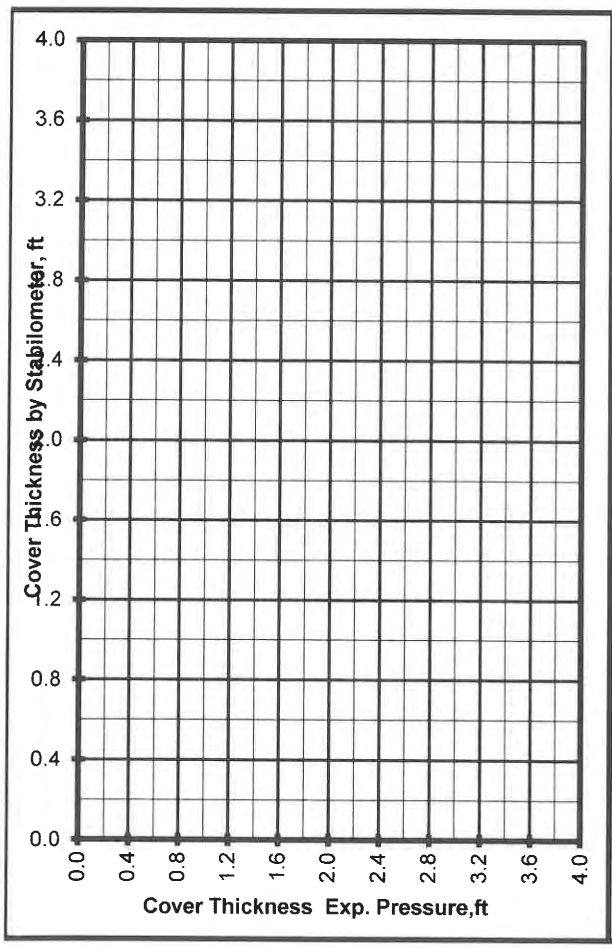


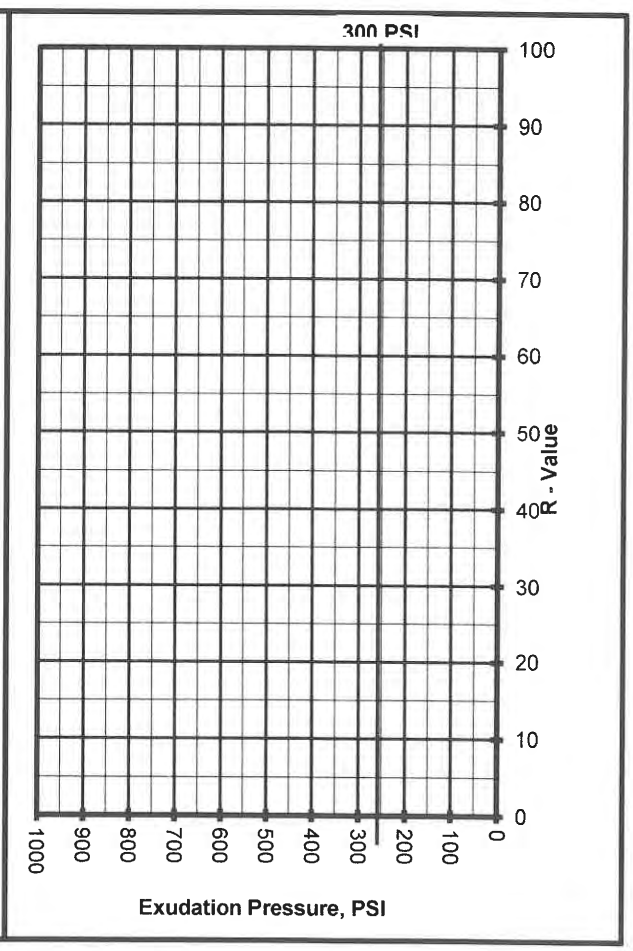
R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	012-21027
Project Name	:	Residental Development
Date	:	3/10/2021
Sample Location/Curve Number	:	RV#6
Soil Classification	:	CL

TEST	A	B	C
Percent Moisture @ Compaction, %			
Dry Density, lbm/cu.ft.	R - Value less than 5 Sample Exuded from bottom of Mold During test		
Exudation Pressure, psi			
Expansion Pressure, (Dial Reading)			
Expansion Pressure, psf			
Resistance Value R			

R - Value at 300 PSI Exudation Pressure	< 5
R - Value by Expansion Pressure	



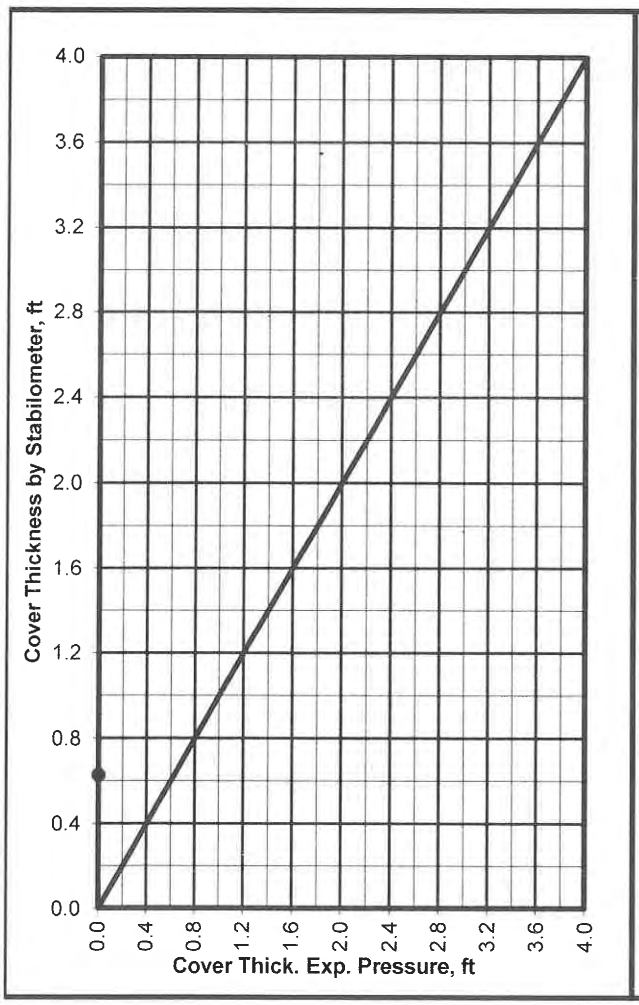


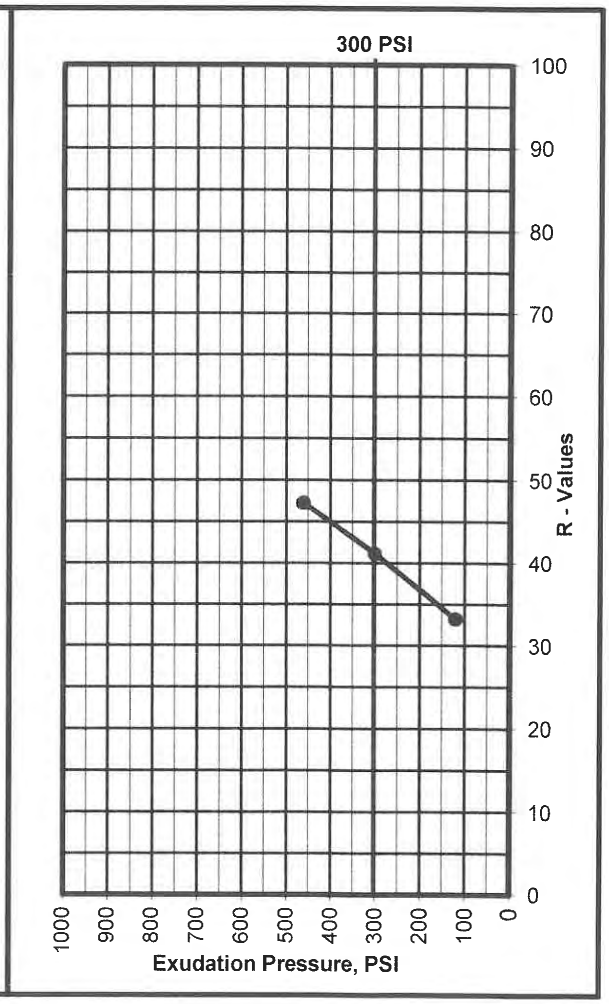
R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	012-21027
Project Name	:	Residental Development
Date	:	3/11/2021
Sample Location/Curve Number	:	RV#7
Soil Classification	:	SM

TEST	A	B	C
Percent Moisture @ Compaction, %	9.7	10.2	9.2
Dry Density, lbm/cu.ft.	125.8	125.2	126.5
Exudation Pressure, psi	300	120	460
Expansion Pressure, (Dial Reading)	0	0	0
Expansion Pressure, psf	0	0	0
Resistance Value R	41	33	47

R Value at 300 PSI Exudation Pressure	**41**
R Value by Expansion Pressure (TI =): 5	**Expansion Pressure nil**





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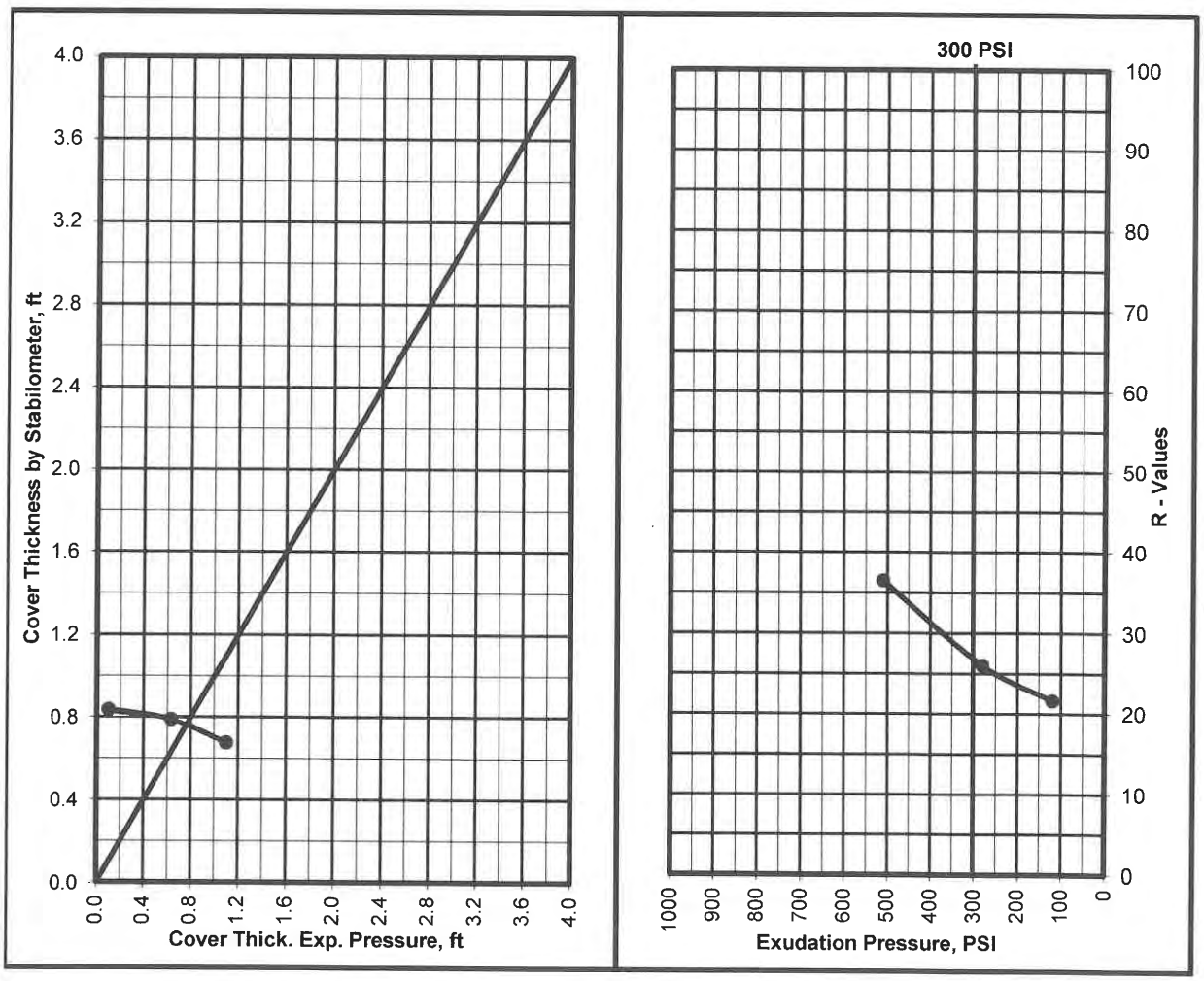
R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	012-21027
Project Name	:	Residental Development
Date	:	2/26/2021
Sample Location/Curve Number	:	RV#8
Soil Classification	:	SC

TEST	A	B	C
Percent Moisture @ Compaction, %	12.5	13.5	14.1
Dry Density, lbm/cu.ft.	121.1	117.5	116.6
Exudation Pressure, psi	510	280	120
Expansion Pressure, (Dial Reading)	33	19	3
Expansion Pressure, psf	143	82	13
Resistance Value R	37	26	22

R Value at 300 PSI Exudation Pressure	**26**
R Value by Expansion Pressure (TI =): 5	**27**



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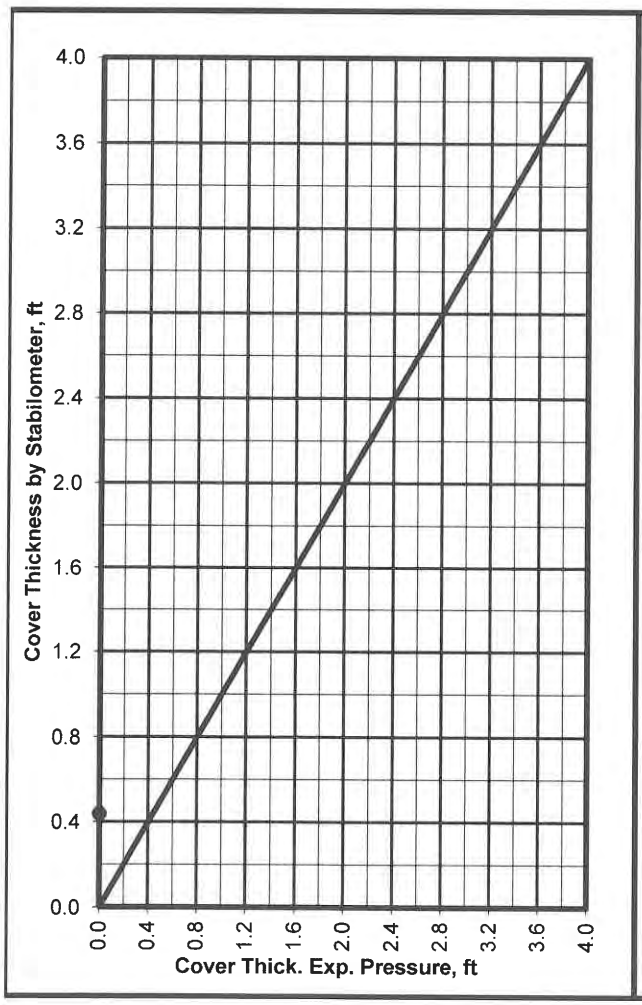
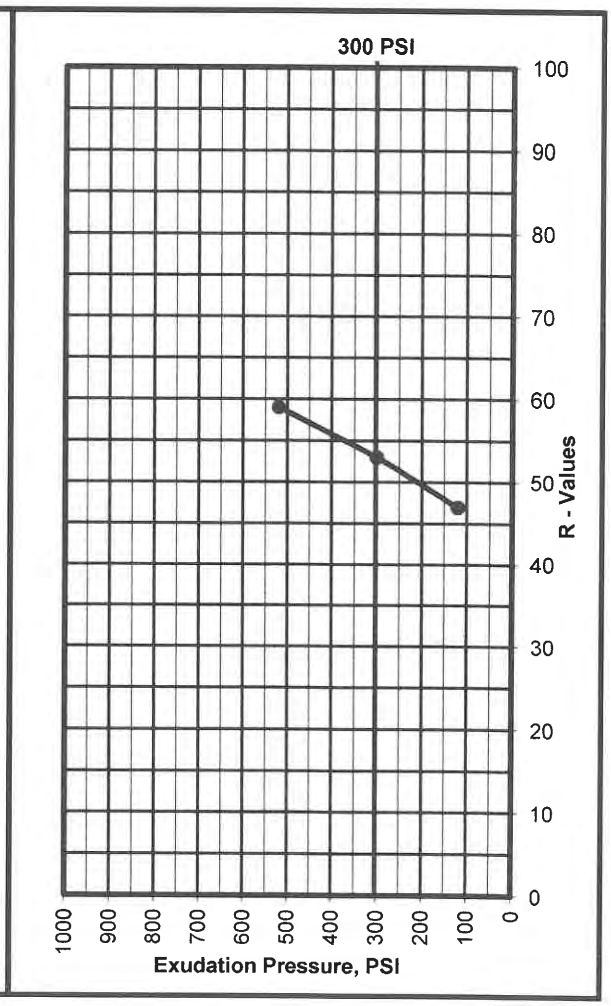
R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	012-21027
Project Name	:	Residental Development
Date	:	2/26/2021
Sample Location/Curve Number	:	RV#9
Soil Classification	:	SM

TEST	A	B	C
Percent Moisture @ Compaction, %	9.3	10.3	11.0
Dry Density, lbm/cu.ft.	127.1	125.4	124.7
Exudation Pressure, psi	520	300	120
Expansion Pressure, (Dial Reading)	0	0	0
Expansion Pressure, psf	0	0	0
Resistance Value R	59	53	47

R Value at 300 PSI Exudation Pressure	**53**
R Value by Expansion Pressure (TI =): 5	**Expansion Pressure nil**





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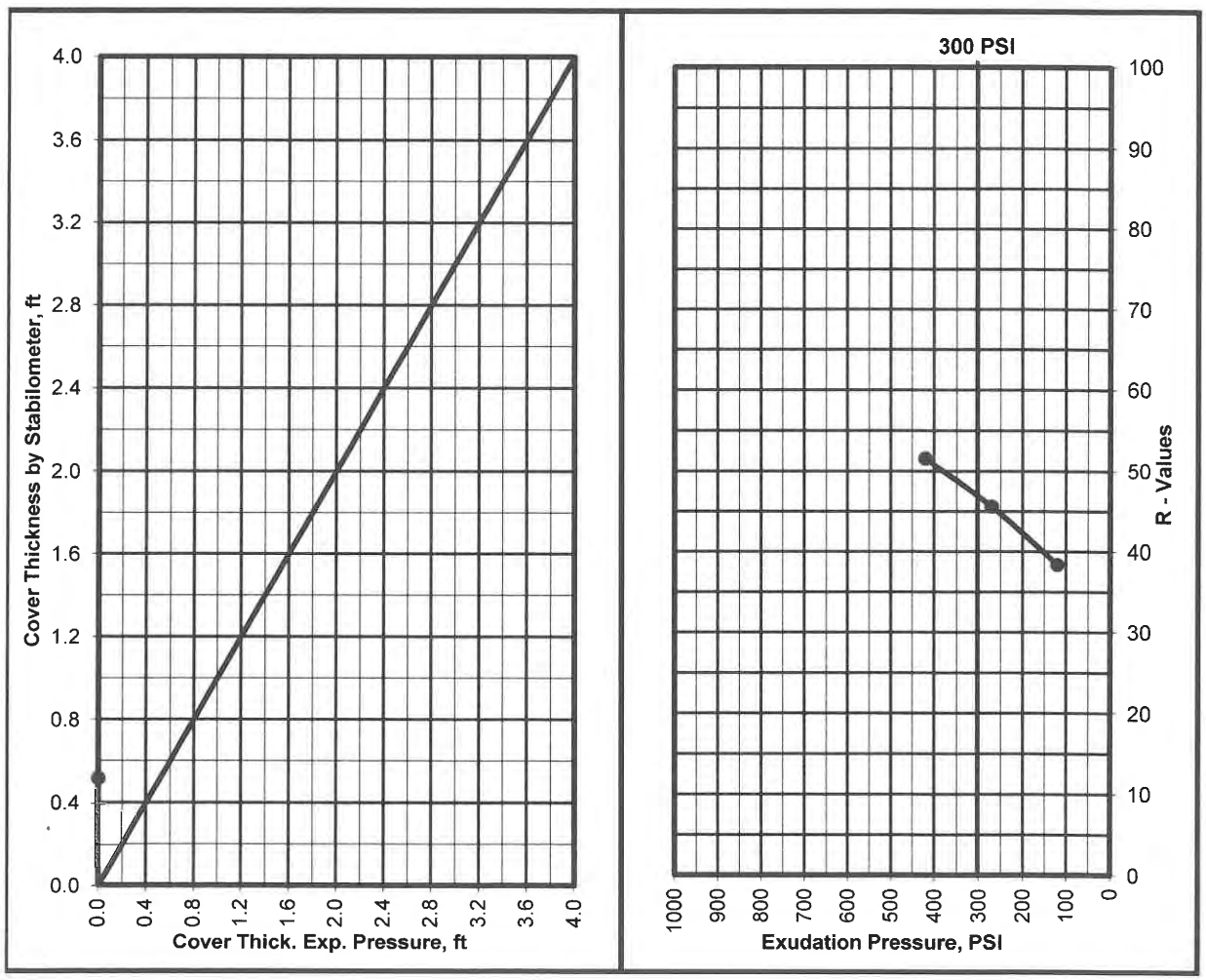
R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	012-21027
Project Name	:	Residental Development
Date	:	3/1/2021
Sample Location/Curve Number	:	RV#10
Soil Classification	:	SM

TEST	A	B	C
Percent Moisture @ Compaction, %	9.9	10.9	11.4
Dry Density, lbm/cu.ft.	127.8	126.0	125.5
Exudation Pressure, psi	420	270	120
Expansion Pressure, (Dial Reading)	0	0	0
Expansion Pressure, psf	0	0	0
Resistance Value R	52	46	38

R Value at 300 PSI Exudation Pressure	**46**
R Value by Expansion Pressure (TI =): 5	**Expansion Pressure nil**



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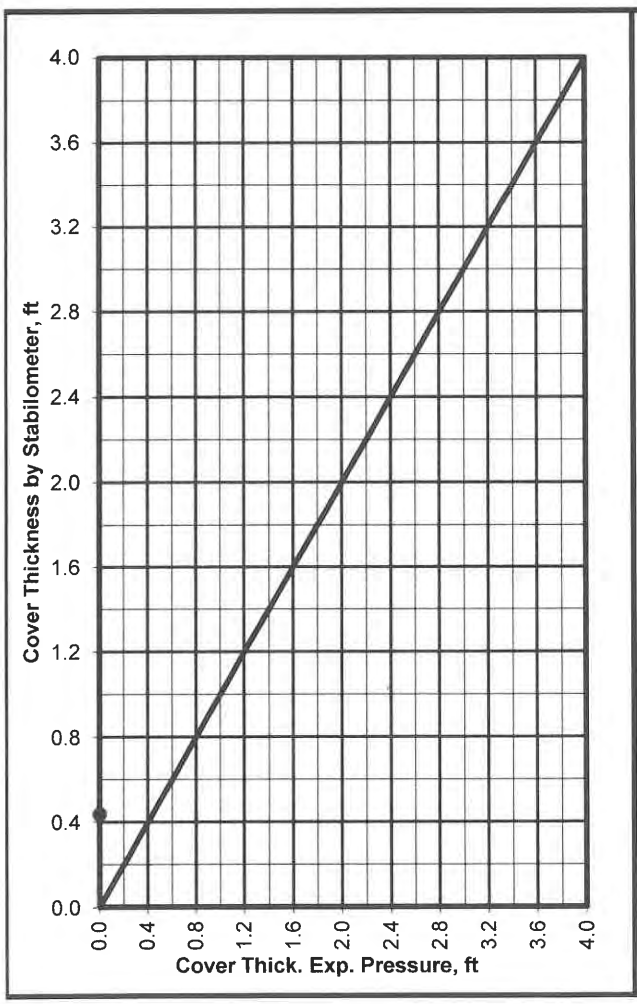
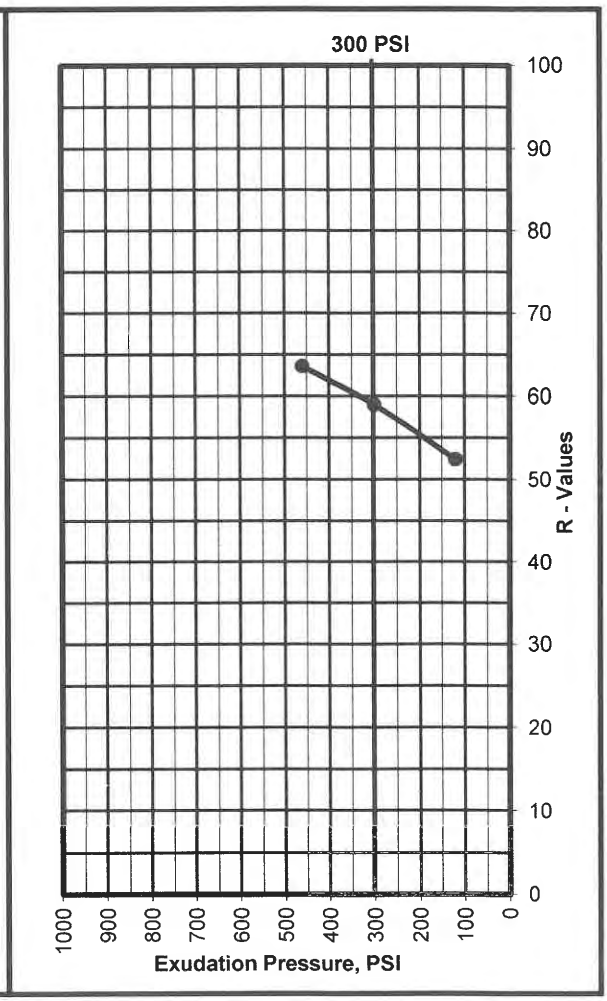
R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	012-21027
Project Name	:	Residental Development
Date	:	2/26/2021
Sample Location/Curve Number	:	RV#11
Soil Classification	:	SM/SP

TEST	A	B	C
Percent Moisture @ Compaction, %	13.3	12.5	13.9
Dry Density, lbm/cu.ft.	115.1	115.8	114.6
Exudation Pressure, psi	300	460	120
Expansion Pressure, (Dial Reading)	0	0	0
Expansion Pressure, psf	0	0	0
Resistance Value R	59	64	52

R Value at 300 PSI Exudation Pressure	**59**
R Value by Expansion Pressure (TI =): 5	**Expansion Pressure nil**





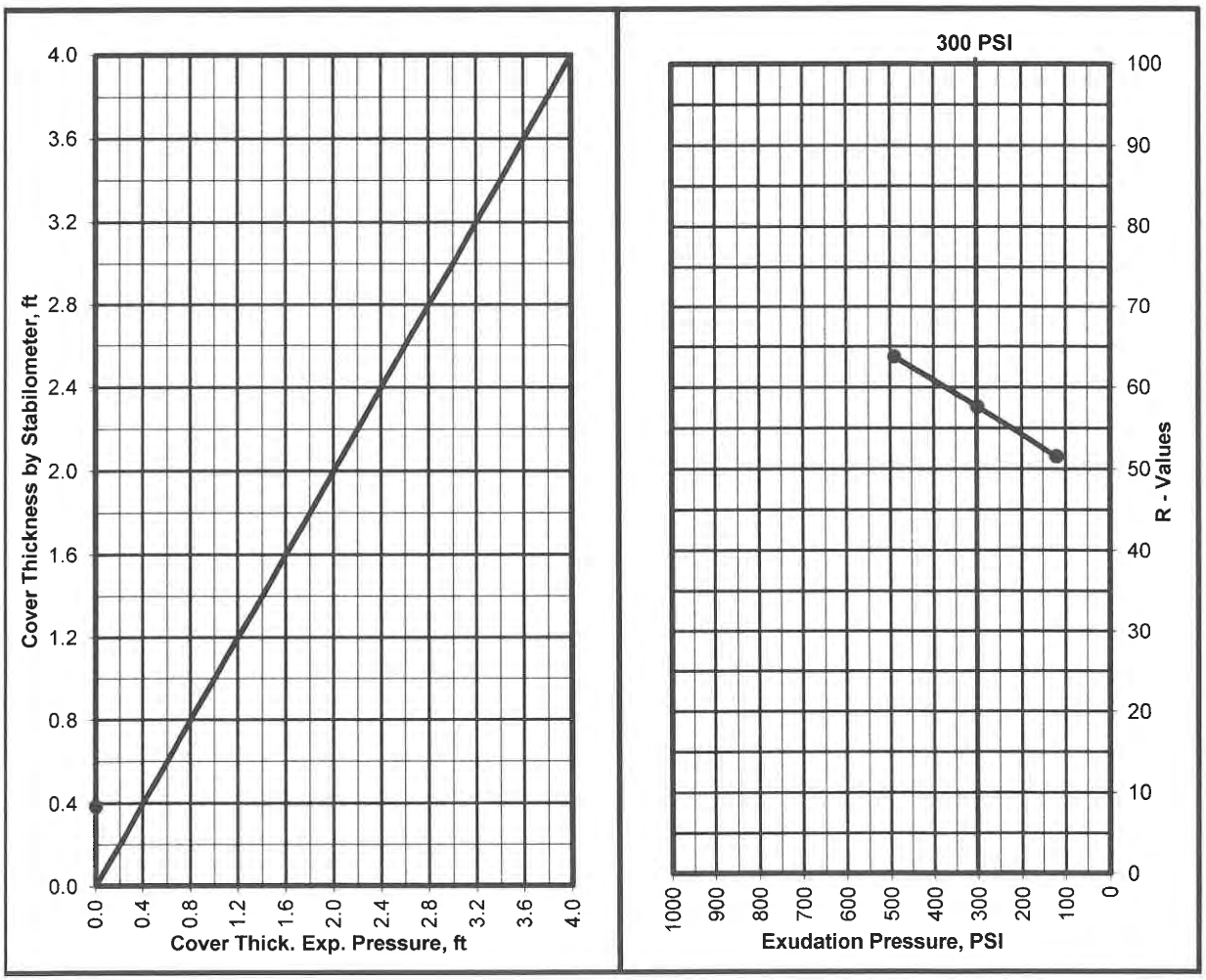
Krazan Testing Laboratory

R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	012-21027
Project Name	:	Residental Development
Date	:	2/26/2021
Sample Location/Curve Number	:	RV#12
Soil Classification	:	SM

TEST	A	B	C
Percent Moisture @ Compaction, %	10.1	11.1	11.7
Dry Density, lbm/cu.ft.	122.3	122.2	121.1
Exudation Pressure, psi	490	120	300
Expansion Pressure, (Dial Reading)	0	0	0
Expansion Pressure, psf	0	0	0
Resistance Value R	64	52	58

R Value at 300 PSI Exudation Pressure	**58**
R Value by Expansion Pressure (TI =): 5	**Expansion Pressure nil**



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APPENDIX B

EARTHWORK SPECIFICATIONS

GENERAL

When the text of the report conflicts with the general specifications in this appendix, the recommendations in the report have precedence.

SCOPE OF WORK: These specifications and applicable plans pertain to and include all earthwork associated with the site rough grading, including but not limited to the furnishing of all labor, tools, and equipment necessary for site clearing and grubbing, stripping, preparation of foundation materials for receiving fill, excavation, processing, placement and compaction of fill and backfill materials to the lines and grades shown on the project grading plans, and disposal of excess materials.

PERFORMANCE: The Contractor shall be responsible for the satisfactory completion of all earthwork in accordance with the project plans and specifications. This work shall be inspected and tested by a representative of Krazan and Associates, Inc., hereinafter known as the Soils Engineer and/or Testing Agency. Attainment of design grades when achieved shall be certified to by the project Civil Engineer. Both the Soils Engineer and the Civil Engineer are the Owner's representatives. If the Contractor should fail to meet the technical or design requirements embodied in this document and on the applicable plans, he shall make the necessary readjustments until all work is deemed satisfactory as determined by both the Soils Engineer and the Civil Engineer. No deviation from these specifications shall be made except upon written approval of the Soils Engineer, Civil Engineer or project Architect.

No earthwork shall be performed without the physical presence or approval of the Soils Engineer. The Contractor shall notify the Soils Engineer at least 2 working days prior to the commencement of any aspect of the site earthwork.

The Contractor agrees that he shall assume sole and complete responsibility for job site conditions during the course of construction of this project, including safety of all persons and property; that this requirement shall apply continuously and not be limited to normal working hours; and that the Contractor shall defend, indemnify and hold the Owner and the Engineers harmless from any and all liability, real or alleged, in connection with the performance of work on this project, except for liability arising from the soil negligence of the Owner or the Engineers.

TECHNICAL REQUIREMENTS: All compacted materials shall be densified to a density not less that 90 percent relative compaction based on ASTM Test Method D1557-78, UBC or CAL-216, as specified in the technical portion of the Soil Engineer's report. The location and frequency of field density tests shall be as determined by the Soils Engineer. The results of these tests and compliance with these specifications shall be the basis upon which satisfactory completion of work will be judged by the Soils Engineer.

SOILS AND FOUNDATION CONDITIONS: The Contractor is presumed to have visited the site and to have familiarized himself with existing site conditions and the contents of the data presented in the soil report.

The Contractor shall make his own interpretation of the data contained in said report, and the Contractor shall not be relieved of liability under the Contractor for any loss sustained as a result of any variance between conditions indicated by or deduced from said report and the actual conditions encountered during the progress of the work.

DUST CONTROL: The work includes dust control as required for the alleviation or prevention of any dust nuisance on or about the site or the borrow area, or off-site if caused by the Contractor's operation either during the performance of the earthwork or resulting from the conditions in which the Contractor leaves the site. The Contractor shall assume all liability, including court costs of codefendants, for all claims related to dust or windblown materials attributable to his work.

SITE PREPARATION

Site preparation shall consist of site clearing and grubbing and the preparations of foundation materials for receiving fill.

CLEARING AND GRUBBING: The Contractor shall accept the site in this present condition and shall demolish and/or remove from the area of designated project, earthwork all structures, both surface and subsurface, trees, brush, roots, debris, organic matter, and all other matter determined by the Soils Engineer to be deleterious. Such materials shall become the property of the Contractor and shall be removed from the site.

Tree root systems in proposed building areas should be removed to a minimum depth of 3 feet and to such an extent which would permit removal of all roots larger than 1 inch. Tree root removed in parking areas may be limited to the upper 1½ feet of the ground surface. Backfill or tree root excavation should not be permitted until all exposed surfaces have been inspected and the Soils Engineer is present for the proper control of backfill placement and compaction. Burning in areas which are to receive fill materials shall not be permitted.

SUBGRADE PREPARATION: Surfaces to receive Engineered Fill, building or slab loads shall be prepared as outlined above, scarified to a depth of 6 inches, moisture-conditioned as necessary, and compacted to 90 percent relative compaction.

Loose soil areas, areas of uncertified fill, and/or areas of disturbed soils shall be moisture-conditioned as necessary and recompacted to 90 percent relative compaction. All ruts, hummocks, or other uneven surface features shall be removed by surface grading prior to placement of any fill materials. All areas, which are to receive fill materials, shall be approved by the Soils Engineer prior to the placement of any of the fill material.

EXCAVATION: All excavation shall be accomplished to the tolerance normally defined by the Civil Engineer as shown on the project grading plans. All over excavation below the grades specified shall be backfilled at the Contractor's expense and shall be compacted in accordance with the applicable technical requirements.

FILL AND BACKFILL MATERIAL: No material shall be moved or compacted without the presence of the Soils Engineer. Material from the required site excavation may be utilized for construction site fills provided prior approval is given by the Soils Engineer. All materials utilized for constructing site fills shall be free from vegetation or other deleterious matter as determined by the Soils Engineer.

PLACEMENT, SPREADING AND COMPACTION: The placement and spreading of approved fill materials and the processing and compaction of approved fill and native materials shall be the responsibility of the Contractor. However, compaction of fill materials by flooding, ponding, or jetting shall not be permitted unless specifically approved by local code, as well as the Soils Engineer.

Both cut and fill shall be surface compacted to the satisfaction of the Soils Engineer prior to final acceptance.

SEASONAL LIMITS: No fill material shall be placed, spread, or rolled while it is frozen or thawing or during unfavorable wet weather conditions. When the work is interrupted by heavy rains, fill operations shall not be resumed until the Soils Engineer indicates that the moisture content and density of previously placed fill are as specified.

APPENDIX C

PAVEMENT SPECIFICATIONS

1. DEFINITIONS - The term "pavement" shall include asphaltic concrete surfacing, untreated aggregate base, and aggregate subbase. The term "subgrade" is that portion of the area on which surfacing, base, or subbase is to be placed.

The term "Standard Specifications": hereinafter referred to is the 2018 Standard Specifications of the State of California, Department of Transportation, and the "Materials Manual" is the Materials Manual of Testing and Control Procedures, State of California, Department of Public Works, Division of Highways. The term "relative compaction" refers to the field density expressed as a percentage of the maximum laboratory density as defined in the applicable tests outlined in the Materials Manual.

2. SCOPE OF WORK - This portion of the work shall include all labor, materials, tools, and equipment necessary for, and reasonably incidental to the completion of the pavement shown on the plans and as herein specified, except work specifically notes as "Work Not Included."

3. PREPARATION OF THE SUBGRADE - The Contractor shall prepare the surface of the various subgrades receiving subsequent pavement courses to the lines, grades, and dimensions given on the plans. The upper 12 inches of the soil subgrade beneath the pavement section shall be compacted to a minimum relative compaction of 90 percent. The finished subgrades shall be tested and approved by the Soils Engineer prior to the placement of additional pavement courses.

4. UNTREATED AGGREGATE BASE - The aggregate base material shall be spread and compacted on the prepared subgrade in conformity with the lines, grades, and dimensions shown on the plans. The aggregate base material shall conform to the requirements of Section 26 of the Standard Specifications for Class 2 material, 1½ inches maximum size. The aggregate base material shall be compacted to a minimum relative compaction of 95 percent. The aggregate base material shall be spread and compacted in accordance with Section 26 of the Standard Specifications. The aggregate base material shall be spread in layers not exceeding 6 inches and each layer of aggregate material course shall be tested and approved by the Soils Engineer prior to the placement of successive layers.

5. AGGREGATE SUBBASE - The aggregate subbase shall be spread and compacted on the prepared subgrade in conformity with the lines, grades, and dimensions shown on the plans. The aggregate subbase material shall conform to the requirements of Section 25 of the Standard Specifications for Class 2 material. The aggregate subbase material shall be compacted to a minimum relative compaction of 95 percent, and it shall be spread and compacted in accordance with Section 25 of the Standard Specifications. Each layer of aggregate subbase shall be tested and approved by the Soils Engineer prior to the placement of successive layers.

6. ASPHALTIC CONCRETE SURFACING - Asphaltic concrete surfacing shall consist of a mixture of mineral aggregate and paving grade asphalt, mixed at a central mixing plant and spread and compacted on a prepared base in conformity with the lines, grades and dimensions shown on the plans. The viscosity grade of the asphalt shall be PG 64-10. The mineral aggregate shall be Type B, ½ inch maximum size, medium grading and shall conform to the requirements set forth in Section 39. The drying, proportioning and mixing of the materials shall conform to Section 39.

The prime coat, spreading and compacting equipment and spreading and compacting mixture shall conform to the applicable chapters of Section 39, with the exception that no surface course shall be placed when the atmospheric temperature is below 50° F. The surfacing shall be rolled with a combination of steel wheel and pneumatic rollers, as described in Section 39-6. The surface course shall be placed with an approved self-propelled mechanical spreading and finishing machine.

7. FOG SEAL COAT - The fog seal (mixing type asphaltic emulsion) shall conform to and be applied in accordance with the requirements of Section 37.

Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

December 7, 2023
Revised January 4, 2024

KA Project No. 012-22165

Ms. Goldie Lewis
Wilson Homes
7550 N. Palm Avenue, Suite 102
Fresno, California 93711

RE: GEOTECHNICAL FEASIBILITY EVALUATION
TRIANGLE DEVELOPMENT
SHEPHERD AVENUE AND LOCAN AVENUE
CLOVIS, CALIFORNIA

Dear Ms. Lewis:

In accordance with your request, we have completed a Geotechnical Feasibility Evaluation for the above-referenced property. The purpose of this investigation was to perform a study for the planned development adjacent to the Big Dry Creek Reservoir Dam to evaluate the on-site soil conditions, groundwater elevations, permeability characteristics, and liquefaction potential. The data obtained from this investigation will be used to determine a potential minimum setback for the planned residential structures.

PROPOSED CONSTRUCTION

We understand that design of the proposed development is currently underway; structural load information and other final details pertaining to the structures are unavailable. On a preliminary basis, it is understood that the development will include approximately 165 acres adjacent to the dam to be developed into a master planned community including single- and multi-family residential developments and ancillary uses. It is anticipated that the structures will include single- to three-story wood-framed buildings supported on conventional shallow footings and utilizing concrete slab-on-grade construction. Foundation loads are anticipated to be light to moderately heavy. On-site paved areas and underground utilities are also planned.

SOIL PROFILE AND SUBSURFACE CONDITIONS

Subsurface soil conditions were explored by drilling 32 borings to depths of approximately 8 to 50 feet below existing site grade, utilizing a truck-mounted drill rig. Boring Nos. 21-32 were terminated due to auger refusal in very dense weathered rock. The initial borings (B1-B6) were drilled at distances of 150 and 300 feet southwest of the property line. Boring Nos. B7-B26 were drilled near the property line and 150 feet southwest of the property line. Boring Nos. B27-B32 were drilled near the property line and 150

feet west of the spillway. The approximate boring locations are shown on the site plan. During drilling operations, penetration tests were performed at regular intervals to evaluate the soil consistency and to obtain information regarding the engineering properties of the subsoils. Soil samples were retained for laboratory testing. The soils encountered were continuously examined and visually classified in accordance with the Unified Soil Classification System. A more detailed description of the field investigation is presented in Appendix A.

Laboratory tests were performed on selected soil samples to evaluate their physical characteristics and engineering properties. Details of the laboratory test program and results of the laboratory tests are summarized in Appendix A. This information, along with the field observations, was used to prepare the final boring logs in Appendix A.

In general, the upper soils within the site consist of approximately 6 to 12 inches of very loose silty sand, clayey sand, sandy clay and silty sand with trace clay. These soils are disturbed, have low strength characteristics, and are highly compressible when saturated.

Below the loose surface soils within the area southwest of the reservoir, approximately 8 to 17 feet of loose to very dense silty sand, sandy silt/sandy clay, silty sand/sandy silt, sandy silt, silty sand/sand, silty sand/clayey sand, clayey silty sand, clayey sand/sandy clay, clayey sand and clayey sandy silt or very stiff to hard sandy clay were encountered. Some of these soils contained traces of clay and gravel. Field and laboratory tests suggest that these soils are moderately strong and slightly compressible. Penetration resistance ranged from 5 blows per foot to over 50 blows per 6 inches. Dry densities ranged from 71 to 129 pcf.

Below 8½ to 18 feet, layers of loose to very dense clayey silty sand, silty sand/sandy silt, clayey sand/sandy clay, clayey sand, silty sand, silty sand/sand, sand, clayey sandy silt, silty sand/clayey sand, sandy clayey silt and sandy silt or very stiff to hard sandy clay were encountered. Some of these soils included traces of clay and gravel. These soils had similar strength characteristics as the upper soils. Penetration resistance ranged from 9 blows per foot to over 50 blows per 6 inches. Dry densities ranged from 80 to 130 pcf. These soils extended to the termination depth of our borings. Boring Nos. B21-B26 were terminated in very dense metamorphic rock at depths of 27½ to 40½ feet below existing site grade.

Below the loose surface soils in the area west of the spillway (Boring Nos. B27-B32), approximately 4 to 9½ feet of medium dense to very dense silty sand, silty sand with clay, clayey sand/sandy clay and clayey sand or firm sandy clay were encountered. Field and laboratory tests suggest that these soils are moderately strong and slightly compressible. Penetration resistance ranged from 22 blows per foot to over 50 blows per 6 inches. Dry densities ranged from 79 to 130 pcf.

Below 5 to 14½ feet, predominately very dense highly to slightly weathered metamorphic rock was encountered. These soils had higher strength characteristics than the upper soils. Penetration resistance was greater than 50 blows per 6 inches. Dry densities ranged from 83 to 115 pcf. These soils extended to the termination depth of our borings. The borings were terminated due to auger refusal at depths of 8 to 17 feet.

For additional information about the soils encountered, please refer to the attached logs of the borings.

PERMEABILITY TESTING

Seventeen permeability tests were conducted on undisturbed soil samples collected from depths of 5 to 41 feet below existing site grade. The permeability tests were performed in accordance with ASTM Test Method D2434. The test results are as follows:

Test No.	Depth (feet)	Coefficient of Permeability (cm/second)	Soil Type
B1	12-13	7.9×10^{-6}	Silty Sand/Sandy Silt (SM/ML)
B1	25-26	2.2×10^{-5}	Silty Sand (SM)
B1	35-36	9.0×10^{-7}	Clayey Sand/Sandy Clay (SC/CL)
B2	20-21	4.0×10^{-5}	Silty Sand (SM)
B3	10-11	2.3×10^{-5}	Silty Sand (SM)
B3	17-18	1.1×10^{-4}	Silty Sand/Sand (SM/SP)
B3	20-21	1.7×10^{-5}	Clayey Sand (SC)
B3	25-26	8.3×10^{-5}	Silty Sand (SM)
B3	35-36	4.6×10^{-5}	Silty Sand (SM)
B4	5-6	9.1×10^{-6}	Clayey Silty Sand (SM/SC)
B4	10-11	9.0×10^{-7}	Clayey Sand/Sandy Clay (SC/CL)
B4	15-16	2.6×10^{-5}	Silty Sand (SM)
B4	25-26	6.3×10^{-6}	Clayey Sand (SC)
B4	40-41	3.3×10^{-5}	Silty Sand (SM)
B5	30-31	7.5×10^{-6}	Clayey Sand (SC)
B6	30-31	6.4×10^{-5}	Silty Sand (SM)
B6	40-41	3.5×10^{-5}	Silty Sand (SM)

The test results indicate that the soils tested have fair to poor absorption characteristics.

PERCOLATION TESTING

Two percolation tests were performed within the site to evaluate the soils absorption characteristics. The percolation tests were performed inside test holes drilled near the borings. The percolation tests were performed at depths of 15 and 20 feet below the existing ground surface. Results of the tests are as follows:

Test No.	Depth (ft)	Percolation Rate (min/in)	Soil Type
1	20	60	Silty Sand (SM)
2	15	90	Silty Sand/Sandy Silt (SM/ML)

The test results indicate that the soils tested have fair absorption characteristics. The test results do not include a factor of safety. The percolation rates given are based on 1 inch of fall within a 6-inch diameter hole with a 12-inch head of water.

HISTORIC BIG DRY CREEK RESERVOIR STORAGE

The historic levels of water storage in the Big Dry Creek Reservoir were obtained from data available from the US Army Corps of Engineers website (www.spk-wc.usace.army.mil/plots/california.html). The data from after 2013 also provided the elevation of the water stored in the levee. The table below provides the maximum volume of water stored in the reservoir each year since 2006. Where available, the surface water elevation is also provided.

Year	Maximum Volume Stored (acre-ft)	Surface Water Elevation
2006	9,588	Not Published
2007	188	Not Published
2008	525	Not Published
2009	188	Not Published
2010	2,498	Not Published
2011	8,437	Not Published
2012	792	Not Published
2013	188	400.00
2014	188	400.00
2015	188	400.00
2016	1675	408.77
2017	11,197	421.42
2018	2096	410.00
2019	3375	412.65
2020	188	400.00
2021	188	400.00
2022	188	400.00
2023	10,457	420.81

GROUNDWATER

The test boring locations were checked for the presence of groundwater during and immediately following the drilling operations. During our initial field investigation performed in August 2022, free groundwater was encountered at approximately 26 to 39 feet below existing site grade. The initial water

level was approximately 29 to 39 feet and rose to depths of 24 to 34 feet after 24 hours. During our field investigations performed in February and April 2023, free groundwater was initially encountered at depths of 7 to 30 feet below existing site grade. The depth to groundwater was measured at depths of 3 to 23 feet below existing site grade after 24 hours. A table showing the initial and final groundwater elevations is provided below.

Boring No.	Date	Initial Depth to Groundwater	Final Depth to Groundwater
1	8-29-22	35	26
2	8-29-22	32	26
3	8-30-22	24	24
4	8-30-22	35	27
5	8-31-22	39	34
6	8-31-22	32	27
7	2-14-23	15	23
8	2-14-23	25	23
9	2-16-23	20	17
10	2-16-23	11	9
11	2-17-23	10	8
12	2-17-23	15	11
13	4-11-23	11	9½
14	4-11-23	13	15
15	4-11-23	15	20
16	4-12-23	12½	7
17	4-12-23	12½	6
18	4-13-23	7	3
19	4-13-23	15	4
20	4-14-23	10	10
21	4-17-23	7	3
22	4-17-23	25	4
23	4-18-23	22	3
24	4-18-23	30	3
25	4-18-23	20	4
26	4-19-23	7	10
27	7-7-23	NA	NA

28	7-7-23	NA	NA
29	7-7-23	NA	NA
30	7-7-23	NA	NA
31	7-7-23	NA	NA
32	7-7-23	NA	NA

It should be recognized that water table elevations may fluctuate with time, being dependent upon seasonal precipitation, irrigation, land use, amount of water stored in the reservoir, and climatic conditions, as well as other factors. During the recent period of high-water storage in the reservoir, the hydrostatic pressure of the water associated with the reservoir resulted in much shallower water levels than during the period with little or no storage in the reservoir. Therefore, water level observations at the time of the field investigation may vary from those encountered during the construction phase of the project.

SOIL LIQUEFACTION

Soil liquefaction is a state of soil particle suspension, caused by a complete loss of strength when the effective stress drops to zero. Liquefaction normally occurs in soils, such as sands, in which the strength is purely frictional. However, liquefaction has occurred in soils other than clean sands. Liquefaction usually occurs under vibratory conditions, such as those induced by seismic events.

To evaluate the liquefaction potential of the site, the following items were evaluated:

1) Soil type

2) Relative density

3) Initial confining pressure

4) Intensity and duration of groundshaking

The predominate soils encountered in our soil borings advanced within the project site consist of silty sands, sandy silts, clayey sands, clayey silts, sandy clays and sands. Groundwater was encountered at depths of 3 to 39 feet below existing site grade during our exploratory drilling.

The potential for soil liquefaction during a seismic event was evaluated on each boring using the "LiquefyPro" computer program (version 5) developed by CivilTech Software. For the analysis, a maximum earthquake magnitude of 6.15 was used. A peak horizontal ground surface acceleration of 0.307g was used for the liquefaction analysis. To model a worst-case scenario, a groundwater depth of 2 feet was used for the analysis. The analysis indicates that soils above a depth of 2 feet are non-liquefiable due to the absence of groundwater. The soils below a depth of 2 feet have a very low to moderate potential for liquefaction under seismic shaking.

The evaluation performed by Krazan & Associates, Inc. indicates the subsurface soils beneath the site have a low potential for liquefaction under seismic conditions. The estimated seismic induced total and differential settlements are indicated to be less than 1 inch and ⅔ inch, respectively. A table is provided below showing the estimated seismic settlement at each boring location. The data used to determine the liquefaction potential and settlement was derived from the Standard Penetration Tests (SPT) performed at 2½ foot intervals in the upper 20 feet and 5 foot intervals between 20 and 50 feet.

Boring No.	Total Seismic Settlement	Differential Seismic Settlement
B1	0.18	0.12
B2	0.00	0.00
B3	0.00	0.00
B4	0.00	0.00
B5	0.16	0.11
B6	0.45	0.30
B7	0.80	0.54
B8	0.59	0.40
B9	0.77	0.52
B10	0.66	0.44
B11	0.71	0.48
B12	0.87	0.58
B13	0.11	0.08
B14	0.04	0.03
B15	0.36	0.24
B16	0.04	0.03
B17	0.87	0.58
B18	0.28	0.19
B19	0.00	0.00
B20	0.00	0.00
B21	0.04	0.03
B22	0.00	0.00
B23	0.16	0.11

GROUNDWATER AND SURFACE WATER CONSIDERATIONS

Surface water runoff associated with the existing reservoir levee is the predominate concern for the planned development. During the recent period of high-water storage in the reservoir, the toe drain for the levee was not able to handle the high volume of water. This resulting in piping of soil on the FMFCD property near the property line which resulted in surface water collecting on the parcels planned for development. Based on the historical storage volumes obtained from the US Army Corps of Engineers, it appears these high water levels have occurred 4 out of the last 18 years or 22 percent of the time. Within the eastern portion of the planned development located adjacent to the Big Dry Creek Reservoir levee, surface water has ponded on the site. Based on our observations in the field, this surface water is directly related to the water piping out of the soil immediately adjacent to the west side of the reservoir. The inadequacy of the toe drain has resulted in impacts to the subject property that will preclude development of a portion of the property and additional improvements to collect and drain water resulting from the reservoir onto this property. In order to intercept this water from the areas of planned construction, it is recommended interceptor trenches be installed at a distance of approximately 250 feet southwest of the property line adjacent to the levee and near the property line adjacent to the spillway.

The interceptor trench should be 2 feet wide and at least 10 feet deep. The trench sidewalls should be raked to reduce the effects of soil smearing, which may occur during construction and adversely affect soil permeability. A geotextile filter fabric should be installed along the trench walls. A Schedule 40 perforated pipe should be placed no higher than 6 inches above the bottom of the trench. The pipe should be at least 4 inches in diameter and of sufficient strength to resist applied soil pressure and external loads. The perforated drain pipe should be installed at a gradient of at least 1 percent and should discharge to a suitable project drainage system. A detail of the interceptor trench is shown in Figure 2.

The trench shall be backfilled with 9 feet of 1½-inch round river gravel or crushed rock. A permeable barrier, such as untreated construction paper, should be placed between the backfill gravel and native soils to prevent migration of fine materials into the gravel. Native backfill soils should then be backfilled over the paper. The backfill material should be placed in 6-inch lifts and compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Failure of the reservoir levee is outside of the scope of our evaluation.

CONCLUSION

Based on our evaluation, liquefaction and sand boils do not appear to be a geologic hazard at the site. In addition, the depth to naturally occurring groundwater is not a problem at the site. The primary concern for the development is water runoff resulting from the toe drain not properly collecting the water associated with the reservoir and resulting in piping of water out of the soil immediately west of the reservoir. This water associated with the reservoir results in ponding of water on the eastern edge of the project planned for development. Provided the groundwater interceptor is constructed as described above, our investigation indicates the setback for the residential structures can be reduced from 500 feet to 250 feet southwest of the levee. No minimum setback is required west of the spillway. Figures 3 through 7 show the estimated location of the interceptor trench.

LIMITATIONS

Soils Engineering is one of the newest divisions of Civil Engineering. This branch of Civil Engineering is constantly improving as new technologies and understanding of earth sciences advance. Although your site was analyzed using the most appropriate and most current techniques and methods, undoubtedly there will be substantial future improvements in this branch of engineering. In addition to advancements in the field of Soils Engineering, physical changes in the site, either due to excavation or fill placement, new agency regulations, or possible changes in the proposed structure after the soils report is completed, may require the soils report to be professionally reviewed. In light of this, the owner should be aware that there is a practical limit to the usefulness of this report without critical review. Although the time limit for this review is strictly arbitrary, it is suggested that 2 years be considered a reasonable time for the usefulness of this report.

Foundation and earthwork construction is characterized by the presence of a calculated risk that soil and groundwater conditions have been fully revealed by the original foundation investigation. This risk is derived from the practical necessity of basing interpretations and design conclusions on limited sampling of the earth. The recommendations made in this report are based on the assumption that soil conditions do not vary significantly from those disclosed during our field investigation. If any variations or undesirable conditions are encountered during construction, the Soils Engineer should be notified so that supplemental recommendations may be made.

This report is a Soil Liquefaction Evaluation with the purpose of evaluating the soil conditions in terms of foundation design. The scope of our services did not include any Environmental Site Assessment for the presence or absence of hazardous and/or toxic materials in the soil, groundwater, or atmosphere; or the presence of wetlands. Any statements, or absence of statements, in this report or on any boring log regarding odors, unusual or suspicious items, or conditions observed, are strictly for descriptive purposes, and are not intended to convey engineering judgment regarding potential hazardous and/or toxic assessment.

The geotechnical information presented herein is based upon professional interpretation utilizing standard engineering practices and a degree of conservatism deemed proper for this project. It is not warranted that such information and interpretation cannot be superseded by future geotechnical developments. We emphasize that this report is valid for the project outlined above, and should not be used for any other site.

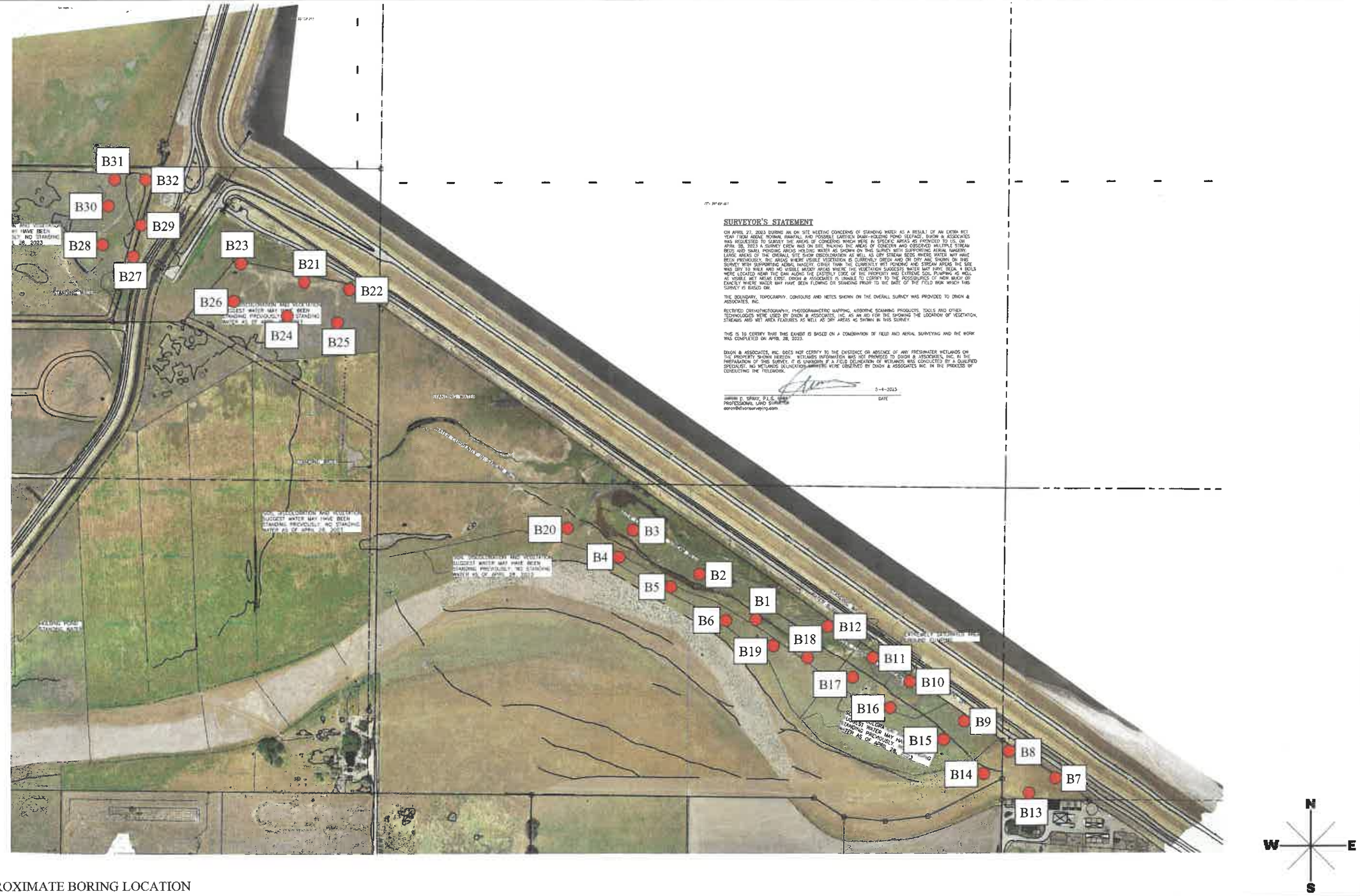
If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (559) 348-2200.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

REGISTERED PROFESSIONAL ENGINEER
DAVID R. JAROSZ II
2698
GEOTECHNICAL
STATE OF CALIFORNIA

David R. Jarosz, II
Managing Engineer
RCE No. 60185/RGE No. 2698

DRJ:ht



SURVEYOR'S STATEMENT

ON APRIL 27, 2023 DURING AN ON SITE MEETING CONCERNS OF STANDING WATER AS A RESULT OF AN EXTRA WET YEAR FROM ABOVE NORMAL RAINFALL AND POSSIBLE EARTHEN DAMS-HOLDING POND SEEPAGE, DIXON & ASSOCIATES WAS REQUESTED TO SURVEY THE AREAS OF CONCERNS WHICH WERE IN SPECIFIC AREAS AS PROVIDED TO US. ON APRIL 28, 2023 A SURVEY CREW WAS ON SITE WALKING THE AREAS OF CONCERN AND OBSERVED MULTIPLE STREAM BEDS AND SMALL PONDING AREAS HOLDING WATER AS SHOWN ON THIS SURVEY WITH SUPPORTING AERIAL IMAGERY. LARGE AREAS OF THE OVERALL SITE SHOW DISCOLORATION AS WELL AS DRY STREAM BEDS WHERE WATER MAY HAVE BEEN PREVIOUSLY. THE AREAS WHERE VISIBLE VEGETATION IS CURRENTLY GREEN AND OR DRY ARE SHOWN ON THIS SURVEY WITH SUPPORTING AERIAL IMAGERY. OTHER THAN THE CURRENTLY WET PONDING AND STREAM AREAS THE SITE WAS DRY TO WALK AND NO VISIBLE MUDDY AREAS WHERE THE VEGETATION SUGGESTS WATER MAY HAVE BEEN. 4 BOLS WERE LOCATED NEAR THE DAM ALONG THE EASTERLY EDGE OF THE PROPERTY AND EXTREME SOIL PUMPING AS WELL AS VISIBLE WET AREAS EXIST. DIXON & ASSOCIATES IS UNABLE TO CERTIFY TO THE POSSIBILITIES OF HOW MUCH OR EXACTLY WHERE WATER MAY HAVE BEEN FLOWING OR STANDING PRIOR TO THE DATE OF THE FIELD WORK WHICH THIS SURVEY IS BASED ON.

THE BOUNDARY, TOPOGRAPHY, CONTOURS AND NOTES SHOWN ON THE OVERALL SURVEY WAS PROVIDED TO DIXON & ASSOCIATES, INC.

RECTIFIED ORTHOPHOTOGRAPHY, PHOTOGRAMMETRIC MAPPING, AIRBORNE SCANNING PRODUCTS, TOOLS AND OTHER TECHNOLOGIES WERE USED BY DIXON & ASSOCIATES, INC. AS AN AID FOR THE SHOWING THE LOCATION OF VEGETATION, STREAMS AND WET AREA FEATURES AS WELL AS DRY AREAS AS SHOWN IN THIS SURVEY.

THIS IS TO CERTIFY THAT THIS EXHIBIT IS BASED ON A COMBINATION OF FIELD AND AERIAL SURVEYING AND THE WORK WAS COMPLETED ON APRIL 28, 2023.

DIXON & ASSOCIATES, INC. DOES NOT CERTIFY TO THE EXISTENCE OR ABSENCE OF ANY FRESHWATER WETLANDS ON THE PROPERTY SHOWN HEREON. WETLANDS INFORMATION WAS NOT PROVIDED TO DIXON & ASSOCIATES, INC. IN THE PREPARATION OF THIS SURVEY. IT IS UNKNOWN IF A FIELD DELINEATION OF WETLANDS WAS CONDUCTED BY A QUALIFIED SPECIALIST. NO WETLANDS DELINEATION [illegible] WERE OBSERVED BY DIXON & ASSOCIATES INC. IN THE PROCESS OF CONDUCTING THE FIELDWORK.

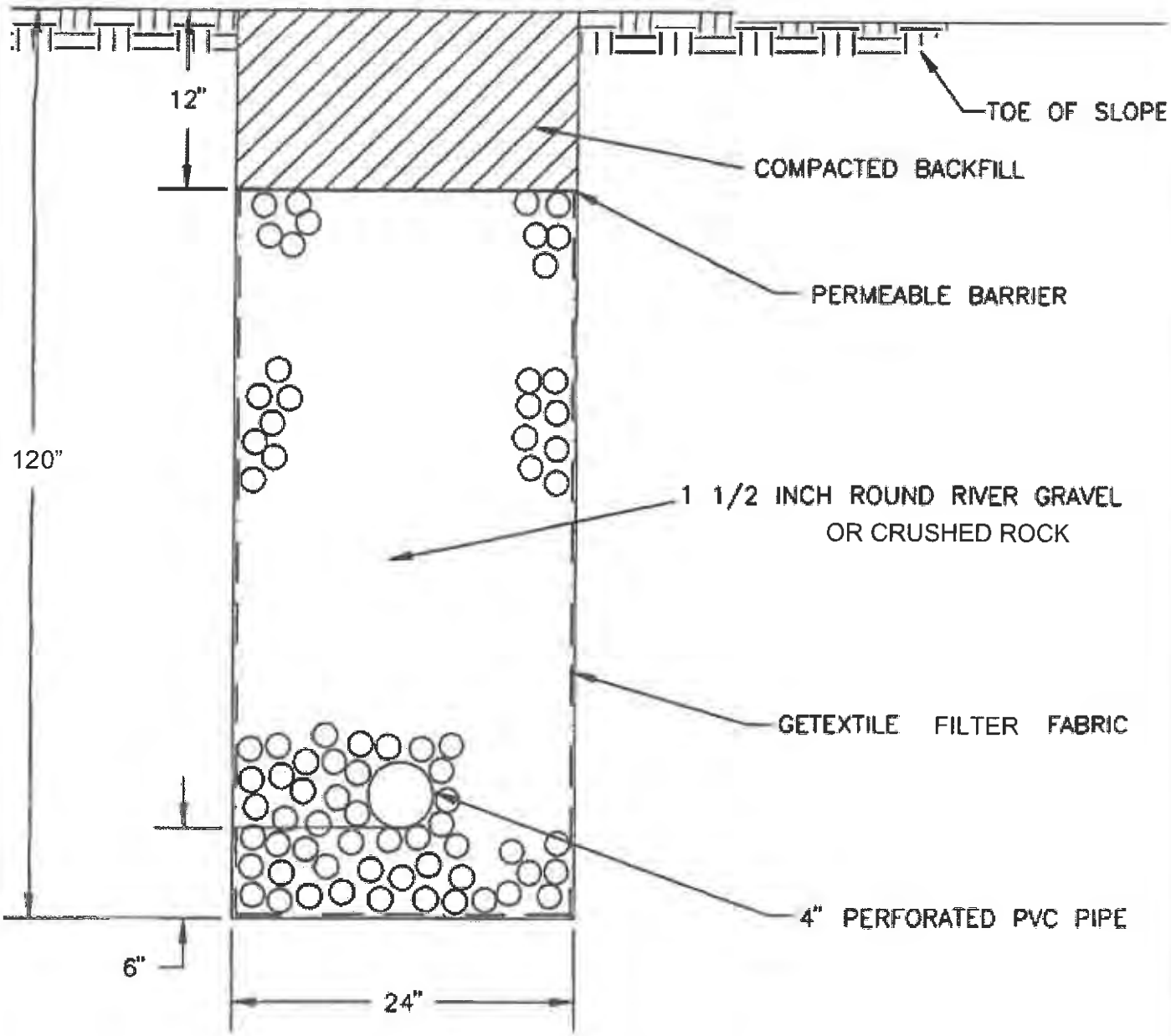
5-4-2023

[illegible] D. SPRAY, P.L.S. [illegible]
PROFESSIONAL LAND SURVEYOR
aaron@dixonsurveying.com

DATE

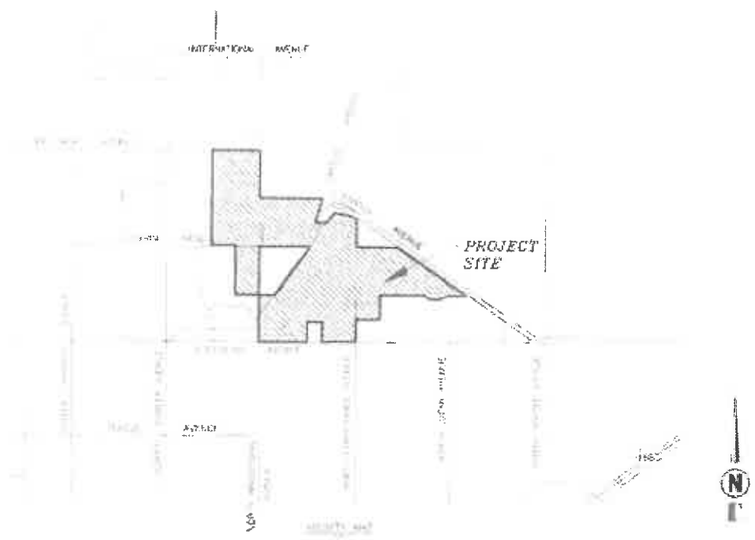
APPROXIMATE BORING LOCATION

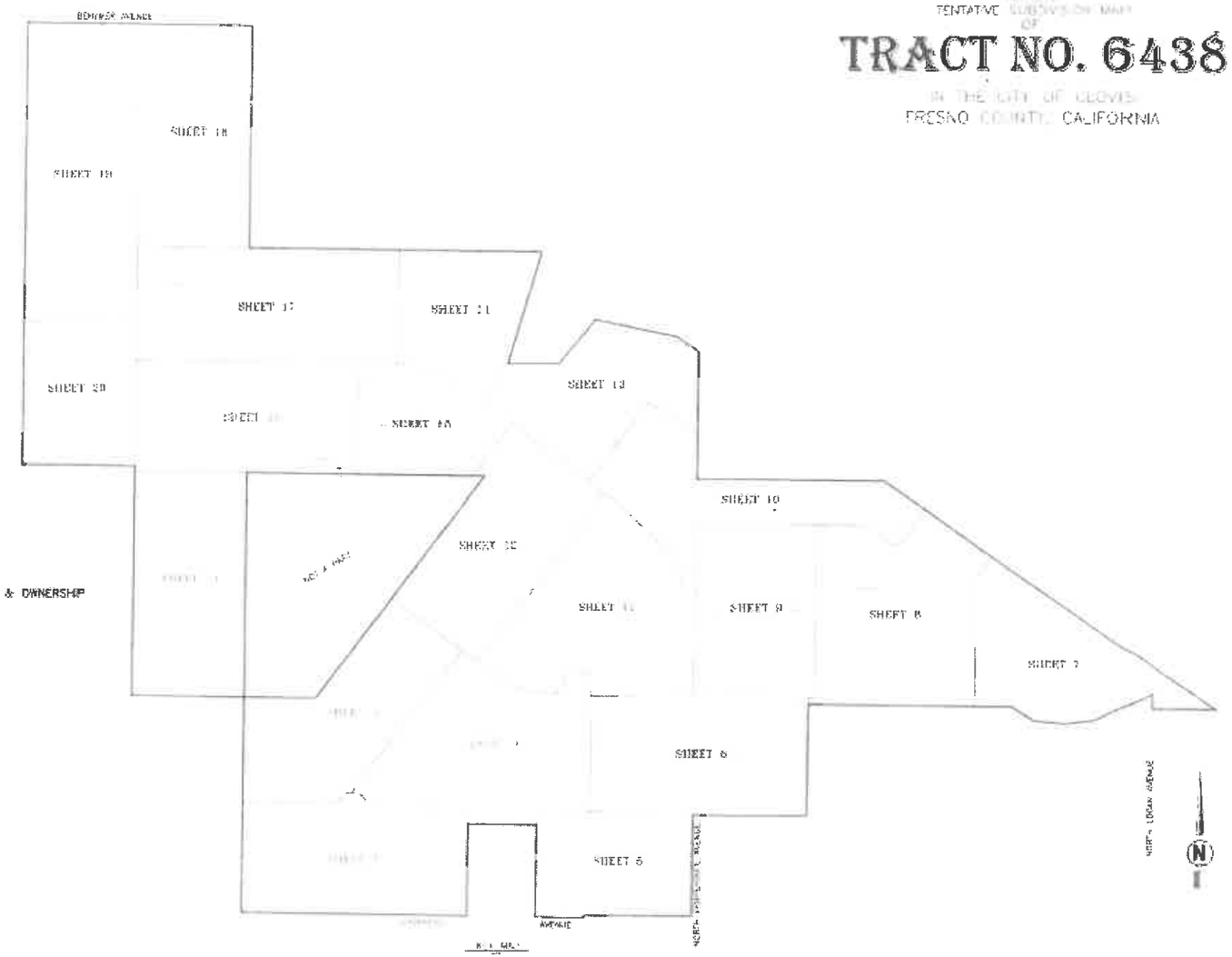
SITE MAP	Scale: NTS	Date: August 2023	Krazan GEOTECHNICAL ENGINEERING
Triangle Development Shepherd Avenue and Locan Avenue Clovis, California	Drawn by: HT	Approved by: DJ	
	Project No. 012-22165	Figure No. 1	



GROUND WATER INTERCEPTOR DETAIL

INTERCEPTOR DETAIL	**Scale:** NTS	**Date:** Sep. 2023	Krazan GEOTECHNICAL ENGINEERING
Triangle Development **Shepherd Avenue and Locan Avenue** **Clovis, California**	**Drawn by:** As Shown	**Approved by:** DJ	
	Project No. 012-22165	**Figure No.** 2	





TENTATIVE PARCEL MAP OF SUBDIVISION MAP OF

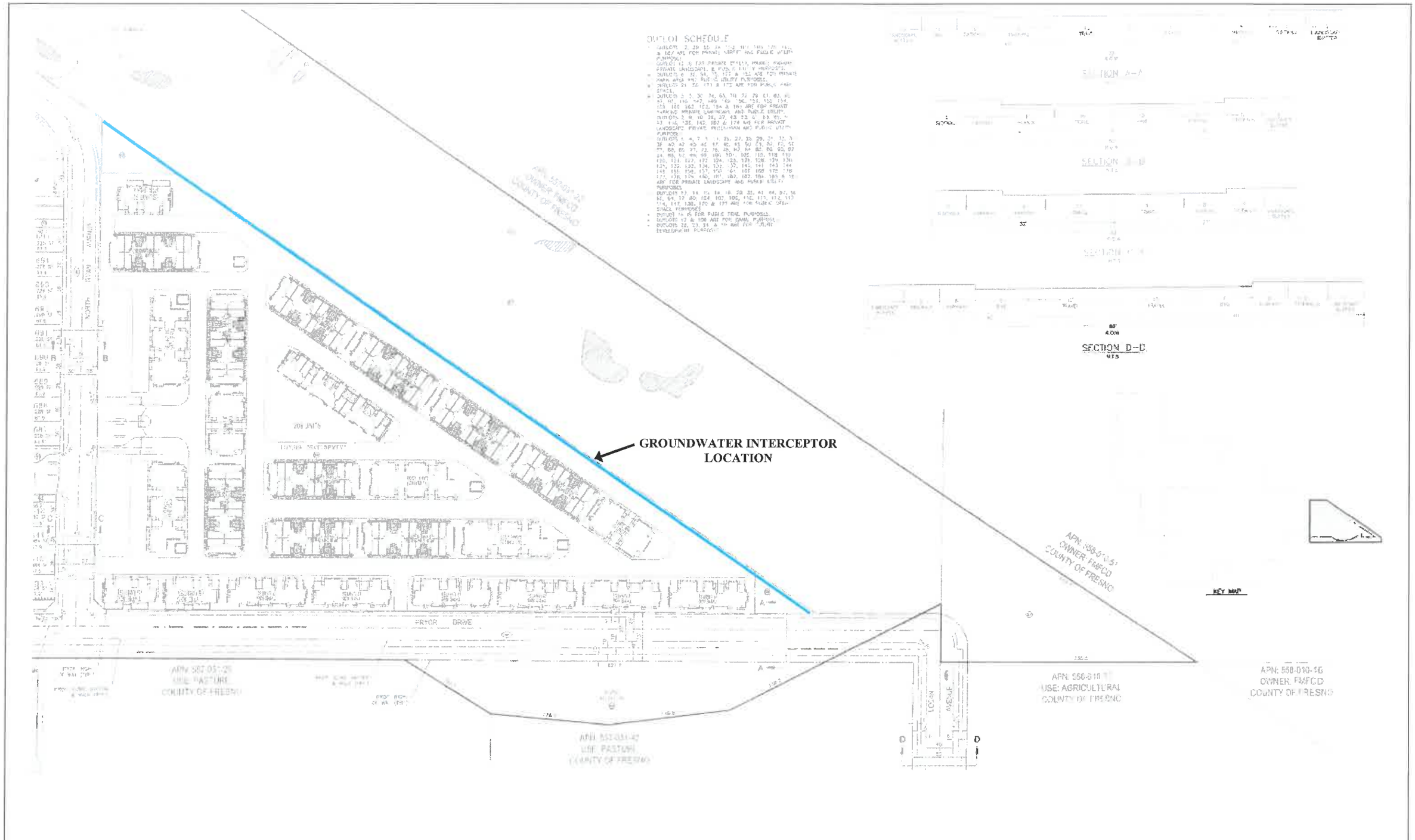
TRACT NO. 6438

IN THE CITY OF CLOVIS
FRESNO COUNTY, CALIFORNIA

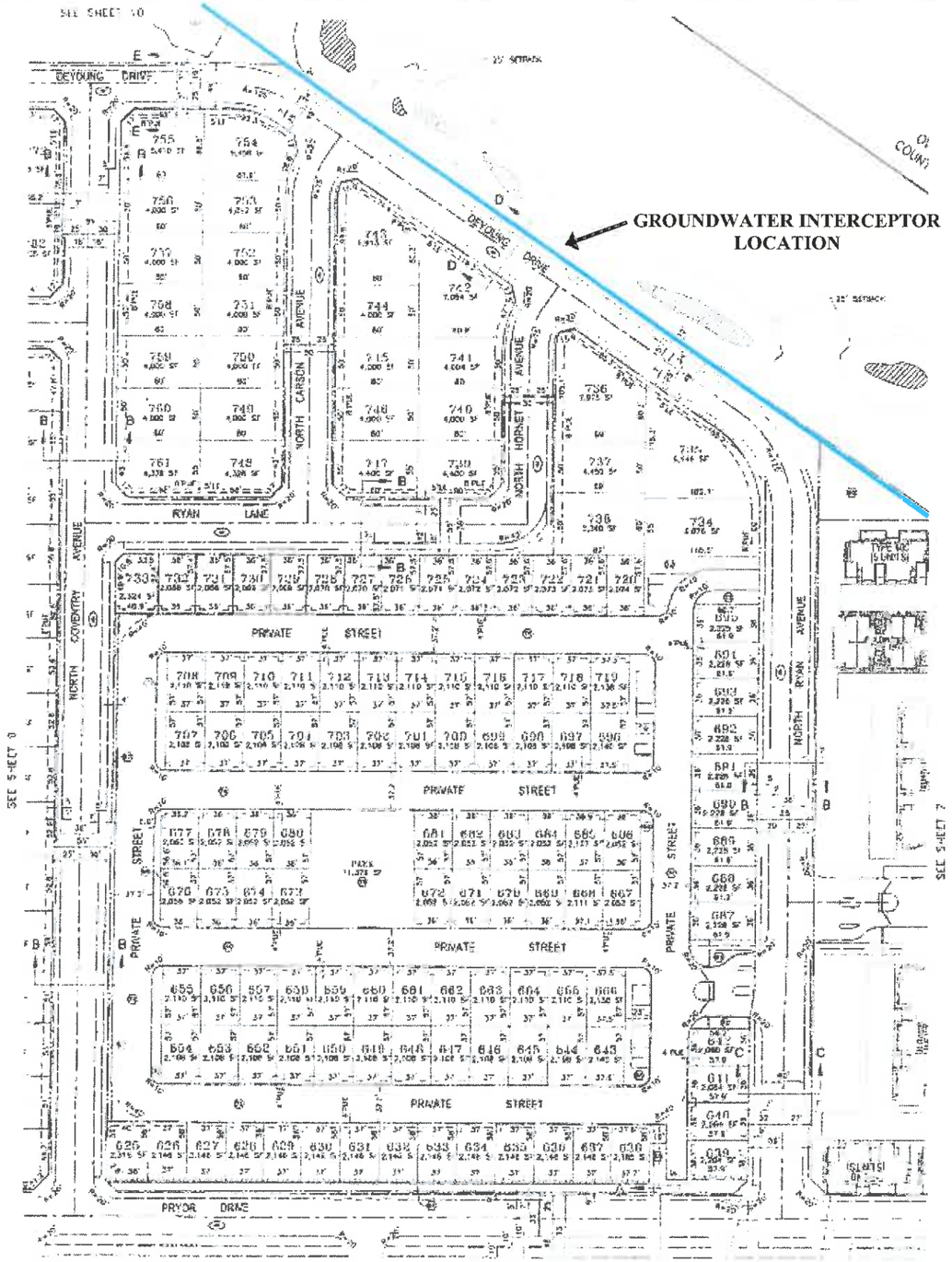
LEGAL DESCRIPTION:

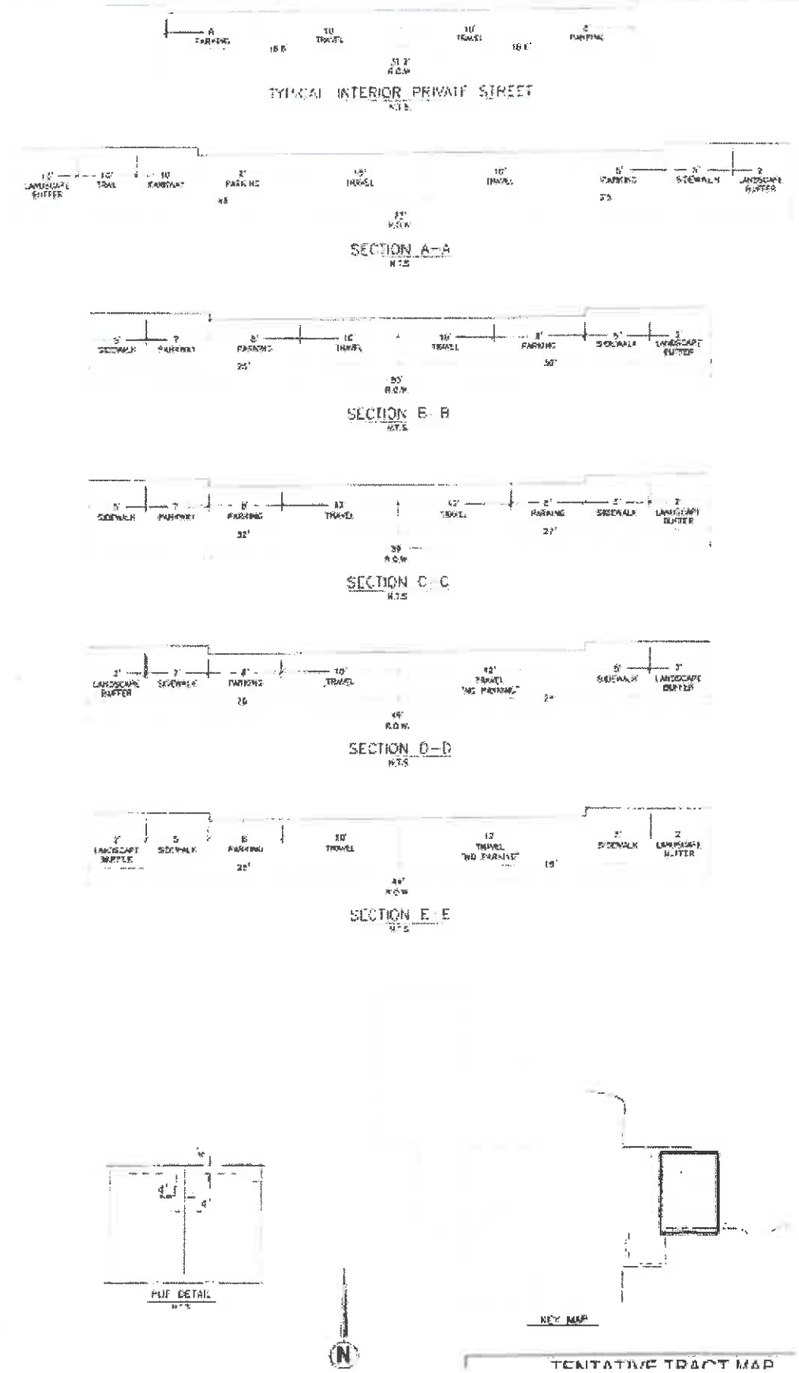
ASSESSOR'S PARCEL NUMBER, SITE ADDRESS, USE & OWNERSHIP

GROUNDWATER INTERCEPTOR LOCATION	**Scale:** NTS	**Date:** September 2023	Krazan GEOTECHNICAL ENGINEERING
Triangle Development **Shepherd Avenue and Locan Avenue** **Clovis, California**	**Drawn by:** HT	**Approved by:** DJ	
	Project No. 012-22165	**Figure No.** 3	

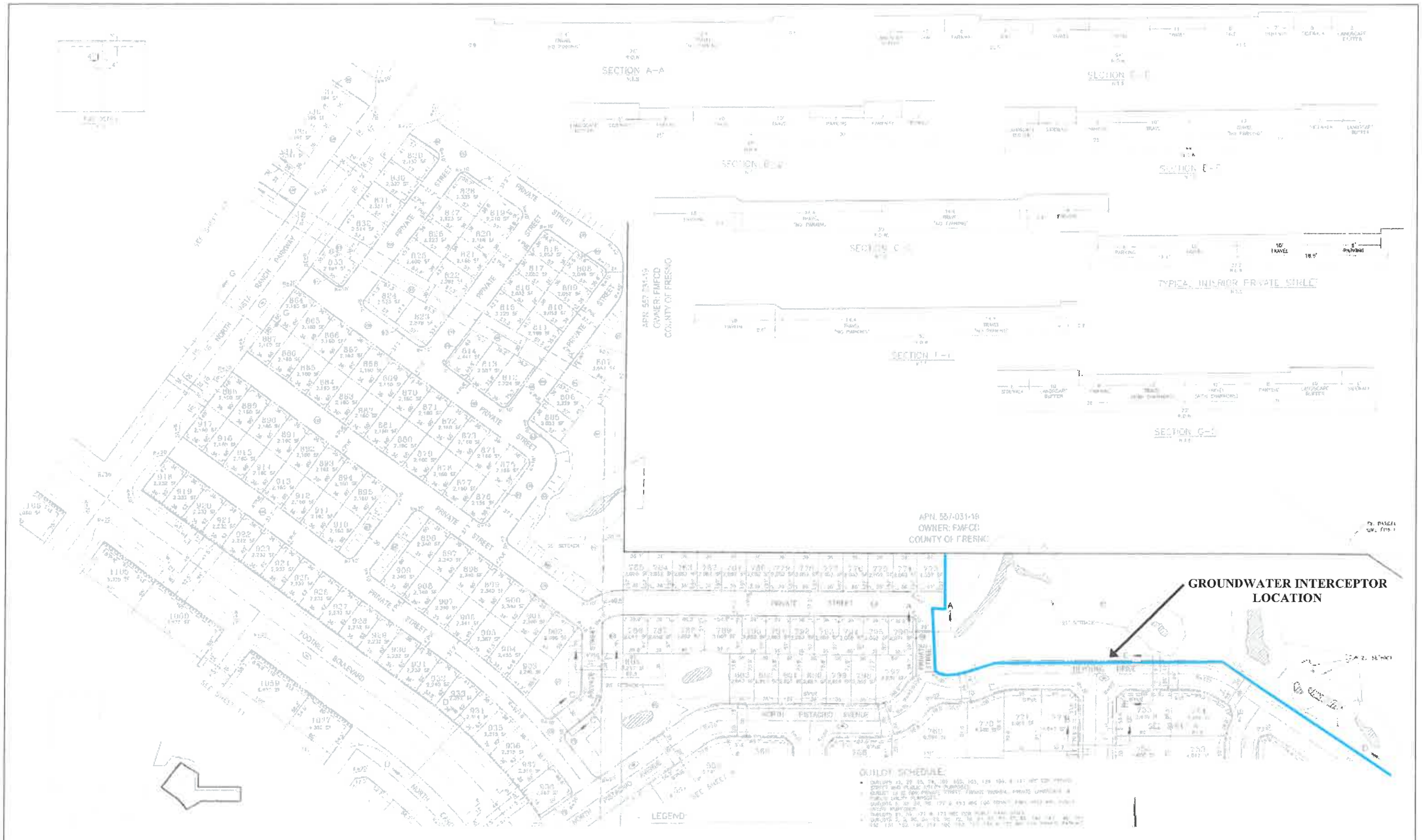


GROUNDWATER INTERCEPTOR LOCATION	Scale: NTS	Date: September 2023	Krazan GEOTECHNICAL ENGINEERING
Triangle Development Shepherd Avenue and Locan Avenue Clovis, California	Drawn by: HT	Approved by: DJ	
	Project No. 012-22165	Figure No. 4	

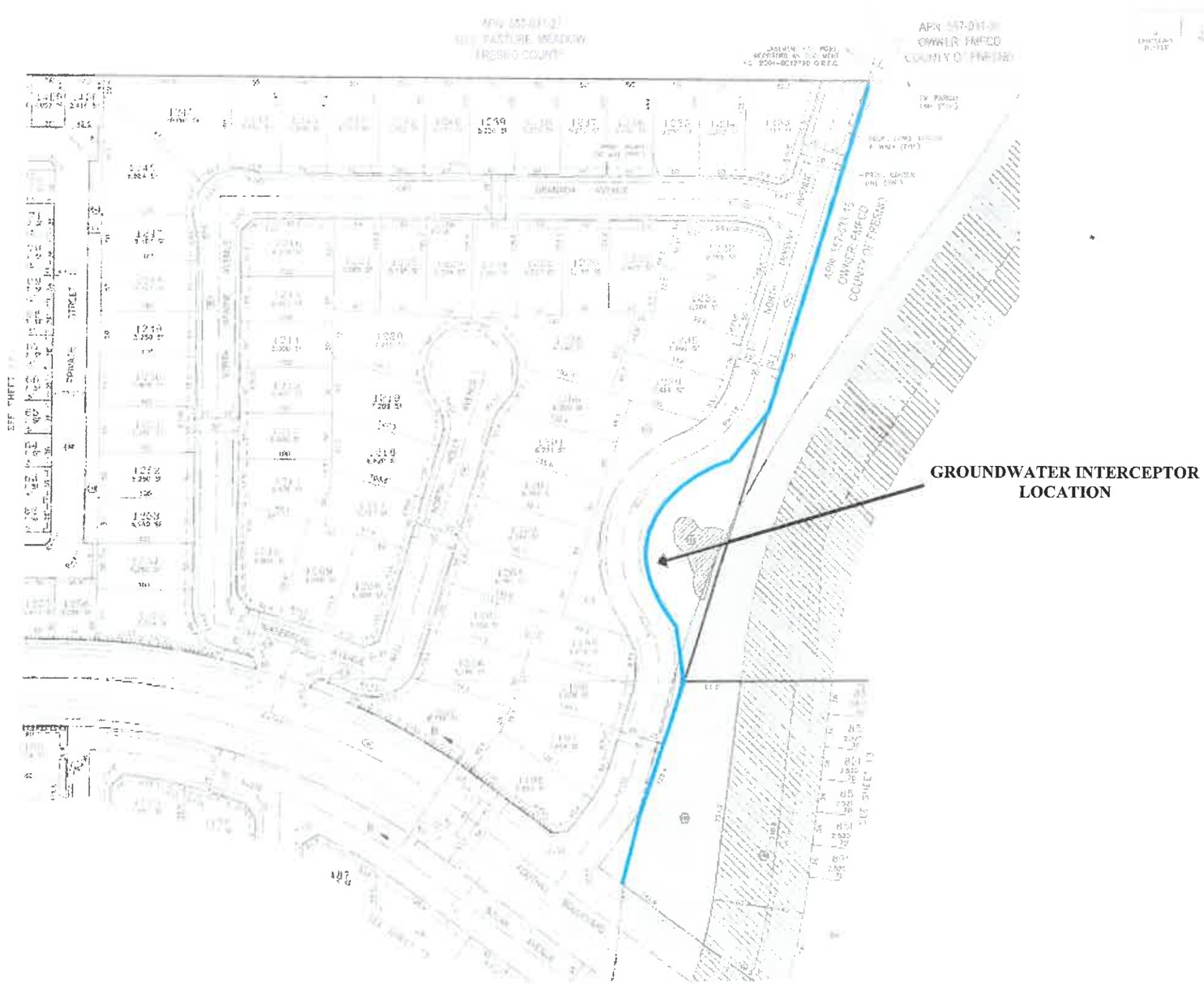




GROUNDWATER INTERCEPTOR LOCATION	**Scale:** NTS	**Date:** September 2023	Krazan GEOTECHNICAL ENGINEERING
Triangle Development **Shepherd Avenue and Locan Avenue** **Clovis, California**	**Drawn by:** HT	**Approved by:** DJ	
	Project No. 012-22165	**Figure No.** 5	



GROUNDWATER INTERCEPTOR LOCATION	Scale: NTS	Date: September 2023	Krazan GEOTECHNICAL ENGINEERING
Triangle Development Shepherd Avenue and Locan Avenue Clovis, California	Drawn by: HT	Approved by: DJ	
	Project No. 012-22165	Figure No. 6	



GROUNDWATER INTERCEPTOR LOCATION	Scale: NTS	Date: September 2023	Krazan GEOTECHNICAL ENGINEERING
Triangle Development Shepherd Avenue and Locan Avenue Clovis, California	Drawn by: HT	Approved by: DJ	
	Project No. 012-22165	Figure No. 7	

FIELD AND LABORATORY INVESTIGATIONS

Field Investigation

The field investigation consisted of a surface reconnaissance and a subsurface exploratory program. Thirty-two 4½-inch exploratory borings were advanced. The boring locations are shown on the site plan.

The soils encountered were logged in the field during the exploration and, with supplementary laboratory test data, are described in accordance with the Unified Soil Classification System.

Modified standard penetration tests and standard penetration tests were performed at selected depths. These tests represent the resistance to driving a 2½-inch and 1½-inch diameter split barrel sampler, respectively. The driving energy was provided by a hammer weighing 140 pounds falling 30 inches. Relatively undisturbed soil samples were obtained while performing this test. Bag samples of the disturbed soil were obtained from the auger cuttings. The modified standard penetration tests are identified in the sample type on the boring logs with a full shaded in block. The standard penetration tests are identified in the sample type on the boring logs with half of the block shaded. All samples were returned to our Clovis laboratory for evaluation.

Laboratory Investigation

The laboratory investigation was programmed to determine the physical and mechanical properties of the foundation soil underlying the site. Test results were used as criteria for determining the engineering suitability of the surface and subsurface materials encountered.

In situ moisture content, dry density, sieve analysis, Atterberg limits and permeability tests were determined for the undisturbed samples representative of the subsurface material. These tests, supplemented by visual observation, comprised the basis for our evaluation of the site material.

The logs of the exploratory borings and laboratory determinations are presented herein.

UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)		
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)	
	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
	GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	
	GM	Silty gravels, gravel-sand-silt mixtures
	GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)	
	SW	Well-graded sands, gravelly sands, little or no fines
	SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	
	SM	Silty sands, sand-silt mixtures
	SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)		
SILTS AND CLAYS Liquid limit less than 50%	ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity
	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
	CH	Inorganic clays of high plasticity, fat clays
	OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS	PT	Peat and other highly organic soils

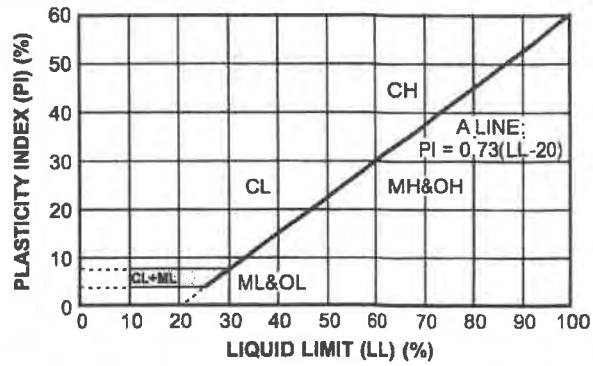
CONSISTENCY CLASSIFICATION

Description	Blows per Foot
Granular Soils	
Very Loose	< 5
Loose	5 – 15
Medium Dense	16 – 40
Dense	41 – 65
Very Dense	> 65
Cohesive Soils	
Very Soft	< 3
Soft	3 – 5
Firm	6 – 10
Stiff	11 – 20
Very Stiff	21 – 40
Hard	> 40

GRAIN SIZE CLASSIFICATION

Grain Type	*Standard Sieve Size*	*Grain Size in Millimeters*
Boulders	Above 12 inches	Above 305
Cobbles	12 to 13 inches	305 to 76.2
Gravel	3 inches to No. 4	76.2 to 4.76
Coarse-grained	3 to ¾ inches	76.2 to 19.1
Fine-grained	¾ inches to No. 4	19.1 to 4.76
Sand	No. 4 to No. 200	4.76 to 0.074
Coarse-grained	No. 4 to No. 10	4.76 to 2.00
Medium-grained	No. 10 to No. 40	2.00 to 0.42
Fine-grained	No. 40 to No. 200	0.42 to 0.074
Silt and Clay	Below No. 200	Below 0.074

PLASTICITY CHART



Log of Boring B1

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-1

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 35 Feet **At Completion:** 26 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches Medium dense below 2 feet						
2				7.9		16		
4		Percent passing No. 200 - 43.6%	105.5	7.2		24		
6		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained with CLAY; reddish-brown, damp, drills easily Percent passing No. 200 - 17.5%	120.7	4.4		28		
8		***SANDY SILT/SANDY CLAY (ML/CL)*** Very stiff, fine- to medium-grained; reddish-brown, damp, drills easily Percent passing No. 200 - 64.1%	117.1	14.0		15		
10		***SILTY SAND/SANDY SILT (SM/ML)*** Medium dense, fine- to medium-grained; brown, moist, drills easily Percent passing No. 200 - 52.9%	105.5	19.6		25		
12		***CLAYEY SILTY SAND (SM/SC)*** Medium dense, fine- to medium-grained; brown, moist, drills easily Percent passing No. 200 - 40.1%	111.6	16.0		17		
14			110.7	17.2		20		
16		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained; brown, moist, drills easily Percent passing No. 200 - 26.9%						
18								
20								

Drill Method: Hollow Stem

Drill Date: 8-29-22

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B1

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-1

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 35 Feet **At Completion:** 26 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Dense below 20 feet	113.9	9.5		31		
22								
24								
26		Medium dense below 25 feet Percent passing No. 200 - 44.2% Saturated below 26 feet	110.7	17.6		26		
28								
30		***SILTY SAND/SANDY SILT (SM/ML)*** Dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 49.8%	111.8	17.2		30		
32								
34								
36		***CLAYEY SAND/SANDY CLAY (SC/CL)*** Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 52.3%	80.4	36.2		16		
38								
40								

Drill Method: Hollow Stem

Drill Date: 8-29-22

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B1

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-1

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 35 Feet **At Completion:** 26 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		SILTY SAND (SM) Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 35.9%	110.9	16.2		24		
42								
44								
		Very dense below 45 feet Percent passing No. 200 - 38.5%	109.4	17.3		22		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 8-29-22

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B2

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-2

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 32 Feet **At Completion:** 26 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches						
2		***SANDY SILT (ML)*** Very dense, fine- to medium-grained; brown, damp, drills firmly	108.4	15.1		48		
4								
6		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained with CLAY; brown, damp, drills easily Percent passing No. 200 - 27.9%	116.7	6.4		22		
8		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained; brown, damp, drills easily	118.0	9.1		16		
10			115.3	10.1		14		
12		Percent passing No. 200 - 43.4%	123.5	12.2		27		
14		***SILTY SAND/SANDY SILT (SM/ML)*** Medium dense, fine- to medium-grained; brown, moist, drills easily Percent passing No. 200 - 48.9%	117.0	12.2		29		
16		Dense below 17 feet	118.1	14.0		42		
18								
20		Percent passing No. 200 - 34.5%						

Drill Method: Hollow Stem

Drill Date: 8-29-22

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B2

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-2

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 32 Feet **At Completion:** 26 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		SILTY SAND (SM) Dense, fine- to medium-grained; brown, damp, drills easily	109.2	15.7		32		
22								
24		***CLAYEY SAND (SC)*** Dense, fine- to medium-grained with thin lenses of SILTY SAND; reddish-brown, damp, drills easily Percent passing No. 200 - 39.7%	113.1	16.8		35		
26								
28								
30		Percent passing No. 200 - 34.6%	114.3	16.1		40		
32		Saturated below 32 feet						
34		***CLAYEY SILTY SAND (SM/SC)*** Dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 26.4%	120.8	13.6		36		
36								
38		***SILTY SAND (SM)*** Dense, fine- to medium-grained; brown, moist, drills easily Percent passing No. 200 - 33.0%						
40								

Drill Method: Hollow Stem

Drill Date: 8-29-22

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B2

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-2

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 32 Feet **At Completion:** 26 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
			124.6	11.1		44		
42								
44								
		Very dense below 45 feet Percent passing No. 200 - 33.7%		17.1		62		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 8-29-22

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B3

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-3

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 29 Feet **At Completion:** 24 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches Dense below 2 feet						
2			108.3	7.6		41		
4		***SANDY SILT (ML)*** Very dense, fine- to medium-grained with trace CLAY and thin lenses of SILTY SAND; brown, damp, drills firmly						
6			128.8	9.3		45		
		Dense below 7 feet	119.9	11.4		34		
8								
10		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained; brown, moist, drills easily Percent passing No. 200 - 38.6%	115.4	12.1		15		
12			110.1	18.6		24		
14		Percent passing No. 200 - 35.4%	119.4	12.8		25		
16		***SILTY SAND/SAND (SM/SP)*** Medium dense, fine- to medium-grained; brown, moist, drills easily Percent passing No. 200 - 13.5%	110.6	11.0		23		
18								
20								

Drill Method: Hollow Stem

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 8-30-22

Hole Size: 4½ Inches

Elevation: 50 Feet

Log of Boring B3

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-3

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 29 Feet **At Completion:** 24 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		CLAYEY SAND (SC) Dense, fine- to medium-grained; reddish-brown, moist, drills easily Percent passing No. 200 - 31.6%	121.1	10.4		44		
22								
24		***SILTY SAND (SM)*** Very dense, fine- to medium-grained; brown, very moist, drills easily Percent passing No. 200 - 20.7%	120.1	12.9		52		
26								
28								
		SANDY SILT (ML) Dense, fine- to medium-grained with thin lenses of SILTY SAND; brown, moist, drills easily Saturated below 29 feet Percent passing No. 200 - 57.9%						
30			110.3	19.2		30		
32								
34								
		SILTY SAND (SM) Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 36.7%	97.6	20.3		25		
36								
38								
40								

Drill Method: Hollow Stem

Drill Date: 8-30-22

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B3

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-3

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 29 Feet **At Completion:** 24 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Percent passing No. 200 - 44.8%	104.5	20.8		39		
42								
44								
46		***SILTY SAND/SANDY SILT (SM/ML)*** Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 52.2%	90.1	26.6		27		
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 8-30-22

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Sheet: 3 of 3

Log of Boring B4

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-4

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 35 Feet **At Completion:** 27 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches Medium dense below 2 feet						
2			99.4	8.8		26		
4		***CLAYEY SILTY SAND (SM/SC)*** Medium dense, fine- to medium-grained; brown, damp, drills easily Percent passing No. 200 - 43.8%						
6			123.9	6.1		21		
8			122.8	7.6		17		
10		***CLAYEY SAND/SANDY CLAY (SC/CL)*** Medium dense, fine- to medium-grained; reddish-brown, damp, drills easily Percent passing No. 200 - 46.2%	119.9	13.9		26		
12		***CLAYEY SAND (SC)*** Dense, fine- to medium-grained; brown, moist, drills easily Percent passing No. 200 - 39.6%	116.3	15.4		34		
14		***SILTY SAND (SM)*** Dense, fine- to medium-grained; brown, damp, drills easily Percent passing No. 200 - 29.4%	118.0	12.9		33		
16		Medium dense below 17 feet	115.1	14.4		26		
18								
20		Dense below 20 feet						

Drill Method: Hollow Stem

Drill Date: 8-30-22

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B4

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

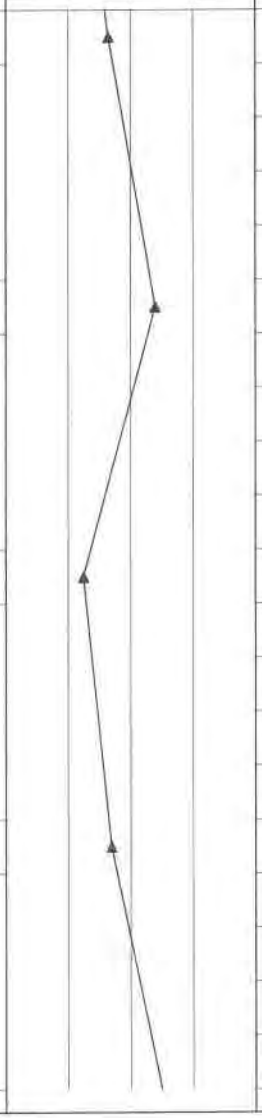
Figure No.: A-4

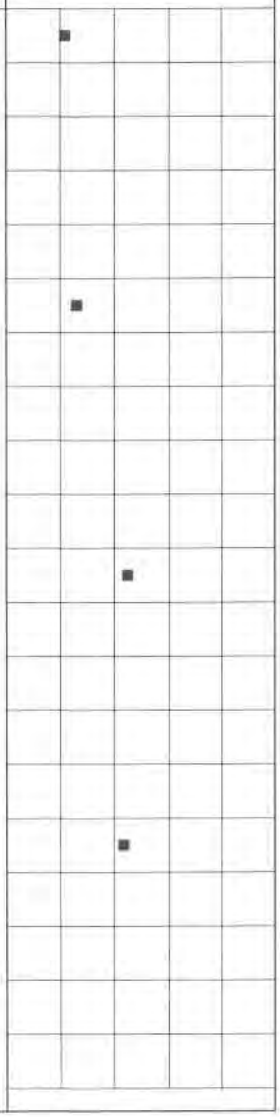
Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 35 Feet **At Completion:** 27 Feet

SUBSURFACE PROFILE			SAMPLE			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
		Percent passing No. 200 - 28.2%	113.0	10.9		33
22						
24		***CLAYEY SAND (SC)*** Very dense, fine- to medium-grained; brown, damp, drills firmly Percent passing No. 200 - 37.3%	97.9	13.1		48
26						
28						
30		***SANDY CLAY (CL)*** Very stiff, fine- to medium-grained; reddish-brown, moist, drills easily Percent passing No. 200 - 55.7%	97.0	22.5		25
32						
34		***SILTY SAND (SM)*** Dense, fine- to medium-grained with trace CLAY and thin lenses of SANDY SILT; brown, very moist, drills easily Saturated below 35 feet Percent passing No. 200 - 33.2%	105.2	21.8		34
36						
38						
40		Very dense and drills hard below 40 feet				





Drill Method: Hollow Stem

Drill Date: 8-30-22

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B4

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-4

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 35 Feet **At Completion:** 27 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Percent passing No. 200 - 44.4%	98.3	24.3		52		
42								
44								
		Percent passing No. 200 - 22.0%	120.8	11.2		51		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 8-30-22

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B5

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-5

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 39 Feet **At Completion:** 34 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches Medium dense below 2 feet						
2				12.6		10		
4		Percent passing No. 200 - 33.1%	101.1	4.2		16		
6		***SANDY SILT (ML)*** Medium dense, fine- to medium-grained with trace CLAY; brown, damp, drills easily	97.1	7.1		18		
8								
10		***CLAYEY SAND (SC)*** Medium dense, fine- to medium-grained; brown, moist, drills easily Percent passing No. 200 - 29.4%	120.1	6.4		17		
12			115.1	14.1		25		
14		Percent passing No. 200 - 22.5%	120.6	10.1		25		
16		***SILTY SAND/SANDY SILT (SM/ML)*** Medium dense, fine- to medium-grained with CLAY; brown, damp, drills easily	109.2	16.7		27		
18								
20								

Drill Method: Hollow Stem

Drill Date: 8-31-22

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B5

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-5

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 39 Feet **At Completion:** 34 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		SILTY SAND (SM) Medium dense, fine- to medium-grained; brown, moist, drills easily Percent passing No. 200 - 36.7%	112.8	15.3		26		
22								
24								
		Percent passing No. 200 - 36.3%	107.9	20.0		21		
26								
		CLAYEY SAND (SC) Medium dense, fine- to medium-grained; brown, moist, drills easily						
28								
30		Percent passing No. 200 - 42.7%	115.8	16.6		21		
32								
34								
		Very moist below 35 feet Percent passing No. 200 - 44.4%	107.9	17.6		19		
36								
38								
40								

Drill Method: Hollow Stem

Drill Date: 8-31-22

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B5

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-5

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 39 Feet **At Completion:** 34 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		SILTY SAND (SM) Dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 37.3%	85.1	31.2		30		
42								
44		***SILTY SAND/SANDY SILT (SM/ML)*** Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 45.7%						
			94.7	24.5		17		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 8-31-22

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B6

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-6

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 32 Feet **At Completion:** 27 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches Medium dense below 2 feet Percent passing No. 200 - 43.5%						
2			76.9	10.3		12		
4								
6			88.9	8.1		13		
		CLAYEY SANDY SILT (ML) Medium dense, fine- to medium-grained; brown, damp, drills easily						
8			115.6	10.1		18		
		CLAYEY SAND (SC) Medium dense, fine- to medium-grained; brown, damp, drills easily Percent passing No. 200 - 26.0%						
10			112.2	5.6		26		
12		Percent passing No. 200 - 43.5%	116.7	14.5		26		
14								
16			111.5	12.9		25		
		SANDY CLAY (CL) Very stiff, fine- to medium-grained; brown, moist, drills easily						
18			105.3	14.4		17		
20								

Drill Method: Hollow Stem

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 8-31-22

Hole Size: 4½ Inches

Elevation: 50 Feet

Log of Boring B6

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-6

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 32 Feet **At Completion:** 27 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Stiff below 20 feet Percent passing No. 200 - 84.2%	95.3	26.4		13		
22								
24		***CLAYEY SAND (SC)*** Medium dense, fine- to medium-grained; brown, moist, drills easily Percent passing No. 200 - 39.0%	115.2	15.3		24		
26		Saturated below 27 feet						
28		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 33.1%						
30			108.9	19.0		27		
32		***SILTY SAND/SANDY SILT (SM/ML)*** Medium dense, fine- to medium-grained; gray, saturated, drills easily.						
34		Percent passing No. 200 - 47.7%						
36			100.7	23.0		14		
38								
40								

Drill Method: Hollow Stem

Drill Date: 8-31-22

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B6

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-6

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 32 Feet **At Completion:** 27 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		SILTY SAND (SM) Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 39.2%		19.6		15		
42								
44								
		Percent passing No. 200 - 42.1%	98.9	22.9		27		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 8-31-22

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B32

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-32

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Michael Rupright

Depth to Water> **Initial:** None **At Completion:** None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***WEATHERED ROCK*** Very loose, highly weathered; reddish-brown, damp, drills easily						
		Medium dense below 12 inches						
2		Very dense and drills hard below 18 inches	79.4	9.9		50+		
4								
			120.7	7.8		50+		
6		***WEATHERED ROCK*** Very dense, moderately weathered; gray, damp, drills hard						
				4.4		50+		
8		Auger refusal at 8 feet						
		End of Borehole						
10								
12								
14								
16								
18								
20								

Drill Method: Hollow Stem

Drill Date: 7-7-23

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 8 Feet

Sheet: 1 of 1

Log of Boring B7

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-7

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 15 Feet **At Completion:** 23 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		CLAYEY SILTY SAND (SM) Very loose, fine- to medium-grained with trace GRAVEL; brown, damp, drills easily						
2		Loose below 12 inches Percent passing No. 200 - 24.3%	110.5	9.4		9		
4								
		Dense below 5 feet Percent passing No. 200 - 28.8%	119.5	8.2		33		
6								
8		***SILTY SAND/SAND (SM/SP)*** Medium dense, fine- to medium-grained; brown, damp, drills easily Percent passing No. 200 - 10.6%						
10			112.9	6.2		14		
12								
14		Saturated below 15 feet Percent passing No. 200 - 8.4%	118.4	13.4		12		
16								
18		***CLAYEY SAND (SC)*** Medium dense, fine- to coarse-grained; red-brown, saturated, drills easily Percent passing No. 200 - 16.9%						
20								

Drill Method: Hollow Stem

Drill Date: 2-14-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B7

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-7

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 15 Feet **At Completion:** 23 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
			122.5	10.9		25		
22								
24								
26		Percent passing No. 200 - 31.5%	107.6	18.5		21		
28		***CLAYEY SILTY SAND (SM/SC)*** Medium dense, fine- to medium-grained; red-brown, saturated, drills easily Percent passing No. 200 - 24.9%						
30			117.6	15.2		29		
32								
34								
36		Percent passing No. 200 - 44.4%	119.8	14.4		26		
38								
40		Dense below 40 feet						

Drill Method: Hollow Stem

Drill Date: 2-14-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B7

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-7

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 15 Feet **At Completion:** 23 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Percent passing No. 200 - 37.8%	119.7	15.2		34		
42								
44		***SILTY SAND (SM)*** Dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 36.1%	126.3	13.6		41		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 2-14-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B8

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-8

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 25 Feet **At Completion:** 23 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***CLAYEY SILTY SAND (SM/SC)*** Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches Percent passing No. 200 - 28.1%						
2			128.6	8.2		12		
		SAND (SP) Medium dense, fine- to coarse-grained with trace GRAVEL; gray, damp, drills easily Percent passing No. 200 - 3.3%						
4								
			107.7	2.7		12		
6								
8								
		SILTY SAND/SAND (SM/SP) Medium dense, fine- to coarse-grained with GRAVEL; gray, damp, drills easily Percent passing No. 200 - 8.2%						
10			117.0	2.9		14		
12								
14								
		SILTY SAND/SANDY SILT (SM/ML) Loose, fine- to medium-grained; brown, damp, drills easily Percent passing No. 200 - 46.4%						
			111.5	17.1		9		
16								
18								
20								

Drill Method: Hollow Stem

Drill Date: 2-14-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B8

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-8

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 25 Feet **At Completion:** 23 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		SILTY SAND/SAND (SM/SP) Medium dense, fine- to medium-grained; brown, damp, drills easily Percent passing No. 200 - 15.0% Saturated below 23 feet	100.7	19.3		12		
22								
24								
		GRAVELLY SILTY SAND (SM) Medium dense, fine- to coarse-grained; brown, saturated, drills easily Percent passing No. 200 - 23.2	127.0	11.4		29		
26								
28								
30		Percent passing No. 200 - 15.7%	119.7	12.4		31		
		CLAYEY SAND (SC) Dense, fine- to medium-grained; brown, saturated, drills easily						
32								
		SANDY SILTY CLAY (CL) Very stiff, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 72.9%						
34			107.9	21.1		21		
36								
38								
40								

Drill Method: Hollow Stem

Drill Date: 2-14-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Sheet: 2 of 3

Log of Boring B8

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-8

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 25 Feet **At Completion:** 23 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		CLAYEY SAND/SANDY CLAY (SC/CL) Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 50.6%	103.1	16.6		27		
42								
44								
		Dense below 45 feet Percent passing No. 200 - 46.2%	119.5	18.5		41		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 2-14-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Sheet: 3 of 3

Log of Boring B9

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-9

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 20 Feet **At Completion:** 17 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***CLAYEY SANDY SILT (ML)*** Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches Medium dense below 2 feet Percent passing No. 200 - 62.0%						
2			91.6	21.7		10		
4		***SILTY SAND/SANDY SILT (SM/ML)*** Medium dense, fine- to medium-grained with trace CLAY; brown, damp, drills easily Percent passing No. 200 - 50.5%						
6			111.2	4.4		18		
8		***SAND (SP)*** Medium dense, fine- to coarse-grained with trace GRAVEL; light brown, damp, drills easily Percent passing No. 4.5%						
10			106.9	1.6		12		
12								
14		***SILTY SAND/SAND (SM/SP)*** Medium dense, fine- to coarse-grained; light brown, damp, drills easily Percent passing No. 200 - 8.3%						
16			116.4	3.3		14		
18								
20		Saturated below 20 feet						

Drill Method: Hollow Stem

Drill Date: 2-16-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B9

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-9

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 20 Feet **At Completion:** 17 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Percent passing No. 200 - 9.1%	119.2	10.6		21		
22								
24		***CLAYEY SILTY SAND (SM)*** Medium dense, fine- to medium-grained with thin lenses of CLAYEY SAND; brown, saturated, drills easily Percent passing No. 200 - 20.8%	113.1	14.4		20		
26								
28								
30		Percent passing No. 200 - 19.8%	121.4	12.6		20		
32		With increased fines below 33 feet						
34		Percent passing No. 200 - 41.9%	114.6	17.1		19		
36								
38								
40								

Drill Method: Hollow Stem

Drill Date: 2-16-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B9

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-9

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 20 Feet **At Completion:** 17 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		CLAYEY SAND (SC) Dense, fine- to medium-grained; brown, saturated, drills firmly Percent passing No. 200 - 37.0%	106.4	20.8		40		
42								
44								
		Very dense below 45 feet Percent passing No. 200 - 43.7%	108.1	19.3		52		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 2-16-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Sheet: 3 of 3

Log of Boring B10

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-10

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 11 Feet **At Completion:** 9 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***CLAYEY SANDY SILT (ML)*** Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches Medium dense below 2 feet Percent passing No. 200 - 66.4%						
2			109.5	17.4		14		
4		Percent passing No. 200 - 57.5%						
6			121.8	5.3		14		
8								
		SILTY SAND (SM) Loose, fine- to medium-grained; brown, damp, drills easily Percent passing No. 200 - 37.3% Saturated below 11 feet						
10			75.3	13.6		5		
12								
14		***CLAYEY SAND/SANDY CLAY (SC/CL)*** Medium dense, fine- to medium-grained with thin lenses of CLAYEY SAND; brown, saturated, drills easily Percent passing No. 200 - 49.3%						
16			119.1	16.3		15		
18								
20								

Drill Method: Hollow Stem

Drill Date: 2-16-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B10

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-10

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 11 Feet **At Completion:** 9 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
22		***SILTY SAND (SM)*** Medium dense, fine- to coarse-grained with CLAY; red-brown, saturated, drills easily Percent passing No. 18.1%	119.3	14.4		14		
24		***CLAYEY SAND (SC)*** Medium dense, fine- to medium-grained; gray, saturated, drills easily Percent passing No. 200 - 30.6%	107.7	17.6		20		
26								
28								
30		Percent passing No. 200 - 41.9%	104.8	20.5		17		
32								
34								
36		With thin lenses of SAND below 35 feet Percent passing No. 200 - 40.8%	106.2	21.4		21		
38								
40								

Drill Method: Hollow Stem

Drill Date: 2-16-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B10

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-10

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 11 Feet **At Completion:** 9 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Percent passing No. 200 - 43.5%	95.7	22.2		21		
42								
44								
		Percent passing No. 200 - 36.4%	108.3	20.5		21		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 2-16-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B11

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-11

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 10 Feet **At Completion:** 8 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND/SANDY SILT (SM/ML)*** Very loose, fine- to medium-grained with CLAY; brown, damp, drills easily						
2		Loose below 12 inches Medium dense below 2 feet Percent passing No. 200 - 52.2%	96.3	20.8		10		
4								
6		Loose, with interbeds of SANDY SILT and very moist below 5 feet Percent passing No. 200 - 55.8%	97.1	17.6		5		
8								
10		***CLAYEY SAND/SANDY CLAY (SC/CL)*** Medium dense, fine- to medium-grained; red-brown, saturated, drills easily Percent passing No. 200 - 49.4%	117.5	14.9		21		
12								
14		***CLAYEY SAND (SC)*** Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 40.4%	117.6	16.8		16		
16								
18								
20								

Drill Method: Hollow Stem

Drill Date: 2-17-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B11

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-11

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 10 Feet **At Completion:** 8 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		SILTY SAND (SM) Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 34.1%	118.5	14.4		22		
22								
24								
		Percent passing No. 200 - 20.7%	115.2	16.3		23		
26								
28								
30		***SILTY SAND/CLAYEY SAND (SM/SC)*** Medium dense, fine- to coarse-grained; brown, saturated, drills easily Percent passing No. 43.5%	109.7	18.8		14		
32		***CLAYEY SAND/SANDY CLAY (SC/CL)*** Medium dense, fine- to medium-grained; brown, saturated, drills easily						
34								
		Percent passing No. 200 - 54.8%	95.0	25.6		11		
36								
38								
40								

Drill Method: Hollow Stem

Drill Date: 2-17-23

Drill Rig: CME 45C-4

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Krazan and Associates

Log of Boring B11

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-11

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 10 Feet **At Completion:** 8 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		SILTY SAND (SM) Medium dense, fine- to medium-grained with CLAY and thin lenses of CLAYEY SANDY SILT; brown, saturated, drills easily	116.5	13.9		17		
42		Percent passing No. 200 - 19.1%						
44								
		Percent passing No. 200 - 16.9%	108.5	15.7		21		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 2-17-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B12

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-12

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 15 Feet **At Completion:** 11 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND/SANDY SILT (SM/ML)*** Very loose, fine- to medium-grained; brown, damp, drills easily						
2		Loose below 12 inches Medium dense below 2 feet Percent passing No. 200 - 49.1%	110.5	16.3		17		
4								
		Loose and moist below 5 feet Percent passing No. 200 - 53.6%	103.4	18.5		6		
6								
8		***CLAYEY SAND/SANDY CLAY (SC/CL)*** Medium dense, fine- to medium-grained; brown, damp, drills easily						
10		Percent passing No. 45.8%	129.1	9.6		24		
12								
14		***CLAYEY SAND (SC)*** Medium dense, fine- to medium-grained; brown, moist, drills easily						
16		Saturated below 15 feet Percent passing No. 200 - 43.5%	109.3	18.8		15		
18								
20								

Drill Method: Hollow Stem

Drill Date: 2-17-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B12

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-12

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 15 Feet **At Completion:** 11 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		SILTY SAND (SM) Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 43.2%	98.6	25.6		17		
22								
24								
		CLAYEY SAND (SC) Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 36.6%	108.9	17.9		14		
26								
28								
30		***SILTY SAND (SM)*** Dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 37.8%	100.4	23.5		30		
32								
34								
		Medium dense below 35 feet Percent passing No. 200 - 32.7%	110.0	18.5		13		
36								
38								
40								

Drill Method: Hollow Stem

Drill Date: 2-17-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B12

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-12

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 15 Feet **At Completion:** 11 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
42		***CLAYEY SAND (SC)*** Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 38.4%	107.2	20.8		23		
44		***SILTY SAND/CLAYEY SAND (SM/SC)*** Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 36.6%	106.9	20.5		24		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 2-17-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B13

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-13

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 11 Feet **At Completion:** 9½ Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; dark brown, damp, drills easily						
2		Loose below 12 inches	115.3	9.6		9		
4								
		Medium dense below 5 feet Percent passing No. 200 - 29.3%	102.5	9.3		13		
6								
		Very dense and drills firmly below 7 feet	125.4	10.1		58		
8								
10		Medium dense and drills easily below 9 feet. Percent passing No. 200 - 35.1% Saturated below 9½ feet	70.9	11.4		11		
12		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained with trace GRAVEL; brown, saturated, drills easily	116.1	12.6		16		
14			111.9	13.8		18		
16		With increased SAND below 15 feet Percent passing No. 200 - 17.6%	92.0	13.8		18		
18								
20								

Drill Method: Hollow Stem

Drill Date: 4-11-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 6½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Log of Boring B13

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-13

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 11 Feet **At Completion:** 9½ Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		CLAYEY SAND (SC) Medium dense, fine- to medium-grained; brown, saturated, drills easily	118.3	12.9		28		
22								
24								
		Dense below 25 feet Percent passing No. 200 - 21.3%	115.0	13.1		36		
26								
28								
30		Very dense, orange-brown and drills firmly below 30 feet	123.7	11.7		47		
32								
34								
		Drills hard below 35 feet	112.2	13.8		50+		
36								
38								
40		Dense below 40 feet						

Drill Method: Hollow Stem

Drill Date: 4-11-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 6½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Log of Boring B13

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-13

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 11 Feet **At Completion:** 9½ Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Percent passing No. 200 - 39.3%	122.0	13.6		32		
42								
44								
46		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 44.7%	110.4	17.6		20		
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 4-11-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 6½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Log of Boring B14

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-14

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 13 Feet **At Completion:** 15 Feet

SUBSURFACE PROFILE			SAMPLE			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
		Ground Surface				
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with trace CLAY; brown, damp, drills easily				
		Loose below 12 inches				
2		Medium dense below 2 feet Percent passing No. 200 - 32.1%	121.7	11.1		21
4		Percent passing No. 200 - 15.2%	104.9	4.6		22
6		***SILTY SAND/SAND (SM/SP)*** Medium dense, fine- to medium-grained; light brown, damp, drills easily Percent passing No. 200 - 5.7%	101.7	4.1		18
8		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained; brown, damp, drills easily With increased SAND and trace GRAVEL below 9 feet	107.8	2.7		13
10			116.7	9.3		23
12		Saturated below 13 feet	123.2	12.4		24
14		Percent passing No. 200 - 26.6%	123.7	14.0		28
16						
18						
20		Dense below 20 feet				

Penetration Test blows/ft: 20 40 60

Water Content (%): 10 20 30 40

Drill Method: Hollow Stem

Drill Date: 4-11-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 6½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Log of Boring B14

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-14

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 13 Feet **At Completion:** 15 Feet

SUBSURFACE PROFILE			SAMPLE			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
		Percent passing No. 200 - 20.0%	125.6	11.6		38
22						
24						
		Percent passing No. 200 - 22.3%	119.5	13.3		30
26						
28						
30		Very dense below 30 feet	118.7	13.0		47
32						
34						
36		***SANDY CLAY (CL)*** Hard, fine- to medium-grained; brown, saturated, drills firmly Percent passing No. 200 - 58.8%	116.7	25.7		45
38						
40						

Penetration Test blows/ft: 20 40 60

Water Content (%): 10 20 30 40

Drill Method: Hollow Stem

Drill Date: 4-11-23

Drill Rig: CME 45C-4

Hole Size: 6½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Krazan and Associates

Log of Boring B14

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-14

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 13 Feet **At Completion:** 15 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		SANDY CLAY (CL) Very stiff, fine- to medium-grained; reddish-brown, saturated, drills easily Percent passing No. 200 - 78.1%	97.5	25.9		26		
42								
44								
		CLAYEY SAND/SANDY CLAY (SC/CL) Medium dense, fine- to medium-grained; red-brown, saturated, drills easily Percent passing No. 200 - 51.3%	105.5	20.3		22		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 4-11-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 6½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Log of Boring B15

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-15

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 15 Feet **At Completion:** 20 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with trace CLAY; dark brown, damp, drills easily						
2		Loose below 12 inches	97.7	17.1		9		
4								
6		Medium dense, with increased SAND, trace GRAVEL and no CLAY below 5 feet Percent passing No. 200 - 34.7	115.4	11.6		14		
8		***SILTY SAND/SAND (SM/SP)*** Medium dense, fine- to coarse-grained; brown, damp, drills easily Percent passing No. 200 - 7.6	104.0	4.1		11		
			111.8	4.4		12		
10								
			123.9	11.4		15		
12								
			115.4	13.3		12		
14		▽						
16		***SILTY SAND (SM)*** Medium dense, fine- to coarse-grained; brown, moist, drills easily	116.0	15.1		16		
18								
20		▼						

Drill Method: Hollow Stem

Drill Date: 4-11-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 6½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Log of Boring B15

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-15

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 15 Feet **At Completion:** 20 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		SILTY SAND/SAND (SM/SP) Medium dense, fine- to coarse-grained; brown, moist, drills easily Percent passing No. 200 - 10.3%	112.4	11.1		24		
22								
24		Percent passing No. 200 - 10.6	120.7	10.6		27		
26								
28								
30		***SILTY SAND/SANDY SILT (SM/ML)*** Medium dense, fine- to medium-grained with trace CLAY; brown, saturated, drills easily	117.6	12.7		16		
32								
34		Percent passing No. 200 - 49.9%	104.4	20.5		18		
36								
38		With decreased SAND below 40 feet						
40								

Drill Method: Hollow Stem

Drill Date: 4-11-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 6½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Log of Boring B15

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-15

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 15 Feet **At Completion:** 20 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
			105.2	19.3		23		
42								
44								
		Percent passing No. 200 - 45.2%	112.6	17.6		22		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 4-11-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 6½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Sheet: 3 of 3

Log of Boring B16

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-16

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 12½ Feet **At Completion:** 7 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches						
2			93.3	19.8		9		
4		Medium dense below 5 feet Percent passing No. 200 - 35.2%	107.2	11.5		14		
6		Saturated below 7 feet						
8			115.2	15.1		13		
10		Percent passing No. 200 - 30.6%	119.2	12.6		14		
12		Red-brown, with increased SAND and trace GRAVEL below 12½ feet	118.7	12.2		22		
14		With interbeds of SILTY SAND/SANDY SILT below 15 feet Percent passing No. 200 - 45.2%	115.2	15.6		28		
16								
18								
20		With decreased SAND and brown below 20 feet						

Drill Method: Hollow Stem

Drill Date: 4-12-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Log of Boring B16

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-16

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 12½ Feet **At Completion:** 7 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Percent passing No. 200 - 43.4%	104.6	18.5		21		
22								
24								
		Percent passing No. 200 - 31.7%	111.2	16.3		20		
26								
28								
30		Percent passing No. 200 - 53.3%	103.8	22.2		12		
32								
34								
		Dense below 35 feet Percent passing No. 200 - 25.9%	113.4	15.7		36		
36								
38								
40								

Drill Method: Hollow Stem

Drill Date: 4-12-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Log of Boring B16

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-16

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 12½ Feet **At Completion:** 7 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Percent passing No. 200 - 24.7%	124.7	12.6		43		
42								
44								
		Percent pasing No. 200 - 35.4%	115.5	16.1		30		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 4-12-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Sheet: 3 of 3

Log of Boring B17

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-17

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 12½ Feet **At Completion:** 6 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with trace CLAY; dark brown, moist, drills easily						
2		Loose below 12 inches Medium dense below 2 feet	109.4	27.4		13		
4								
		Percent passing No. 200 - 29.6%	120.3	12.9		14		
6		Saturated below 6 feet						
8			114.7	14.0		17		
10		Percent passing No. 200 - 26.4%	122.8	12.0		18		
12		With trace GRAVEL and red-brown below 12½ feet	118.4	12.7		21		
14								
16		***SANDY CLAY (CL)*** Very stiff, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 68%	108.3	19.3		19		
18								
20								

Drill Method: Hollow Stem

Drill Date: 4-12-23

Drill Rig: CME 75

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Krazan and Associates

Log of Boring B17

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

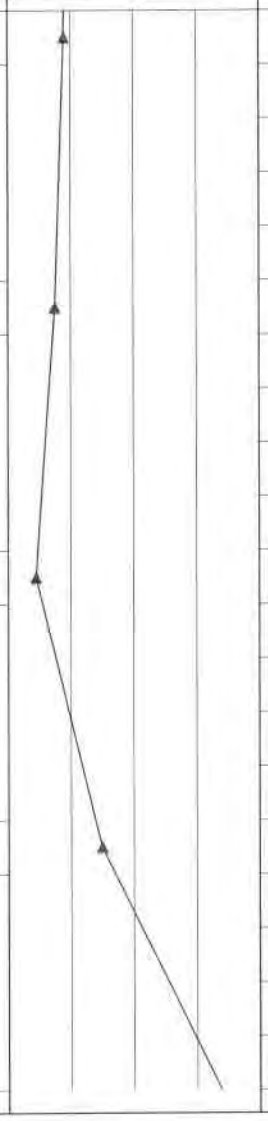
Figure No.: A-17

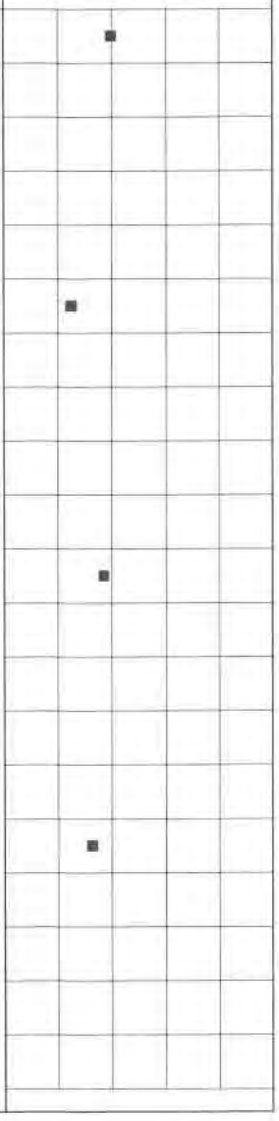
Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 12½ Feet **At Completion:** 6 Feet

SUBSURFACE PROFILE			SAMPLE			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
		Percent passing No. 200 - 57.6%	106.4	19.9		18
22						
24		***CLAYEY SAND (SC)*** Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 18%	111.4	12.4		15
26						
28						
30		***SILTY SAND (SM)*** Loose, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 20.1%	103.1	18.5		9
32						
34						
		Medium dense with interbeds of SAND below 35 feet Percent passing No. 200 - 19.4%	110.5	16.3		30
36						
38						
40						





Drill Method: Hollow Stem

Drill Date: 4-12-23

Drill Rig: CME 75

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Krazan and Associates

Log of Boring B17

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-17

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 12½ Feet **At Completion:** 6 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		SILTY SAND (SM) Very dense, fine- to medium-grained; red-brown, saturated, drills hard Percent passing No. 200 - 26.5%	115.1	14.5		72		
42								
44		***SILTY SAND/SAND (SM/SP)*** Medium dense, fine- to medium-grained; light brown, saturated, drills easily Percent passing No. 200 - 5.5%						
46		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained; red-brown, saturated, drills easily	118.9	12.2		27		
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 4-12-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Sheet: 3 of 3

Log of Boring B18

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-18

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 7 Feet **At Completion:** 3 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with trace CLAY; brown, damp, drills easily Loose below 12 inches						
2		Saturated below 3 feet				9		
4								
		Medium dense below 5 feet Percent passing No. 200 - 33.8%	115.2	14.4		15		
6								
8			113.5	13.8		28		
10			115.5	14.4		19		
12		***CLAYEY SAND (SC)*** Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 33.9%						
		SILTY SAND (SM) Dense, fine- to medium-grained with trace CLAY; red-brown, saturated, drills easily	119.6	13.3		30		
14		Medium dense below 15 feet Percent passing No. 200 - 29.3%	119.4	12.9		24		
16								
18								
20								

Drill Method: Hollow Stem

Drill Date: 4-13-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Log of Boring B18

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-18

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 7 Feet **At Completion:** 3 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Percent passing No. 200 - 20.1%	118.1	12.9		36		
22		***CLAYEY SAND (SC)*** Dense, fine- to medium-grained; red-brown, saturated, drills easily						
24								
26		Percent passing No. 200 - 23.1%	107.5	16.6		31		
28								
30		***SILTY SAND/SANDY SILT (SM/ML)*** Very dense, fine- to medium-grained with CLAY; brown, saturated, drills easily Percent passing No. 200 - 45.5%	116.5	14.9		45		
32								
34								
36		***CLAYEY SAND/SANDY CLAY (SC/CL)*** Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 45.6%	101.5	19.3		12		
38								
40								

Drill Method: Hollow Stem

Drill Date: 4-13-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Log of Boring B18

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-18

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 7 Feet **At Completion:** 3 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		CLAYEY SAND (SC) Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 40.8%	97.6	24.4		15		
42								
44								
		SILTY SAND (SM) Medium dense, fine- to medium-grained with trace CLAY; brown, saturated, drills easily Percent passing No. 200 - 44.2%	102.2	17.6		29		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 4-13-23

Drill Rig: CME 75

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Krazan and Associates

Log of Boring B19

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-19

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 15 Feet **At Completion:** 4 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with trace CLAY; brown, damp, drills easily Loose below 12 inches Medium dense below 2 feet						
2			120.4	13.6		23		
4								
		SANDY CLAY (CL) Stiff, fine- to medium-grained; red-brown, saturated, drills easily Percent passing No. 200 - 77.9%	109.4	17.6		9		
6		Very stiff below 7½ feet						
8			122.8	11.7		26		
10		Hard below 10 feet Percent passing No. 200 - 60.2%	121.4	11.9		47		
12			125.3	11.9		64		
14								
		CLAYEY SAND (SC) Dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 34.7%	119.3	10.4		32		
16								
18								
20								

Drill Method: Hollow Stem

Drill Date: 4-13-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Log of Boring B19

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-19

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 15 Feet **At Completion:** 4 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		CLAYEY SAND/SANDY CLAY (SC/CL) Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 49.3%	116.6	16.8		20		
22								
24								
		SILTY SAND (SM) Medium dense, fine- to medium-grained with trace CLAY; brown, saturated, drills easily Percent passing No. 200 - 28.6%	108.9	17.1		20		
26								
28								
30		***CLAYEY SAND (SC)*** Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 31.5%	115.2	14.9		26		
32								
34		***SILTY SAND/SANDY SILT (SM/ML)*** Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 48.8%	110.2	17.9		29		
36								
38								
40								

Drill Method: Hollow Stem

Drill Date: 4-13-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Log of Boring B19

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-19

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 15 Feet **At Completion:** 4 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		SILTY SAND (SM) Very dense, fine- to medium-grained; brown, saturated, drills hard Percent passing No. 200 - 22.1%	130.1	11.2		66		
42								
44		With interbeds of SILTY SAND/SAND below 44 feet Percent passing No. 200 - 14.8%						
			123.4	10.6		77		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 4-13-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Log of Boring B20

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-20

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 10 Feet **At Completion:** 10 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***CLAYEY SAND/SANDY CLAY (SC/CL)*** Very loose, fine- to medium-grained; dark brown, moist, drills easily Loose below 12 inches						
2		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained with trace GRAVEL; red, moist, drills easily	122.0	13.4		29		
4		Dense below 5 feet Percent passing No. 200 - 30.5%	117.2	12.1		44		
6		Medium dense below 7½ feet						
8			124.5	11.7		22		
10		Saturated below 10 feet Percent passing No. 200 - 19.5%	118.2	12.7		29		
12			108.7	18.7		22		
14		***SANDY CLAY (CL)*** Very stiff, fine- to medium-grained; brown, saturated, drills easily Hard below 15 feet Percent passing No. 200 - 69.1%	109.3	18.8		33		
16								
18								
20								

Drill Method: Hollow Stem

Drill Date: 4-14-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Log of Boring B20

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-20

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 10 Feet **At Completion:** 10 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Percent passing No. 200 - 62.1%	107.4	21.4		22		
22								
24								
26		***SILTY SAND/SANDY SILT (SM/ML)*** Very dense, fine- to medium-grained with CLAY; brown, saturated, drills firmly Percent passing No. 200 - 51.4%	116.8	15.7		50+		
28								
30		Dense below 30 feet Percent passing No. 200 - 49.8%	116.0	15.2		30		
32								
34								
36		***SILTY SAND (SM)*** Very dense, fine- to coarse-grained with trace GRAVEL; red-brown, saturated, drills hard Percent passing No. 200 - 37.4%	112.6	18.1		50+		
38								
40								

Drill Method: Hollow Stem

Drill Date: 4-14-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Log of Boring B20

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-20

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 10 Feet **At Completion:** 10 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Percent passing No. 200 - 39.2%	109.7	17.9		50+		
42								
44								
		Dense below 45 feet Percent passing No. 200 - 25.9%	102.6	23.0		38		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 4-14-23

Drill Rig: CME 75

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 50 Feet

Krazan and Associates

Log of Boring B21

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-21

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 7 Feet **At Completion:** 3 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with trace GRAVEL; light red-brown, moist, drills easily						
2		Loose below 12 inches Medium dense below 2 feet Saturated below 3 feet	120.1	10.4		10		
4								
6		Percent passing No. 200 - 22.4%	121.9	11.1		20		
8			121.2	10.6		29		
10		Dense below 10 feet Percent passing No. 200 - 20.8%	124.5	10.4		39		
12		***SANDY CLAY (CL)*** Hard, fine- to medium-grained; brown, saturated, drills firmly	114.4	16.6		41		
14								
16		Percent passing No. 200 - 58.7%	112.0	16.0		37		
18								
20								

Drill Method: Hollow Stem

Drill Date: 4-17-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 35 Feet

Log of Boring B21

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-21

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 7 Feet **At Completion:** 3 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		SILTY SAND (SM) Very dense, fine- to medium-grained with trace CLAY; red-brown, saturated, drills hard Percent passing No. 200 - 43.7%	118.8	13.1		58		
22								
24								
		SANDY CLAY (CL) Hard, fine- to medium-grained; light brown, saturated, drills firmly Percent passing No. 200 - 30.5%	117.0	14.7		49		
26								
28								
30		Percent passing No. 200 - 55.1%	110.8	18.2		69		
32								
34		***WEATHERED ROCK*** Very dense, moderately weathered; brown, saturated, drills hard Auger refusal at 35 feet	117.4	10.9		50+		
36		End of Borehole						
38								
40								

Drill Method: Hollow Stem

Drill Date: 4-17-23

Drill Rig: CME 75

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 35 Feet

Krazan and Associates

Log of Boring B22

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

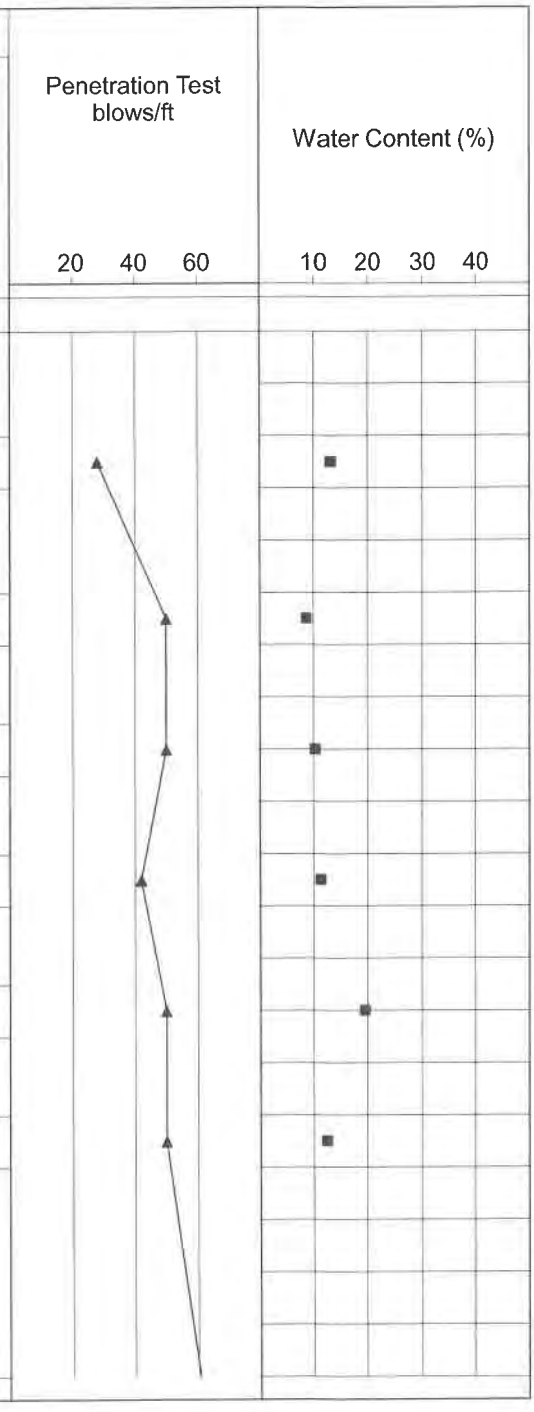
Figure No.: A-22

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 25 Feet **At Completion:** 4 Feet

SUBSURFACE PROFILE			SAMPLE			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
0		Ground Surface				
		SILTY SAND (SM) Very loose, fine- to medium-grained with trace CLAY; brown, damp, drills easily				
2		Loose below 12 inches Medium dense below 2 feet Percent Passing No. 200 - 43.9%	118.9	13.1		28
4		Saturated below 4 feet				
		SILTY SAND (SM) Very dense, fine- to medium-grained, weakly cemented; red-brown, saturated, drills hard Percent passing No. 200 - 40.2%	110.4	8.7		50+
6						
8			124.0	10.4		50+
10		***CLAYEY SAND (SC)*** Dense, fine- to medium-grained; red-brown, saturated, drills hard Percent passing No. 200 - 31.4% Very dense below 12 feet	115.9	11.4		42
12			101.2	19.6		50+
14		***SANDY SILT (ML)*** Very dense, fine- to medium-grained; gray-brown, saturated, drills hard	107.7	12.6		50+
16		***SILTY SAND (SM)*** Very dense, fine- to medium-grained; orange-brown, saturated, drills hard Percent passing No. 200 - 39.6%				
18						
20						



Drill Method: Hollow Stem

Drill Date: 4-17-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 27½ Feet

Log of Boring B22

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-22

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 25 Feet **At Completion:** 4 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		SANDY SILT (ML) Very dense, fine- to medium-grained; orange-brown, saturated, drills hard	114.7	16.3		62		
22								
24								
		Percent passing No. 200 - 71.1%	100.4	22.2		58		
26								
		WEATHERED ROCK Very dense, moderately weathered; gray, saturated, drills hard Auger refusal at 27½ feet	112.5	14.7		50+		
28								
		End of Borehole						
30								
32								
34								
36								
38								
40								

Drill Method: Hollow Stem

Drill Date: 4-17-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 27½ Feet

Sheet: 2 of 2

Log of Boring B23

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

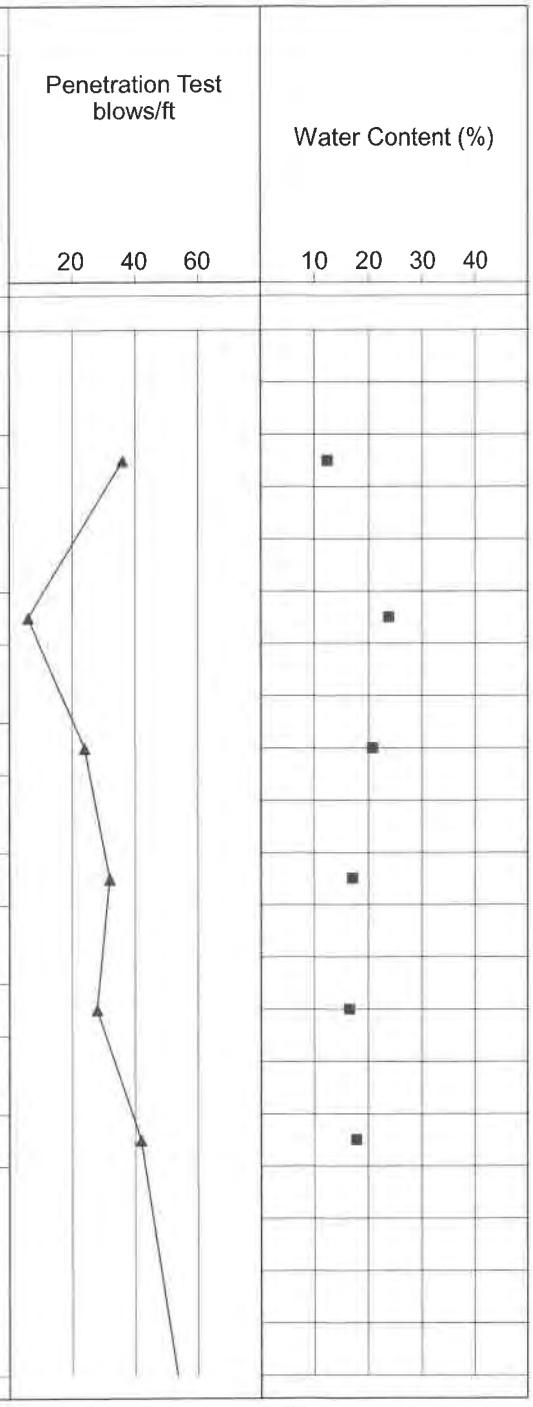
Figure No.: A-23

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 22 Feet **At Completion:** 3 Feet

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
		Ground Surface				
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with trace CLAY; brown, damp, drills easily Loose below 12 inches Dense below 2 feet Saturated below 3 feet				
2			119.7	12.4		36
4		Loose below 5 feet Percent passing No. 200 - 40.8%	99.2	23.8		6
6						
8		***SANDY CLAY (CL)*** Very stiff, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 65.9%	103.4	20.8		24
10		***SILTY SAND (SM)*** Dense, fine- to medium-grained; red-brown, saturated, drills easily	109.8	17.1		32
12		***SANDY SILT (ML)*** Medium dense, fine- to medium-grained with trace CLAY; brown, saturated, drills easily	108.8	16.6		28
14		***SILTY SAND/SANDY SILT (SM/ML)*** Medium dense, fine- to medium-grained; brown, saturated, drills easily Percent passing No. 200 - 53.2%	107.3	17.9		42
16		***SANDY SILT (ML)*** Dense, fine- to medium-grained with trace CLAY; brown, saturated, drills firmly				
18						
20						



Drill Method: Hollow Stem

Drill Date: 4-18-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 27½ Feet

Log of Boring B23

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-23

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 22 Feet **At Completion:** 3 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		SILTY SAND/SANDY SILT (SM/ML) Very dense, fine-grained; brown, saturated, drills firmly Percent passing No. 200 - 55.2%	119.3	11.6		55		
22								
24								
26		***WEATHERED ROCK*** Very dense, highly weathered; brown, saturated, drills firmly Percent passing No. 200 - 42.4%	105.8	22.5		48		
			127.4	7.1		50+		
28		***WEATHERED ROCK*** Very dense, moderately weathered; light gray, saturated, drills hard Auger refusal at 27½ feet						
30		End of Borehole						
32								
34								
36								
38								
40								

Drill Method: Hollow Stem

Drill Date: 4-18-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 27½ Feet

Log of Boring B24

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-24

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 30 Feet **At Completion:** 3 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with trace CLAY; brown, damp, drills easily						
		Loose below 12 inches						
2		Very dense and drills firmly below 2 feet	117.3	12.9		45		
		Saturated below 3 feet						
4								
		Dense below 5 feet						
		Percent passing No. 200 - 33.3%	123.2	10.4		33		
6								
		Medium dense below 7½ feet						
8			116.8	14.7		16		
10		Percent passing No. 200 - 36.8%	111.9	16.6		15		
12								
		SANDY CLAY (CL) Hard, fine- to medium-grained; brown, saturated, drills firmly	108.6	16.0		51		
14								
		Percent passing No. 200 - 60.0%	123.3	9.4		57		
16								
18								
20								

Drill Method: Hollow Stem

Drill Date: 4-18-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 41½ Feet

Log of Boring B24

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-24

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 30 Feet **At Completion:** 3 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		CLAYEY SAND/SANDY CLAY (SC/CL) Medium dense, fine- to medium-grained; red-brown, saturated, drills easily Percent passing No. 200 - 47.4%	108.5	13.4		15		
22								
24								
		CLAYEY SAND (SC) Very dense, fine- to medium-grained; red-brown, saturated, drills hard Percent passing No. 200 - 41.6%	116.9	13.6		64		
26								
28								
30		***SILTY SAND (SM)*** Dense, fine- to medium-grained with CLAY; red-brown, saturated, drills firmly Percent passing No. 200 - 44.8%	113.0	16.6		44		
32								
34								
		SANDY CLAYEY SILT (ML) Dense, fine- to medium-grained; red-brown, saturated, drills firmly Percent passing No. 200 - 60.5%	109.4	20.5		39		
36								
38								
40								

Drill Method: Hollow Stem

Drill Date: 4-18-23

Drill Rig: CME 75

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 41½ Feet

Krazan and Associates

Log of Boring B24

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-24

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 30 Feet **At Completion:** 3 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		CLAYEY SAND (SC) Very dense, fine- to medium-grained; red-brown, saturated, drills hard	102.1	22.2		50+		
				17.4		50+		
42		***WEATHERED ROCK*** Very dense, moderately weathered; gray, saturated, drills hard Auger refusal at 41½ feet						
44		End of Borehole						
46								
48								
50								
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 4-18-23

Drill Rig: CME 75

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 41½ Feet

Krazan and Associates

Log of Boring B25

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-25

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 20 Feet **At Completion:** 4 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND/CLAYEY SAND (SM/SC)*** Very loose, fine- to medium-grained; red-brown, damp, drills easily						
2		Loose below 12 inches Dense below 2 feet Percent passing No. 200 - 42.3%	116.4	12.6		30		
4		Very dense, saturated and drills hard below 4 feet						
6			122.3	8.2		50+		
8			118.9	9.9		50+		
10		Weakly cemented below 10 feet	121.0	10.4		50+		
12		***SILTY SAND (SM)*** Very dense, fine- to medium-grained with trace CLAY; brown, saturated, drills hard	113.2	14.7		50+		
14		Percent passing No. 200 - 42.9%						
16			118.7	10.9		50+		
18								
20								

Drill Method: Hollow Stem

Drill Date: 4-18-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 40½ Feet

Log of Boring B25

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-25

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 20 Feet **At Completion:** 4 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Percent passing No. 200 - 29.2%	116.6	11.4		62		
22								
24								
			125.5	10.1		50+		
26								
28								
		CLAYEY SAND/SANDY CLAY (SC/CL) Very dense, fine- to medium-grained; red-brown, saturated, drills firmly Percent passing No. 200 - 48.3%						
30			116.1	15.5		63		
32								
34								
		SILTY SAND (SM) Very dense, fine- to medium-grained with trace CLAY and GRAVEL; red-brown, saturated, drills hard Percent passing No. 200 - 43.8%	104.6	21.1		50+		
36								
38								
40						50+		

Drill Method: Hollow Stem

Drill Date: 4-18-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 40½ Feet

Log of Boring B25

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-25

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 20 Feet **At Completion:** 4 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		WEATHERED ROCK Very dense, moderately weathered; light gray, saturated, drills hard Auger refusal at 40½ feet	118.5	11.1		50+		
42		End of Borehole						
44								
46								
48								
50								
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 4-18-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 40½ Feet

Sheet: 3 of 3

Log of Boring B26

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-26

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 7 Feet **At Completion:** 10 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with trace CLAY; brown, damp, drills easily Loose below 12 inches Medium dense below 2 feet						
2			125.4	8.9		28		
4		Dense below 10 feet Percent passing No. 200 - 32.4%	123.3	11.1		32		
6								
8			122.6	10.4		44		
10		Saturated below 10 feet	99.8	23.2		44		
12		Very dense below 12 feet Percent passing No. 200 - 39.8%	92.5	25.9		54		
14								
16		***SILTY SAND/SANDY SILT (SM/ML)*** Very dense, fine- to medium-grained with trace CLAY; red-brown, saturated, drills firmly	99.2	18.8		55		
18								
20		Medium dense and drills easily below 20 feet						

Drill Method: Hollow Stem

Drill Date: 4-19-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 35½ Feet

Log of Boring B26

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-26

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** 7 Feet **At Completion:** 10 Feet

SUBSURFACE PROFILE			SAMPLE			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
		Percent passing No. 200 - 48%	102.4	19.9		24
22						
24						
		Dense, light red-brown and drills firmly below 25 feet	112.3	17.9		44
26						
28						
30		***CLAYEY SAND/SANDY CLAY (SC/CL)*** Very dense, fine- to medium-grained; brown, saturated, drills firmly Percent passing No. 200 - 52%	113.1	15.5		54
32						
34						
		WEATHERED ROCK Very dense, moderately weathered; light gray, saturated, drills hard Auger refusal at 35½ feet	109.1	18.8		50+
36						
		End of Borehole				
38						
40						

Penetration Test blows/ft: 20 40 60

Water Content (%): 10 20 30 40

Drill Method: Hollow Stem

Drill Date: 4-19-23

Drill Rig: CME 75

Krazan and Associates

Hole Size: 4½ Inches

Driller: One Way Drilling

Elevation: 35½ Feet

Sheet: 2 of 2

Log of Boring B27

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-27

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** None **At Completion:** None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with trace CLAY; brown, damp, drills easily Medium dense below 12 inches Very dense and drills hard below 18 inches						
2			82.4	7.8		50+		
4								
		WEATHERED ROCK Very dense, moderately weathered; gray, moist, drills hard	115.3	8.2		50+		
6								
8			95.4	1.8		50+		
		Auger refusal at 9 feet						
		End of Borehole						
10								
12								
14								
16								
18								
20								

Drill Method: Hollow Stem

Drill Date: 7-7-23

Drill Rig: CME 55

Krazan and Associates

Hole Size: 4½ Inches

Driller: Eddie Tapia

Elevation: 9 Feet

Sheet: 1 of 1

Log of Boring B28

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-28

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** None **At Completion:** None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***CLAYEY SAND (SC)*** Very loose, fine- to medium-grained; red-brown, damp, drills easily Medium dense below 12 inches Very dense and drills hard below 2 feet						
2			126.1	9.9		50+		
4								
6			123.5	10.4		50+		
8			105.1	12.6		50+		
10			120.6	14.2		50+		
		WEATHERED ROCK Very dense, moderately weathered; gray, moist, drills hard						
12				7.5		50+		
14								
16		Auger refusal at 16 feet	86.4	6.4		50+		
		End of Borehole						
18								
20								

Drill Method: Hollow Stem

Drill Date: 7-7-23

Drill Rig: CME 55

Krazan and Associates

Hole Size: 4½ Inches

Driller: Eddie Tapia

Elevation: 16 Feet

Sheet: 1 of 1

Log of Boring B29

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-29

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Michael Rupright

Depth to Water> **Initial:** None **At Completion:** None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SANDY CLAYEY SILT (ML)*** Very loose, with trace fine-grained SAND; brown, moist, drills easily Loose below 12 inches						
2			102.4	10.1		5		
4								
6		***SILTY SAND (SM)*** Very dense, fine-grained; gray, moist, drills hard	122.9	8.7		50+		
8		***WEATHERED ROCK*** Very dense, moderately weathered; grayish-brown, moist, drills hard Auger refusal at 8 feet		6.6		50+		
		End of Borehole						
10								
12								
14								
16								
18								
20								

Drill Method: Hollow Stem

Drill Date: 7-7-23

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 8 Feet

Sheet: 1 of 1

Log of Boring B30

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-30

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Michael Rupright

Depth to Water> **Initial:** None **At Completion:** None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
0		Ground Surface				
		SILTY SAND (SM) Very loose, fine-grained; brown, moist, drills easily Loose below 12 inches Medium dense below 2 feet Percent passing No. 200 - 30.5	127.2	10.6		22
		CLAYEY SAND (SC) Dense, fine-grained; reddish-brown, moist, drills firmly Percent passing No. 200 - 29.2%	129.7	10.6		37
		CLAYEY SAND/SANDY CLAY (SC/CL) Very dense, fine-grained; reddish-brown, moist, drills firmly Percent passing No. 200 - 48.8%	107.0	11.9		53
		SILTY SAND (SM) Medium dense, fine-grained with trace CLAY; grayish-brown, moist, drills easily Percent passing No. 200 - 41.4% With interbeds of SILTY SAND/SANDY SILT with CLAY below 12 feet Percent passing No. 200 - 48.1%	108.1	14.9		46
			113.4	8.9		24
		SANDY SILT (ML) Medium dense, fine-grained with trace CLAY; grayish-brown, moist, drills easily	103.1	5.9		50+
		WEATHERED ROCK Very dense, highly weathered; grayish-brown, moist, drills hard Percent passing No. 200 - 47.0% Percent passing No. 200 - 72.8% Auger refusal at 17 feet		4.6		
		End of Borehole				

Penetration Test blows/ft: 20 40 60

Water Content (%): 10 20 30 40

Drill Method: Hollow Stem

Drill Date: 7-7-23

Drill Rig: CME 45B

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 17 Feet

Krazan and Associates

Log of Boring B31

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-31

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Sarah Redondo

Depth to Water> **Initial:** None **At Completion:** None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
0		Ground Surface				
		CLAYEY SAND (SC) Very loose, fine- to medium-grained; red-brown, damp, drills easily Medium dense below 12 inches Very dense and drills hard below 2 feet	124.2	11.6		50+
		WEATHERED ROCK Very dense, moderately weathered; gray, moist, drills hard	110.1	11.1		50+
8		Auger refusal at 8½ feet	85.1	5.9		50+
		End of Borehole				

Penetration Test blows/ft: 20 40 60

Water Content (%): 10 20 30 40

Drill Method: Hollow Stem

Drill Date: 7-7-23

Drill Rig: CME 55

Krazan and Associates

Hole Size: 4½ Inches

Driller: Eddie Tapia

Elevation: 8½ Feet

Sheet: 1 of 1

Log of Boring B32

Project: Triangle Development

Project No: 012-22165

Client: Wilson Homes

Figure No.: A-32

Location: Shepherd Avenue and Locan Avenue, Clovis, California

Logged By: Michael Rupright

Depth to Water> **Initial:** None **At Completion:** None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		WEATHERED ROCK Very loose, highly weathered; reddish-brown, damp, drills easily Medium dense below 12 inches Very dense and drills hard below 18 inches						
2			79.4	9.9		50+		
4								
6			120.7	7.8		50+		
		WEATHERED ROCK Very dense, moderately weathered; gray, damp, drills hard Auger refusal at 8 feet		4.4		50+		
8		End of Borehole						
10								
12								
14								
16								
18								
20								

Drill Method: Hollow Stem

Drill Date: 7-7-23

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 8 Feet

Sheet: 1 of 1

Sieve Analysis

Project Number : 012-22165
Project Name : Triangle Development
Date : 9/19/2022
Sample Location : B1 @ 12-13'
Soil Classification : SM/ML

Wet Weight	:	50.00
Dry Weight	:	41.80
Moisture Content	:	20%

Sieves Size/Number	Sieve Size, mm	Retained Weight	Retained. %	Cum % Retained	Cum. % Passing.
1-1/2"	37.50				100.0
1"	25.00				100.0
3/4"	19.00				100.0
1/2"	12.50				100.0
3/8"	9.50				100.0
#4	4.75				100.0
#8	2.36				100.0
#16	1.18	0.3	0.7	0.7	99.3
#30	0.60	0.5	1.2	1.9	98.1
#50	0.30	1.4	3.3	5.3	94.7
#100	0.15	7.1	17.0	22.2	77.8
#200	0.08	10.4	24.9	47.1	52.9

Krazan Testing Laboratory

Sieve Analysis

Project Number : 012-22165
Project Name : Triangle Development
Date : 9/19/2022
Sample Location : B1 @ 12-13'
Soil Classification : SM/ML

Wet Weight	:	50.00
Dry Weight	:	41.80
Moisture Content	:	20%

Sieves Size/Number	Sieve Size, mm	Retained Weight	Retained. %	Cum % Retained	Cum. % Passing.
1-1/2"	37.50				100.0
1"	25.00				100.0
3/4"	19.00				100.0
1/2"	12.50				100.0
3/8"	9.50				100.0
#4	4.75				100.0
#8	2.36				100.0
#16	1.18	0.3	0.7	0.7	99.3
#30	0.60	0.5	1.2	1.9	98.1
#50	0.30	1.4	3.3	5.3	94.7
#100	0.15	7.1	17.0	22.2	77.8
#200	0.08	10.4	24.9	47.1	52.9

Krazan Testing Laboratory

Grain Size Analysis

Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22165
Soil Classification	SM/ML
Sample Number	B1 @ 12-13'

Krazan Testing Laboratory

Hydrometer Anaylsis

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 9/19/2022
Sample Location	: B1 @ 20-21'
Soil Classification	: SM

Dry Weight Used	113.2 g
Temperature	20.0 C
Soil Specific Gravity	2.65
Solution Spec. Grav.	1.003
K Value	0.01365
Correction Factor	0.00000

Elapsed Time (min)	Hydro. Reading	Hydro. Corrected	% Passing	Particle Diameter
2	1.02	1.02	24.2	0.0320
5	1.018	1.018	21.3	0.0207
15	1.017	1.017	19.9	0.0121
30	1.016	1.016	18.5	0.0087
60	1.014	1.014	15.6	0.0063
250	1.013	1.013	14.2	0.0031
1440	1.009	1.009	8.5	0.0013

Particle Diameter	Percent Passing
0.005	15.1
0.002	10.7
0	NA

Krazan Testing Laboratory

Sieve Analysis

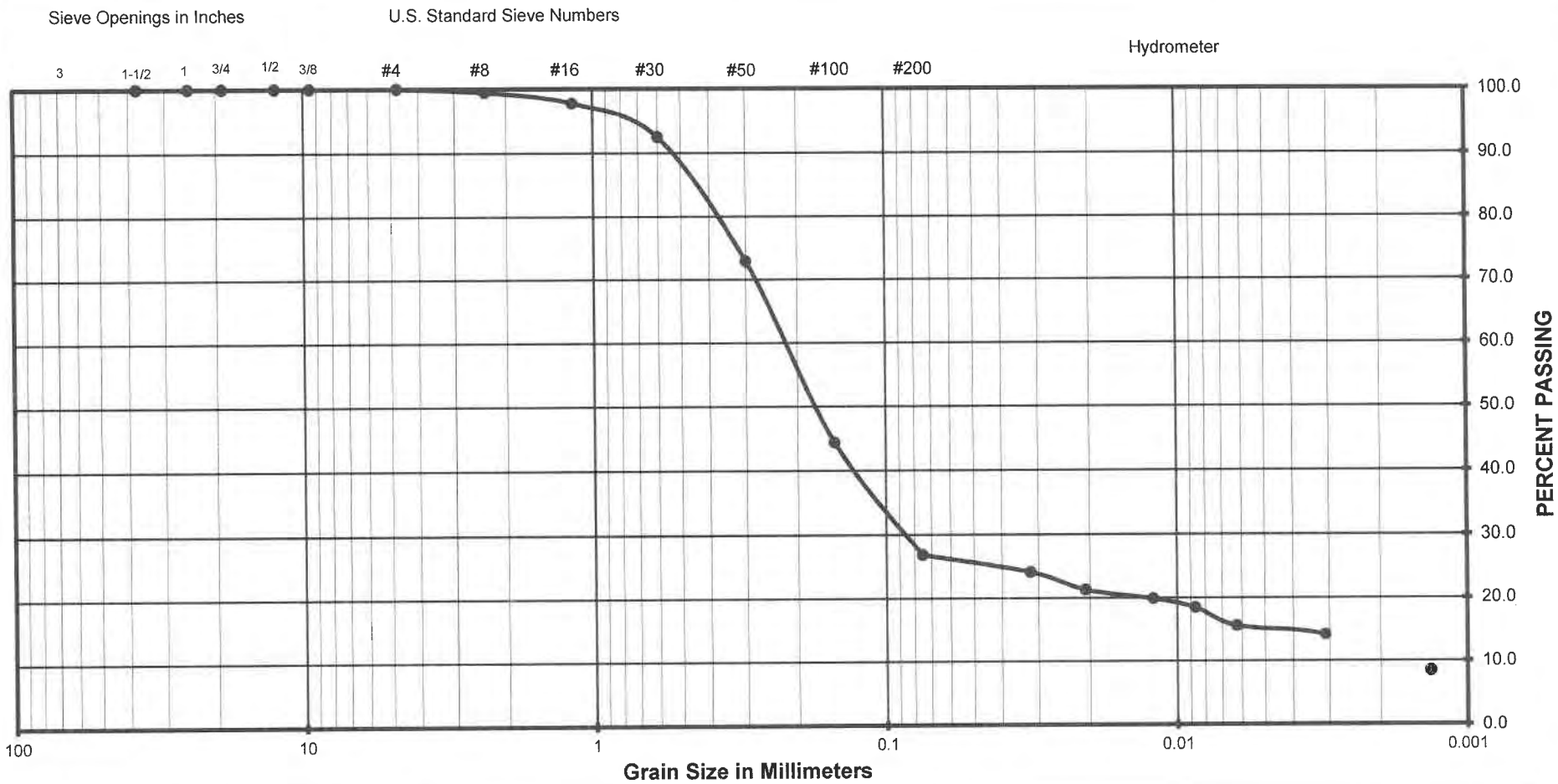
Project Number : 012-22165
Project Name : Triangle Development
Date : 9/19/2022
Sample Location : B1 @ 20-21'
Soil Classification : SM

Wet Weight	:	200.00
Dry Weight	:	182.70
Moisture Content	:	9%

Sieves Size/Number	Sieve Size, mm	Retained Weight	Retained. %	Cum % Retained	Cum. % Passing.
1-1/2"	37.50				100.0
1"	25.00				100.0
3/4"	19.00				100.0
1/2"	12.50				100.0
3/8"	9.50				100.0
#4	4.75				100.0
#8	2.36	1.0	0.5	0.5	99.5
#16	1.18	3.1	1.7	2.2	97.8
#30	0.60	9.6	5.3	7.5	92.5
#50	0.30	35.8	19.6	27.1	72.9
#100	0.15	52.0	28.5	55.6	44.4
#200	0.08	32.1	17.6	73.1	26.9

Krazan Testing Laboratory

Grain Size Analysis



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22165
Soil Classification	SM
Sample Number	B1 @ 20-21'

Krazan Testing Laboratory

Hydrometer Anaylsis

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 9/16/2022
Sample Location	: B2 @ 15-16'
Soil Classification	: SM/ML

Dry Weight Used	89.7 g
Temperature	20.0 C
Soil Specific Gravity	2.65
Solution Spec. Grav.	1.003
K Value	0.01365
Correction Factor	0.00000

Elapsed Time (min)	Hydro. Reading	Hydro. Corrected	% Passing	Particle Diameter
2	1.02	1.02	30.5	0.0320
5	1.018	1.018	26.9	0.0207
15	1.017	1.017	25.1	0.0121
30	1.016	1.016	23.3	0.0087
60	1.015	1.015	21.5	0.0062
250	1.014	1.014	19.7	0.0031
1440	1.011	1.011	14.3	0.0013

Particle Diameter	Percent Passing
0.005	20.8
0.002	16.5
0	NA

Krazan Testing Laboratory

Sieve Analysis

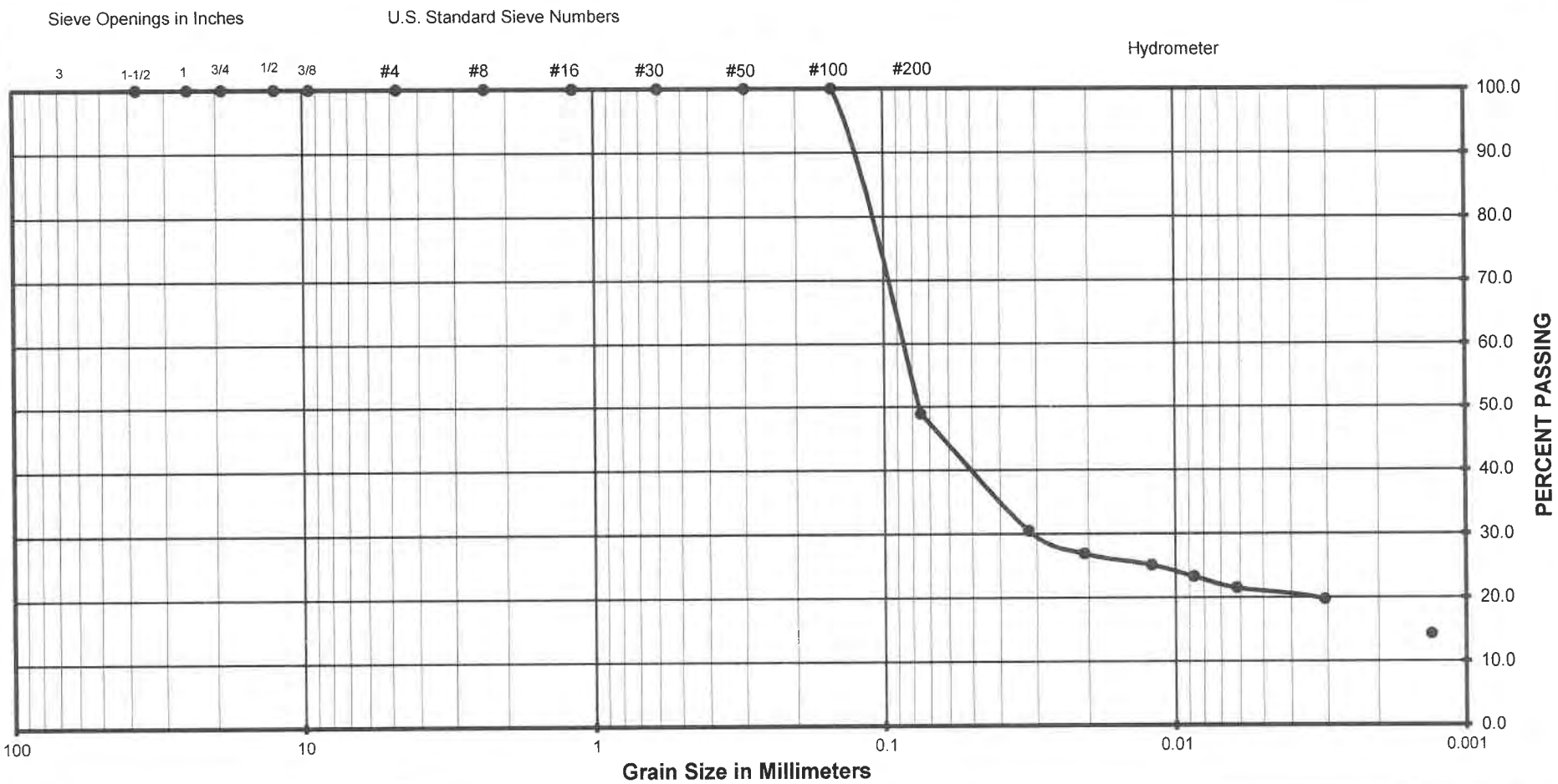
Project Number : 012-22165
Project Name : Triangle Development
Date : 9/16/2022
Sample Location : B2 @ 15-16'
Soil Classification : SM/ML

Wet Weight	:	100.00
Dry Weight	:	89.10
Moisture Content	:	12%

Sieves Size/Number	Sieve Size, mm	Retained Weight	Retained. %	Cum % Retained	Cum. % Passing.
1-1/2"	37.50				100.0
1"	25.00				100.0
3/4"	19.00				100.0
1/2"	12.50				100.0
3/8"	9.50				100.0
#4	4.75				100.0
#8	2.36				100.0
#16	1.18				100.0
#30	0.60				100.0
#50	0.30				100.0
#100	0.15				100.0
#200	0.08	45.5	51.1	51.1	48.9

Krazan Testing Laboratory

Grain Size Analysis



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22165
Soil Classification	SM/ML
Sample Number	B2 @ 15-16'

Krazan Testing Laboratory

Hydrometer Anaylsis

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 9/21/2022
Sample Location	: B2 @ 25-26'
Soil Classification	: SC

Dry Weight Used	111.9 g
Temperature	20.0 C
Soil Specific Gravity	2.65
Solution Spec. Grav.	1.003
K Value	0.01365
Correction Factor	0.00000

Elapsed Time (min)	Hydro. Reading	Hydro. Corrected	% Passing	Particle Diameter
2	1.028	1.028	35.9	0.0288
5	1.025	1.025	31.6	0.0190
15	1.021	1.021	25.9	0.0115
30	1.018	1.018	21.6	0.0085
60	1.015	1.015	17.3	0.0062
250	1.011	1.011	11.5	0.0032
1440	1.007	1.007	5.8	0.0014

Particle Diameter	Percent Passing
0.005	15.0
0.002	7.8
0	NA

Krazan Testing Laboratory

Sieve Analysis

Project Number : 012-22165
Project Name : Triangle Development
Date : 9/21/2022
Sample Location : B2 @ 25-26'
Soil Classification : SC

Wet Weight	:	50.00
Dry Weight	:	42.80
Moisture Content	:	17%

Sieves Size/Number	Sieve Size, mm	Retained Weight	Retained. %	Cum % Retained	Cum. % Passing.
1-1/2"	37.50				100.0
1"	25.00				100.0
3/4"	19.00				100.0
1/2"	12.50				100.0
3/8"	9.50				100.0
#4	4.75				100.0
#8	2.36				100.0
#16	1.18				100.0
#30	0.60				100.0
#50	0.30				100.0
#100	0.15				100.0
#200	0.08	25.8	60.3	60.3	39.7

Krazan Testing Laboratory

Grain Size Analysis

Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22165
Soil Classification	SC
Sample Number	B2 @ 25-26'

Krazan Testing Laboratory

Hydrometer Anaylsis

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 9/21/2022
Sample Location	: B4 @ 12-13'
Soil Classification	: SC

Dry Weight Used	102.2 g
Temperature	20.0 C
Soil Specific Gravity	2.65
Solution Spec. Grav.	1.003
K Value	0.01365
Correction Factor	0.00000

Elapsed Time (min)	Hydro. Reading	Hydro. Corrected	% Passing	Particle Diameter
2	1.026	1.026	36.2	0.0296
5	1.022	1.022	29.9	0.0198
15	1.019	1.019	25.2	0.0118
30	1.016	1.016	20.5	0.0087
60	1.015	1.015	18.9	0.0062
250	1.012	1.012	14.2	0.0031
1440	1.009	1.009	9.4	0.0013

Particle Diameter	Percent Passing
0.005	17.1
0.002	11.2
0	NA

Krazan Testing Laboratory

Sieve Analysis

Project Number : 012-22165
Project Name : Triangle Development
Date : 9/21/2022
Sample Location : B4 @ 12-13'
Soil Classification : SC

Wet Weight	:	150.00
Dry Weight	:	130.00
Moisture Content	:	15%

Sieves Size/Number	Sieve Size, mm	Retained Weight	Retained. %	Cum % Retained	Cum. % Passing.
1-1/2"	37.50				100.0
1"	25.00				100.0
3/4"	19.00				100.0
1/2"	12.50				100.0
3/8"	9.50				100.0
#4	4.75				100.0
#8	2.36	0.3	0.2	0.2	99.8
#16	1.18	1.4	1.1	1.3	98.7
#30	0.60	5.3	4.1	5.4	94.6
#50	0.30	17.2	13.2	18.6	81.4
#100	0.15	30.2	23.2	41.8	58.2
#200	0.08	24.1	18.5	60.4	39.6

Krazan Testing Laboratory

Grain Size Analysis

Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22165
Soil Classification	SC
Sample Number	B4 @ 12-13'

Krazan Testing Laboratory

Hydrometer Anaylsis

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 9/21/2022
Sample Location	: B4 @ 20-21'
Soil Classification	: SM

Dry Weight Used	104.6 g
Temperature	20.0 C
Soil Specific Gravity	2.65
Solution Spec. Grav.	1.003
K Value	0.01365
Correction Factor	0.00000

Elapsed Time (min)	Hydro. Reading	Hydro. Corrected	% Passing	Particle Diameter
2	1.019	1.019	24.6	0.0324
5	1.017	1.017	21.5	0.0210
15	1.015	1.015	18.5	0.0124
30	1.014	1.014	16.9	0.0088
60	1.012	1.012	13.8	0.0064
250	1.01	1.01	10.8	0.0032
1440	1.008	1.008	7.7	0.0014

Particle Diameter	Percent Passing
0.005	12.5
0.002	8.8
0	NA

Krazan Testing Laboratory

Sieve Analysis

Project Number : 012-22165
Project Name : Triangle Development
Date : 9/21/2022
Sample Location : B4 @ 20-21'
Soil Classification : SM

Wet Weight	:	150.00
Dry Weight	:	135.30
Moisture Content	:	11%

Sieves Size/Number	Sieve Size, mm	Retained Weight	Retained. %	Cum % Retained	Cum. % Passing.
1-1/2"	37.50				100.0
1"	25.00				100.0
3/4"	19.00				100.0
1/2"	12.50				100.0
3/8"	9.50				100.0
#4	4.75	0.5	0.4	0.4	99.6
#8	2.36	2.4	1.8	2.1	97.9
#16	1.18	5.3	3.9	6.1	93.9
#30	0.60	11.7	8.6	14.7	85.3
#50	0.30	27.4	20.3	35.0	65.0
#100	0.15	33.6	24.8	59.8	40.2
#200	0.08	16.3	12.0	71.8	28.2

Krazan Testing Laboratory

Grain Size Analysis

Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22165
Soil Classification	SM
Sample Number	B4 @ 20-21'

Krazan Testing Laboratory

Hydrometer Anaylsis

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 9/16/2022
Sample Location	: B5 @ 17-18'
Soil Classification	: SM/ML w/ trace of clay

Dry Weight Used	95.5 g
Temperature	20.0 C
Soil Specific Gravity	2.65
Solution Spec. Grav.	1.003
K Value	0.01365
Correction Factor	0.00000

Elapsed Time (min)	Hydro. Reading	Hydro. Corrected	% Passing	Particle Diameter
2	1.028	1.028	42.1	0.0288
5	1.026	1.026	38.8	0.0187
15	1.022	1.022	32.0	0.0114
30	1.021	1.021	30.3	0.0082
60	1.02	1.02	28.6	0.0058
250	1.017	1.017	23.6	0.0030
1440	1.013	1.013	16.8	0.0013

Particle Diameter	Percent Passing
0.005	27.2
0.002	19.7
0	NA

Krazan Testing Laboratory

Sieve Analysis

Project Number : 012-22165
Project Name : Triangle Development
Date : 9/16/2022
Sample Location : B5 @ 17-18'
Soil Classification : SM/ML w/ trace of clay

Wet Weight	:	100.00
Dry Weight	:	85.70
Moisture Content	:	17%

Sieves Size/Number	Sieve Size, mm	Retained Weight	Retained. %	Cum % Retained	Cum. % Passing.
1-1/2"	37.50				100.0
1"	25.00				100.0
3/4"	19.00				100.0
1/2"	12.50				100.0
3/8"	9.50				100.0
#4	4.75				100.0
#8	2.36				100.0
#16	1.18	0.9	1.1	1.1	98.9
#30	0.60	2.2	2.6	3.6	96.4
#50	0.30	6.1	7.1	10.7	89.3
#100	0.15	12.7	14.8	25.6	74.4
#200	0.08	20.6	24.0	49.6	50.4

Krazan Testing Laboratory

Grain Size Analysis

Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22165
Soil Classification	SM/ML w/ trace of clay
Sample Number	B5 @ 17-18'

Krazan Testing Laboratory

Hydrometer Anaylsis

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 9/16/2022
Sample Location	: B5 @ 25-26'
Soil Classification	: SM

Dry Weight Used	106.0 g
Temperature	20.0 C
Soil Specific Gravity	2.65
Solution Spec. Grav.	1.003
K Value	0.01365
Correction Factor	0.00000

Elapsed Time (min)	Hydro. Reading	Hydro. Corrected	% Passing	Particle Diameter
2	1.022	1.022	28.8	0.0313
5	1.02	1.02	25.8	0.0202
15	1.017	1.017	21.3	0.0121
30	1.016	1.016	19.7	0.0087
60	1.014	1.014	16.7	0.0063
250	1.012	1.012	13.7	0.0031
1440	1.01	1.01	10.6	0.0013

Particle Diameter	Percent Passing
0.005	15.5
0.002	11.8
0	NA

Krazan Testing Laboratory

Sieve Analysis

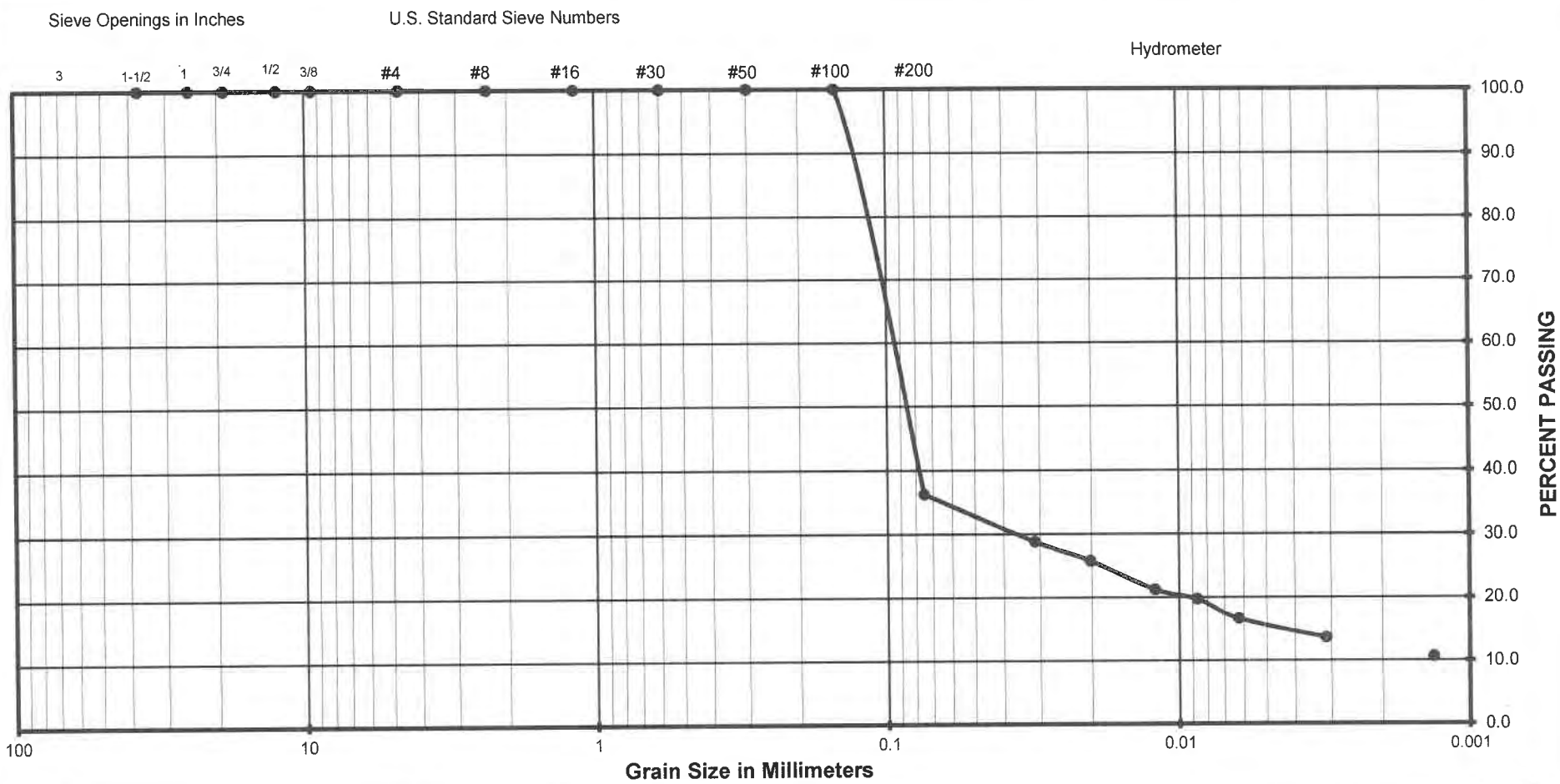
Project Number : 012-22165
Project Name : Triangle Development
Date : 9/16/2022
Sample Location : B5 @ 25-26'
Soil Classification : SM

Wet Weight	:	200.00
Dry Weight	:	166.60
Moisture Content	:	20%

Sieves Size/Number	Sieve Size, mm	Retained Weight	Retained. %	Cum % Retained	Cum. % Passing.
1-1/2"	37.50				100.0
1"	25.00				100.0
3/4"	19.00				100.0
1/2"	12.50				100.0
3/8"	9.50				100.0
#4	4.75				100.0
#8	2.36				100.0
#16	1.18				100.0
#30	0.60				100.0
#50	0.30				100.0
#100	0.15				100.0
#200	0.08	106.2	63.7	63.7	36.3

Krazan Testing Laboratory

Grain Size Analysis



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22165
Soil Classification	SM
Sample Number	B5 @ 25-26'

Krazan Testing Laboratory

Hydrometer Anaylsis

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 9/21/2022
Sample Location	: B6 @ 25-26'
Soil Classification	: SC

Dry Weight Used	104.6 g
Temperature	20.0 C
Soil Specific Gravity	2.65
Solution Spec. Grav.	1.003
K Value	0.01365
Correction Factor	0.00000

Elapsed Time (min)	Hydro. Reading	Hydro. Corrected	% Passing	Particle Diameter
2	1.026	1.026	35.4	0.0296
5	1.025	1.025	33.8	0.0190
15	1.024	1.024	32.3	0.0111
30	1.022	1.022	29.2	0.0081
60	1.019	1.019	24.6	0.0059
250	1.016	1.016	20.0	0.0030
1440	1.012	1.012	13.8	0.0013

Particle Diameter	Percent Passing
0.005	23.2
0.002	16.4
0	NA

Krazan Testing Laboratory

Sieve Analysis

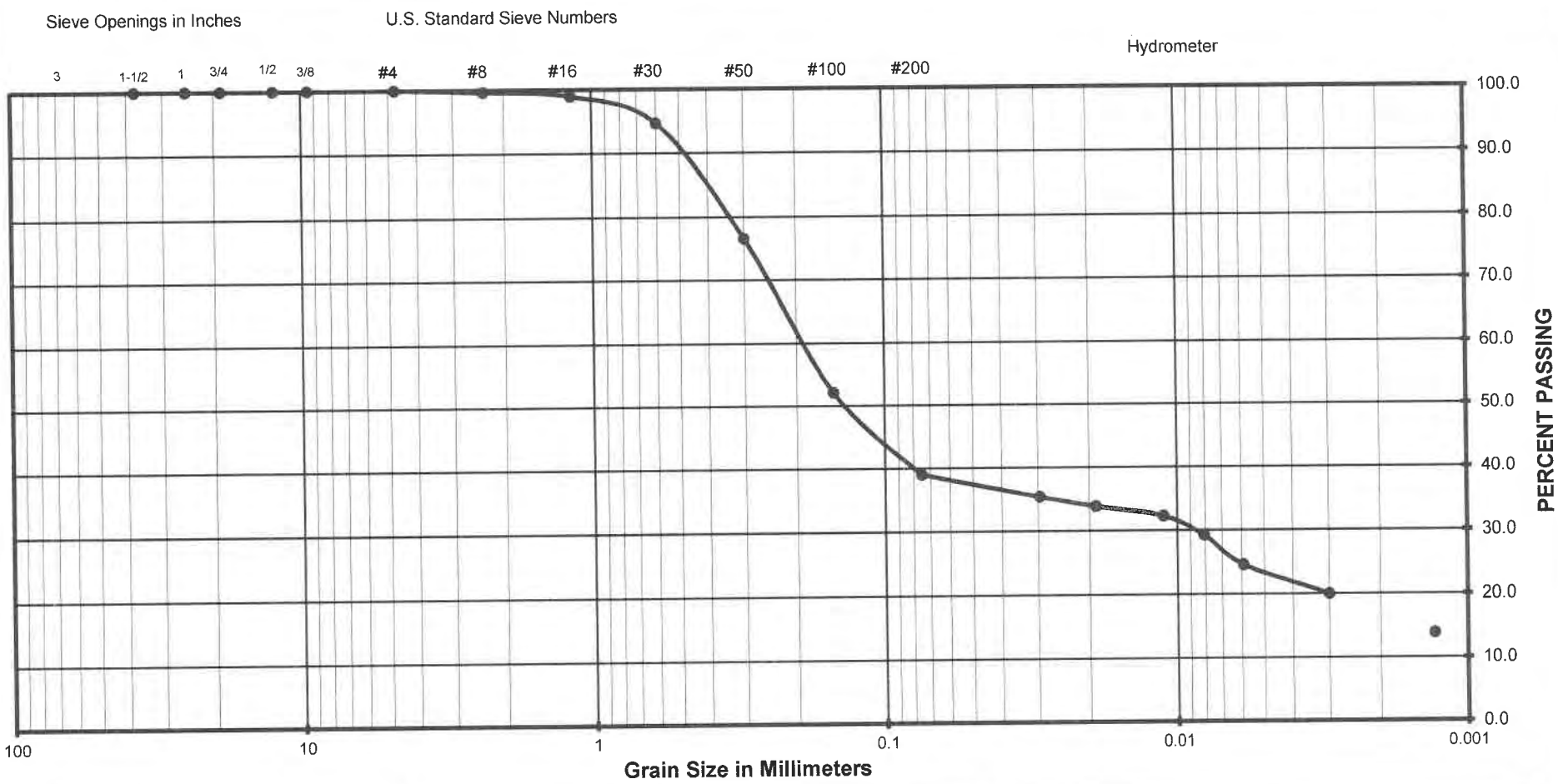
Project Number : 012-22165
Project Name : Triangle Development
Date : 9/21/2022
Sample Location : B6 @ 25-26'
Soil Classification : SC

Wet Weight	:	100.00
Dry Weight	:	86.70
Moisture Content	:	15%

Sieves Size/Number	Sieve Size, mm	Retained Weight	Retained. %	Cum % Retained	Cum. % Passing.
1-1/2"	37.50				100.0
1"	25.00				100.0
3/4"	19.00				100.0
1/2"	12.50				100.0
3/8"	9.50				100.0
#4	4.75				100.0
#8	2.36	0.3	0.3	0.3	99.7
#16	1.18	0.6	0.7	1.0	99.0
#30	0.60	3.7	4.3	5.3	94.7
#50	0.30	15.7	18.1	23.4	76.6
#100	0.15	21.2	24.5	47.9	52.1
#200	0.08	11.4	13.1	61.0	39.0

Krazan Testing Laboratory

Grain Size Analysis



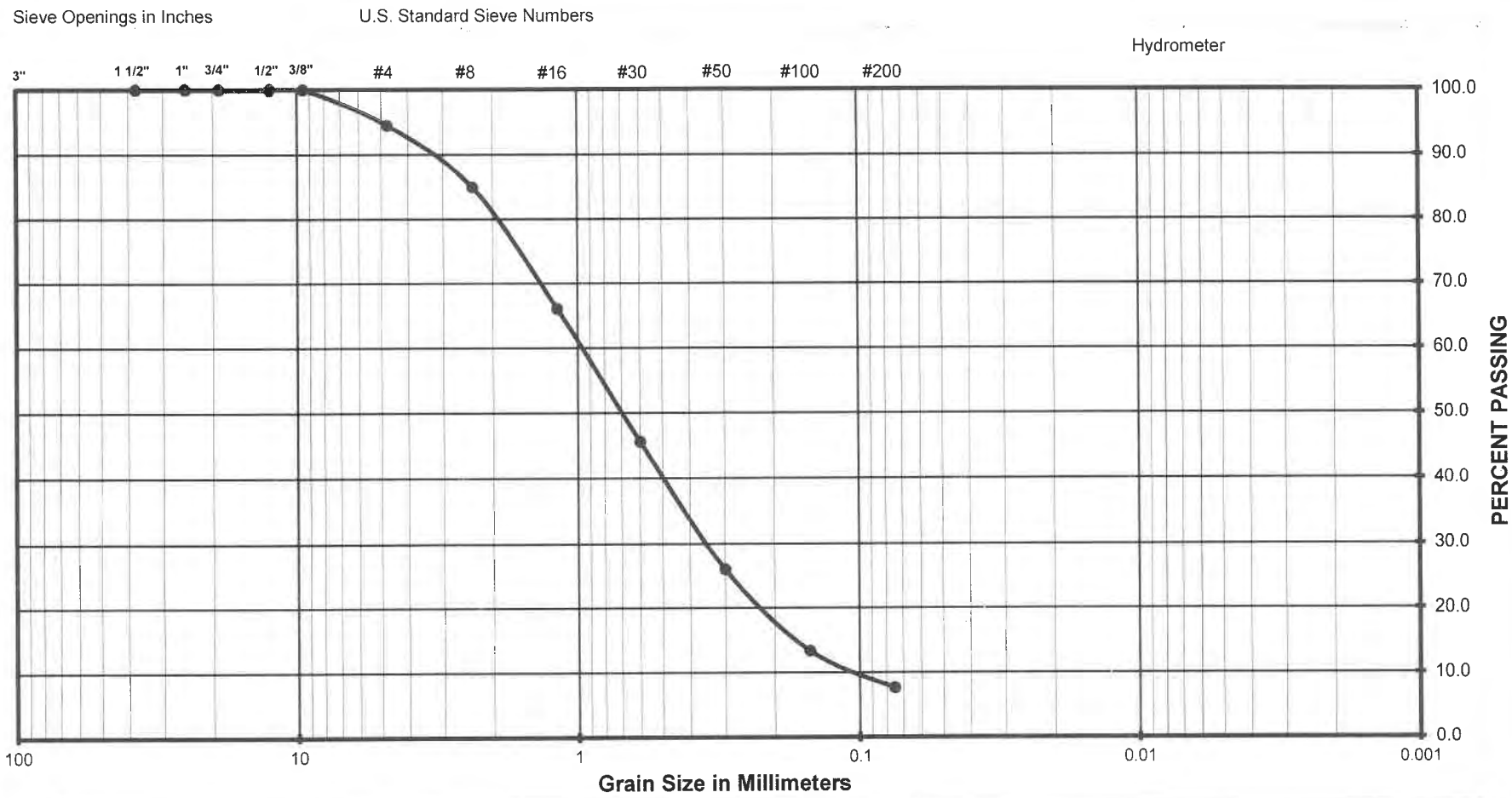
Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22165
Soil Classification	SC
Sample Number	B6 @ 25-26'

Krazan Testing Laboratory

Grain Size Analysis



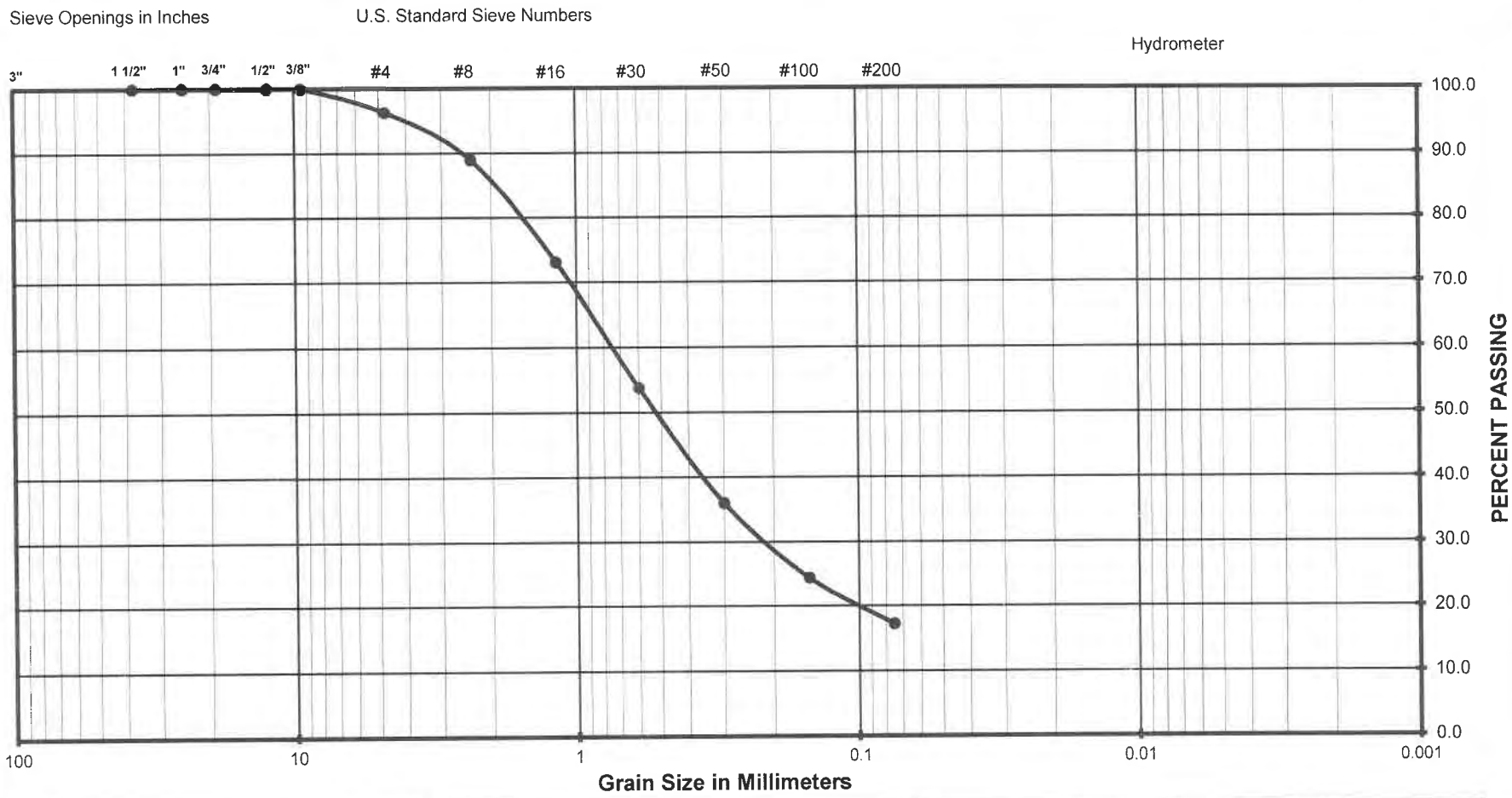
Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22165
Soil Classification	SM/SP
Sample Number	B15 @ 9-10'

Krazan Testing Laboratory

Grain Size Analysis



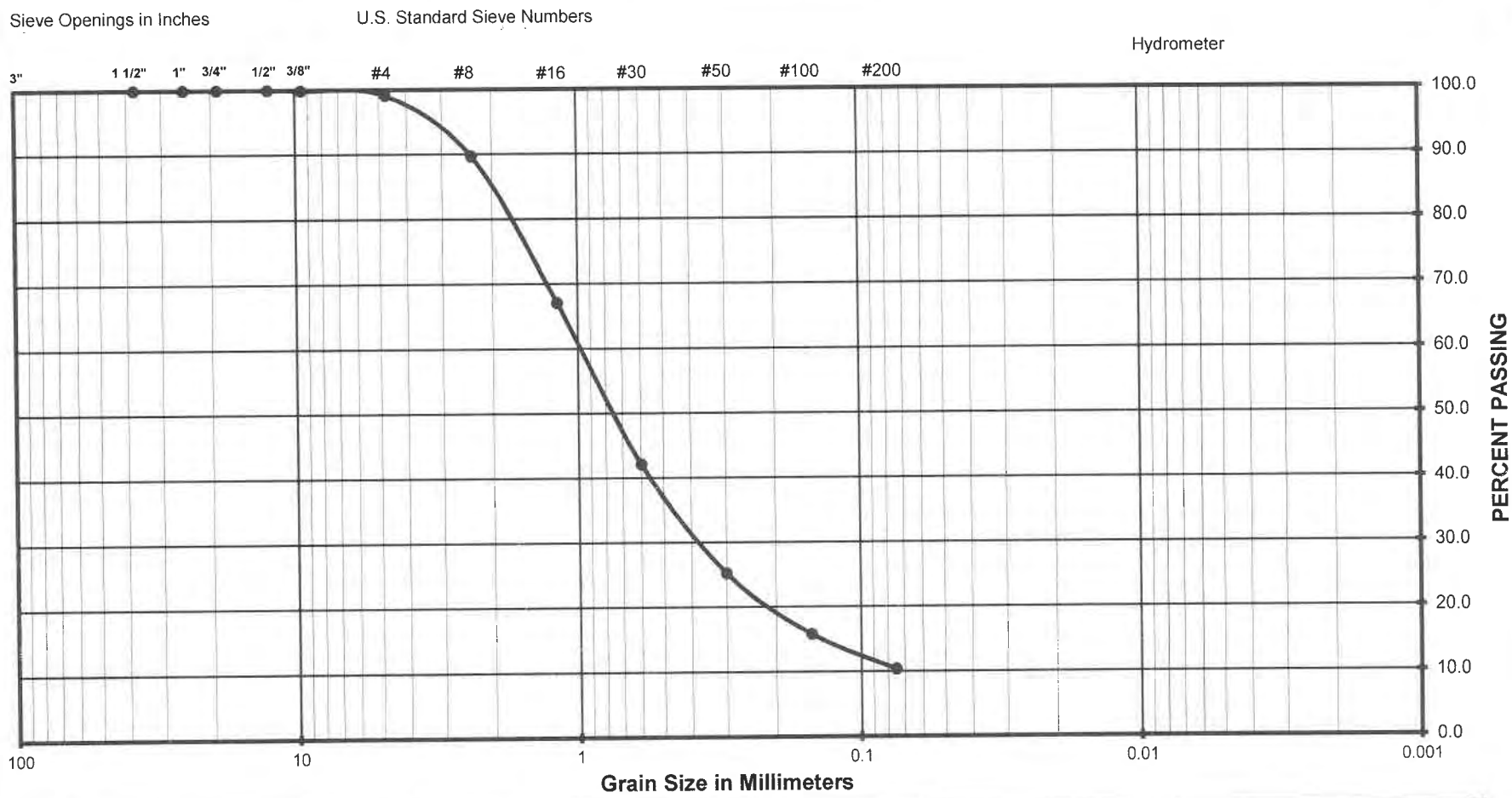
Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22165
Soil Classification	SM w/ trace of clay
Sample Number	B15 @ 15-16'

Krazan Testing Laboratory

Grain Size Analysis



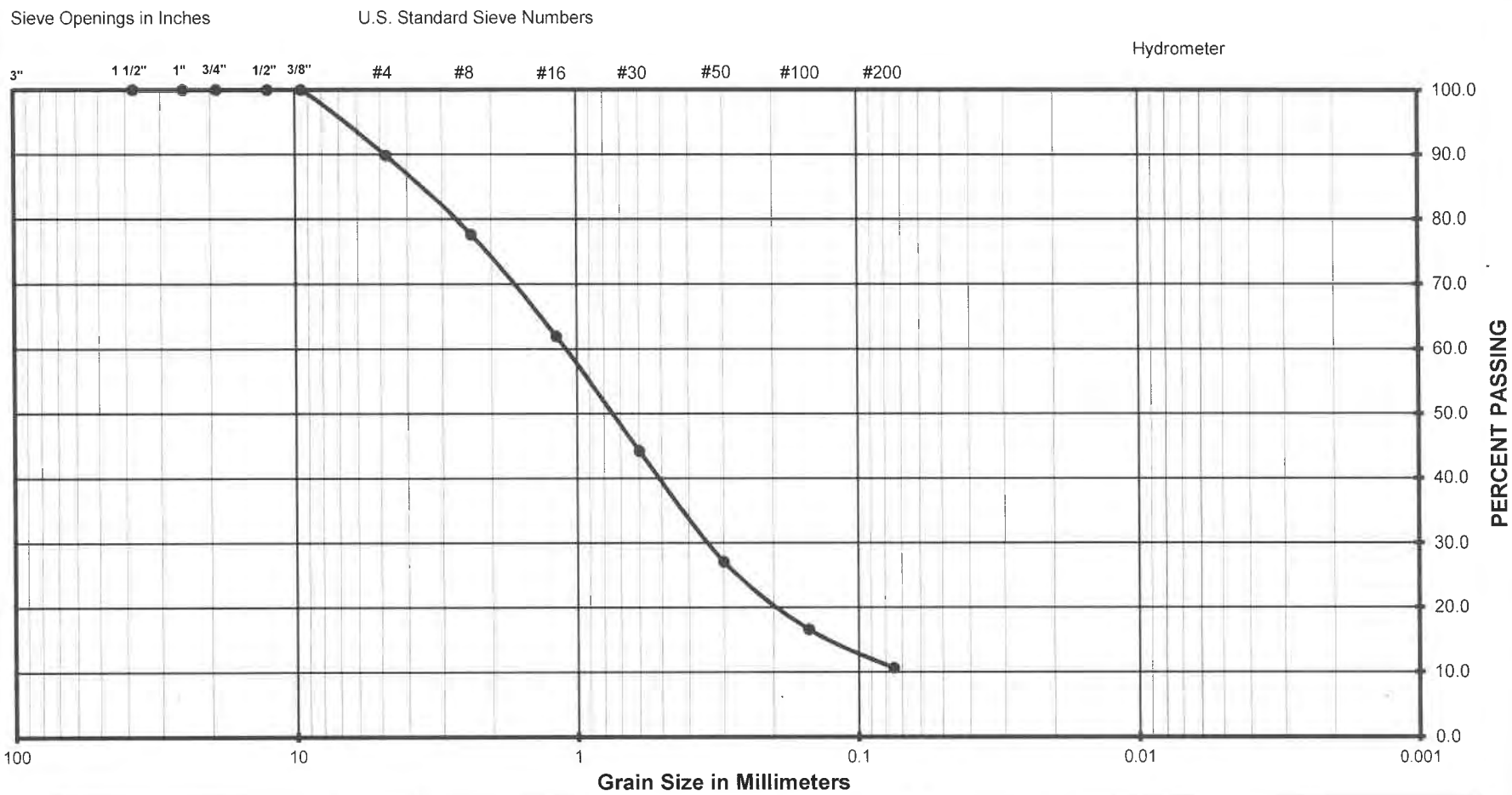
Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22165
Soil Classification	SM/SP
Sample Number	B15 @ 20-21'

Krazan Testing Laboratory

Grain Size Analysis



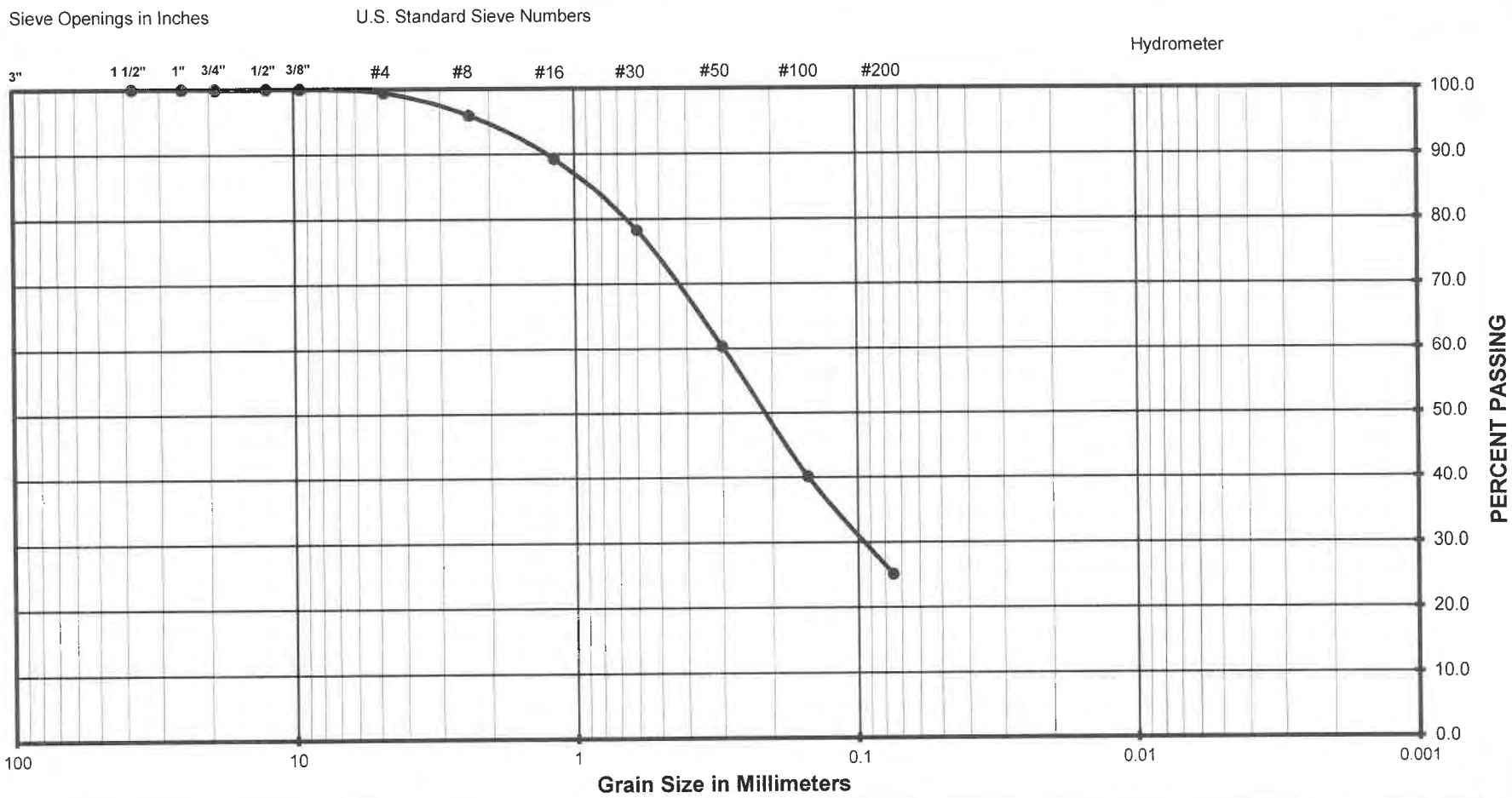
Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22165
Soil Classification	SM/SP
Sample Number	B15 @ 25-26'

Krazan Testing Laboratory

Grain Size Analysis



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22165
Soil Classification	SM
Sample Number	B15 @ 30-31'

Krazan Testing Laboratory

Grain Size Analysis

Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22233
Soil Classification	SM w/ trace of clay
Sample Number	B29 @ 5-6'

Krazan Testing Laboratory

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

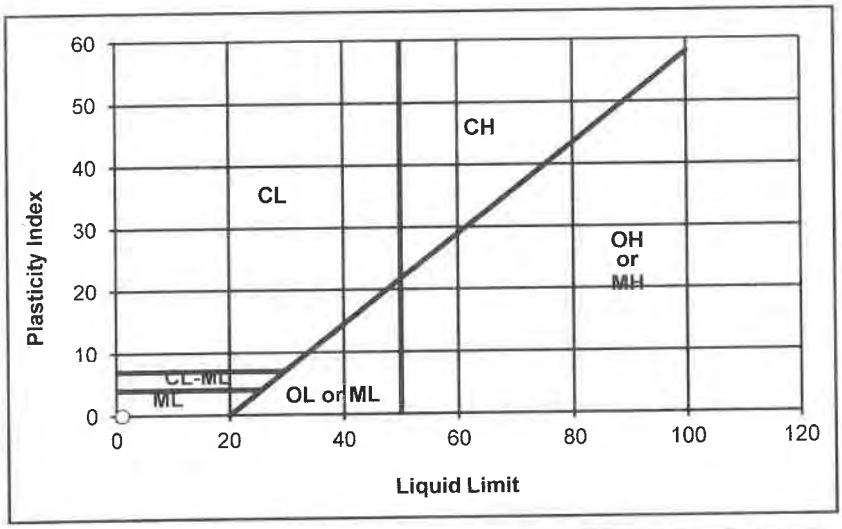
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/29/2022
Sampled By: DA
Sample Number: -
Sample Location: B1 @ 7-8'
Sample Description: SM

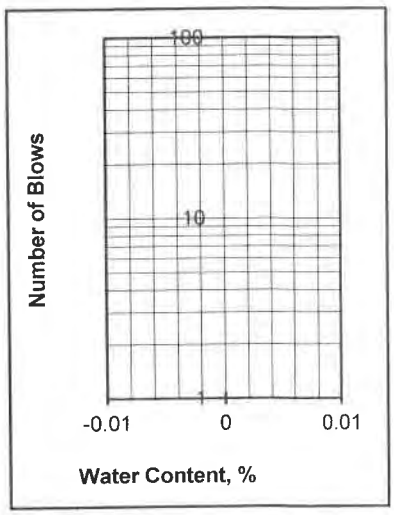
Date Tested: 9/16/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

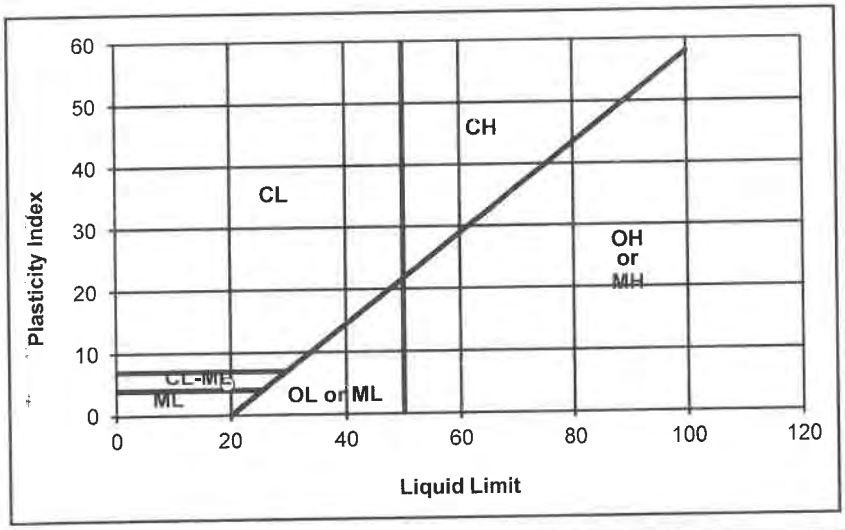
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/29/2022
Sampled By: DA
Sample Number: -
Sample Location: B1 @ 10-11'
Sample Description: ML/CL

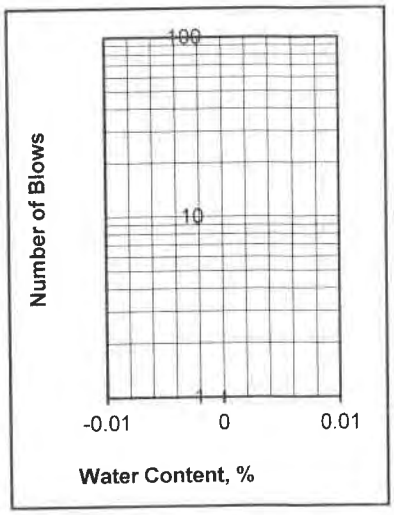
Date Tested: 9/16/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	36.36	37.81		40.03	33.48	
Weight of Dry Soil & Tare (g)	34.83	36.13		37.38	31.16	
Weight of Tare (g)	23.64	23.52		23.37	19.51	
Weight of water (g)	1.53	1.68		2.65	2.32	
Weight of Dry Soil (g)	11.19	12.61		14.01	11.65	
Water Content (% of dry wt.)	13.7%	13.4%		18.9%	19.9%	
Number of Blows				27	23	

Plastic Limit : 14 **Liquid Limit : 19**

Plasticity Index : 5
Unified Soil Classification : CL-ML
Requirement:
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

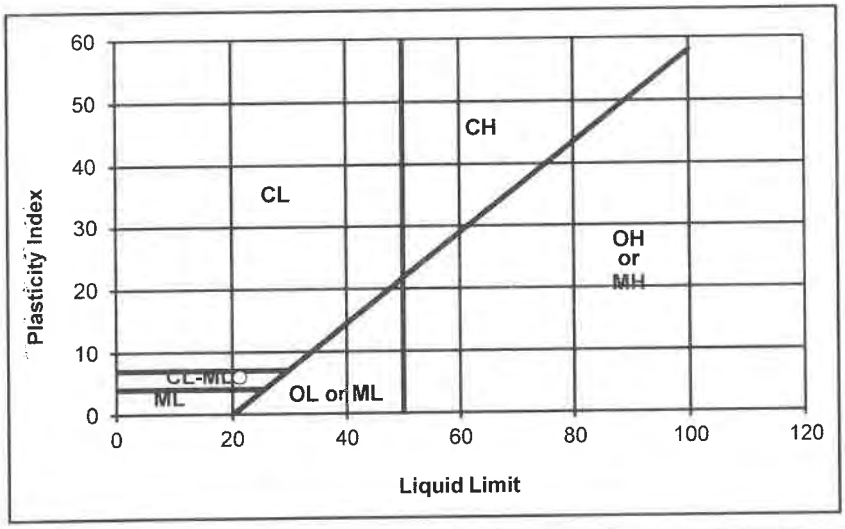
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/29/2022
Sampled By: DA
Sample Number: -
Sample Location: B1 @ 15-16'
Sample Description: SM/SC

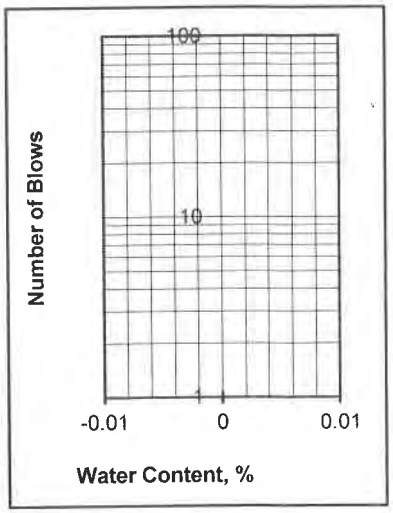
Date Tested: 9/16/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	36.18	34.84		40.41	34.59	
Weight of Dry Soil & Tare (g)	34.51	33.32		37.33	32.55	
Weight of Tare (g)	23.21	23.23		22.36	23.32	
Weight of water (g)	1.67	1.51		3.08	2.04	
Weight of Dry Soil (g)	11.30	10.10		14.97	9.23	
Water Content (% of dry wt.)	14.8%	15.0%		20.6%	22.0%	
Number of Blows				25	23	

Plastic Limit : 15 **Liquid Limit : 21**

Plasticity Index : 6
Unified Soil Classification : CL-ML **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

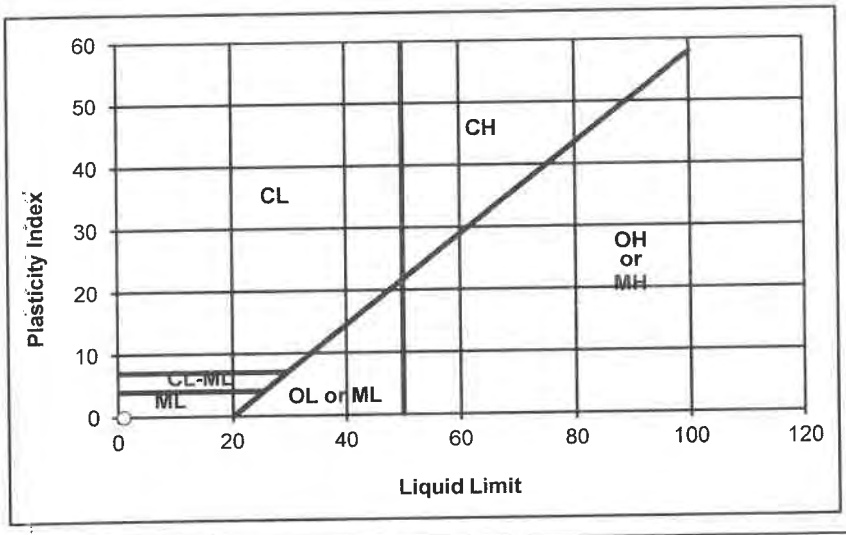
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/29/2022
Sampled By: DA
Sample Number: -
Sample Location: B1 @ 25-26'
Sample Description: SM

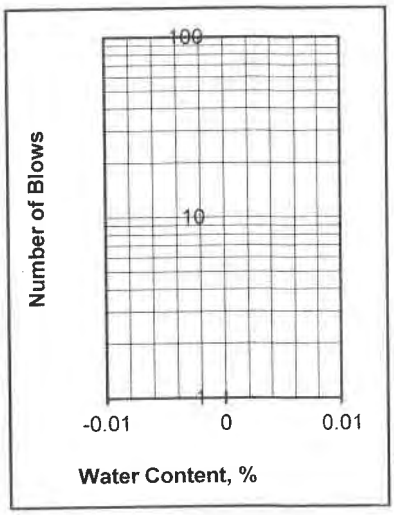
Date Tested: 9/16/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

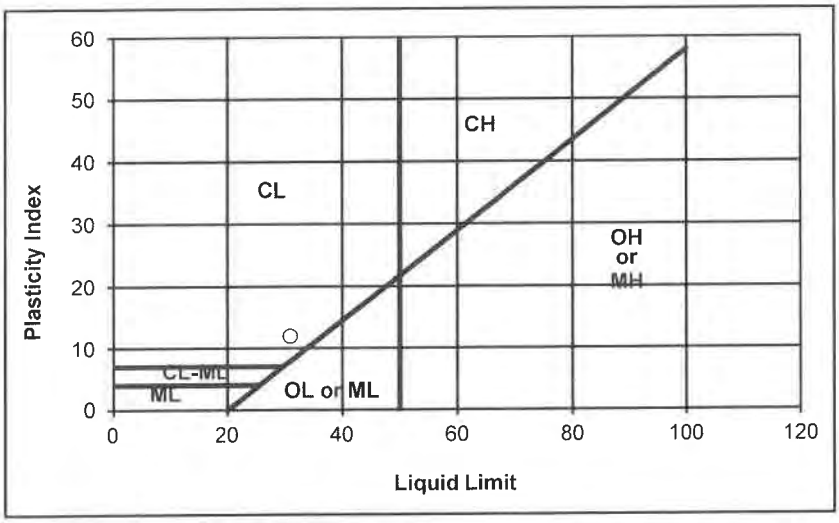
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/29/2022
Sampled By: DA
Sample Number: -
Sample Location: B1 @ 35-36'
Sample Description: SC/CL

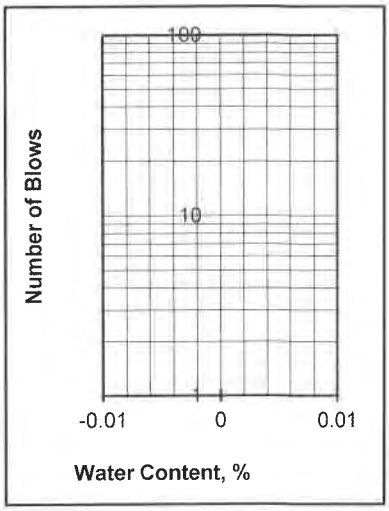
Date Tested: 9/16/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	31.77	31.40		38.08	38.28	
Weight of Dry Soil & Tare (g)	30.41	30.01		34.62	34.78	
Weight of Tare (g)	23.38	22.84		23.46	23.42	
Weight of water (g)	1.37	1.39		3.46	3.50	
Weight of Dry Soil (g)	7.02	7.17		11.16	11.36	
Water Content (% of dry wt.)	19.5%	19.4%		31.0%	30.8%	
Number of Blows				25	25	

Plastic Limit : 19 **Liquid Limit : 31**

Plasticity Index : 12
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

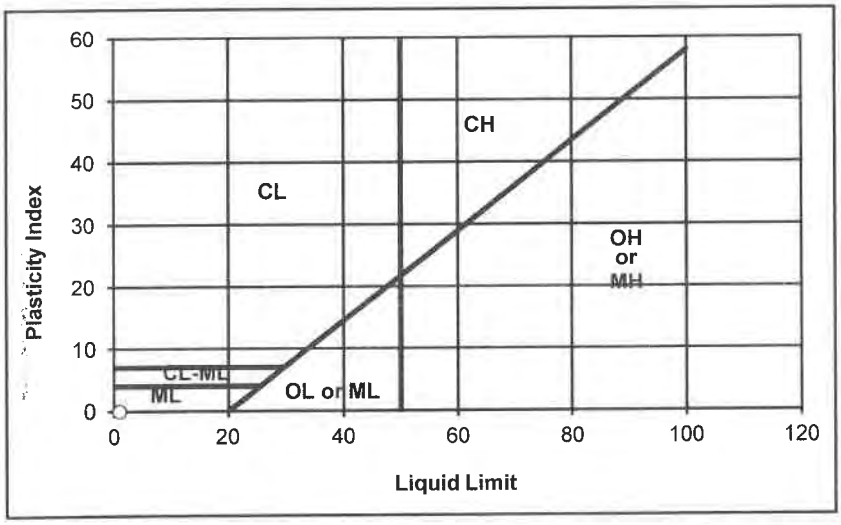
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/29/2022
Sampled By: DA
Sample Number: -
Sample Location: B1 @ 45-46'
Sample Description: SM

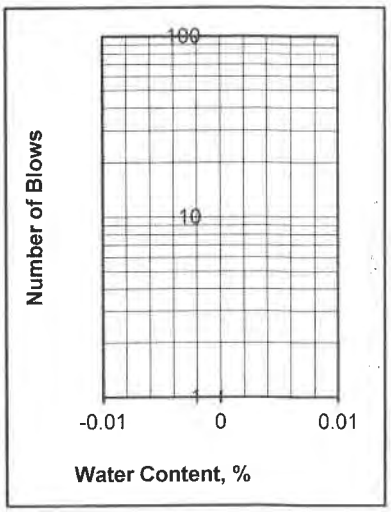
Date Tested: 9/15/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

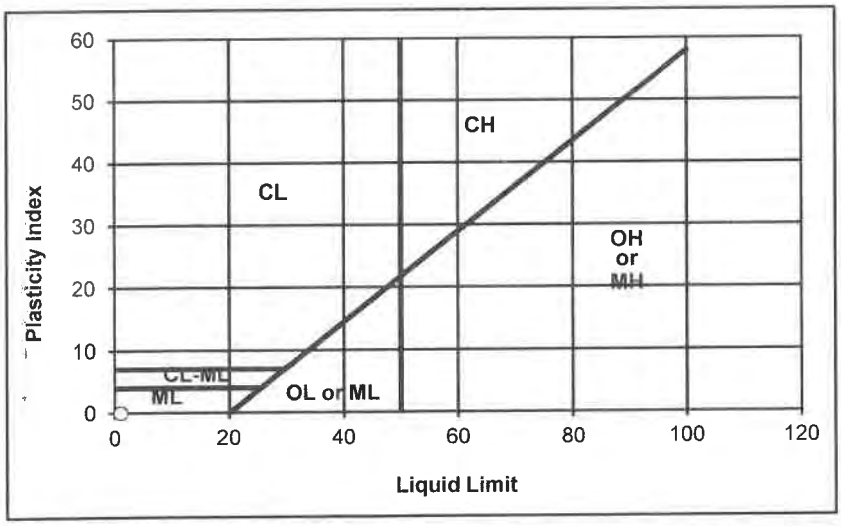
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/29/2022
Sampled By: DA
Sample Number: -
Sample Location: B2 @ 5-6'
Sample Description: SM

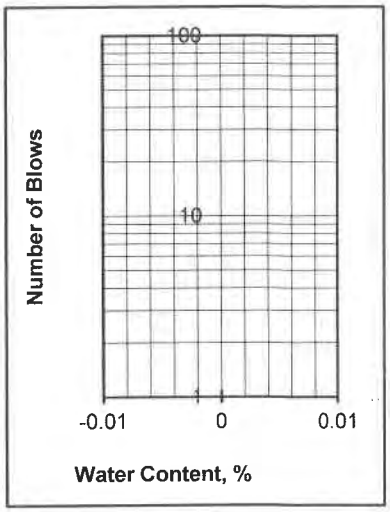
Date Tested: 9/15/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

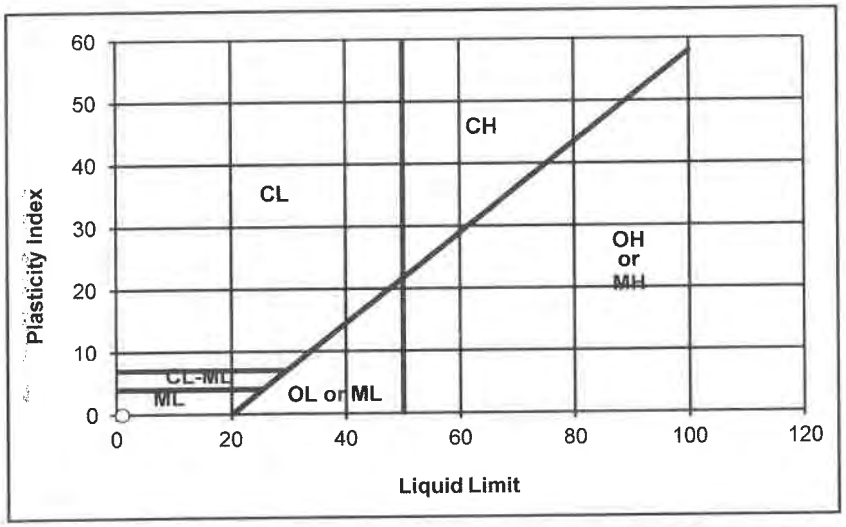
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/29/2022
Sampled By: DA
Sample Number: -
Sample Location: B2 @ 10-11'
Sample Description: SM

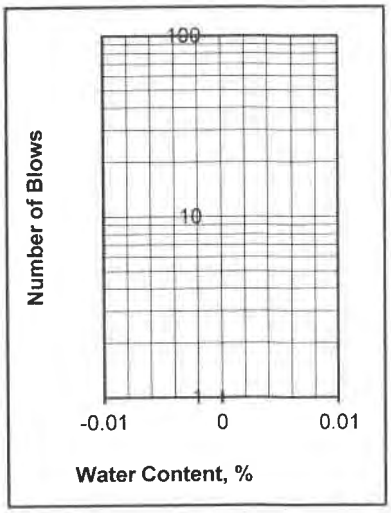
Date Tested: 9/15/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

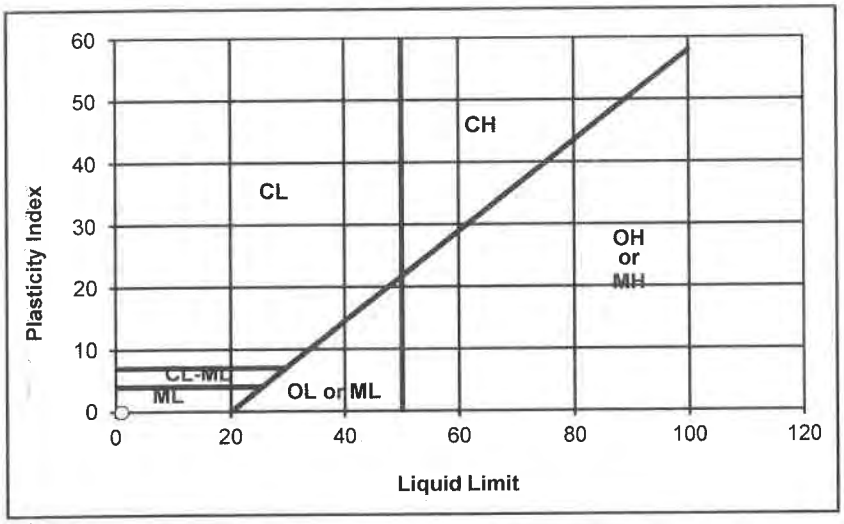
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/29/2022
Sampled By: DA
Sample Number: -
Sample Location: B2 @ 15-16'
Sample Description: SM/ML

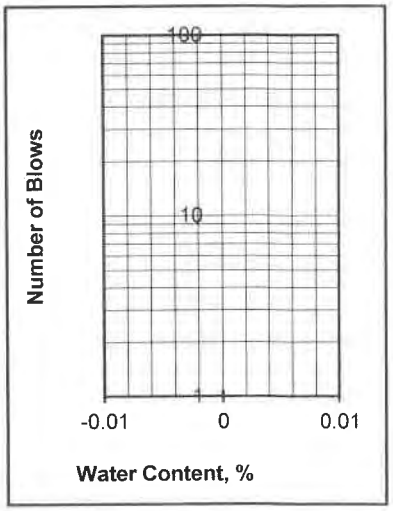
Date Tested: 9/16/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

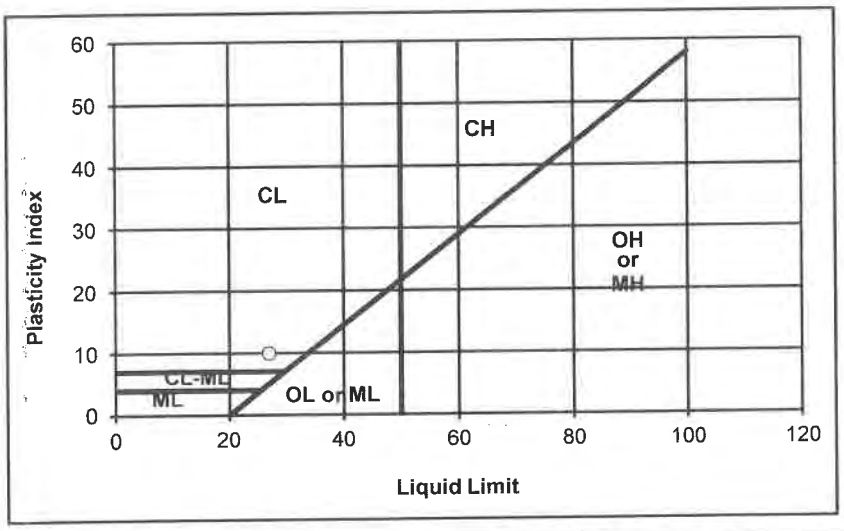
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/29/2022
Sampled By: DA
Sample Number: -
Sample Location: B2 @ 25-26'
Sample Description: SC

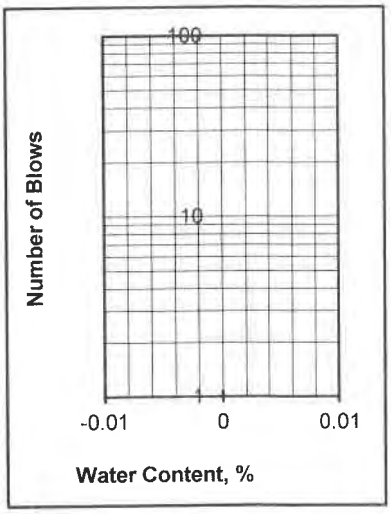
Date Tested: 9/15/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	42.20	40.81		39.76	38.01	
Weight of Dry Soil & Tare (g)	39.51	38.30		36.30	34.05	
Weight of Tare (g)	23.65	23.51		23.37	19.51	
Weight of water (g)	2.70	2.51		3.46	3.96	
Weight of Dry Soil (g)	15.86	14.79		12.94	14.54	
Water Content (% of dry wt.)	17.0%	17.0%		26.7%	27.2%	
Number of Blows				25	25	

Plastic Limit : 17 **Liquid Limit : 27**

Plasticity Index : 10
Unified Soil Classification : CL
Requirement:
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

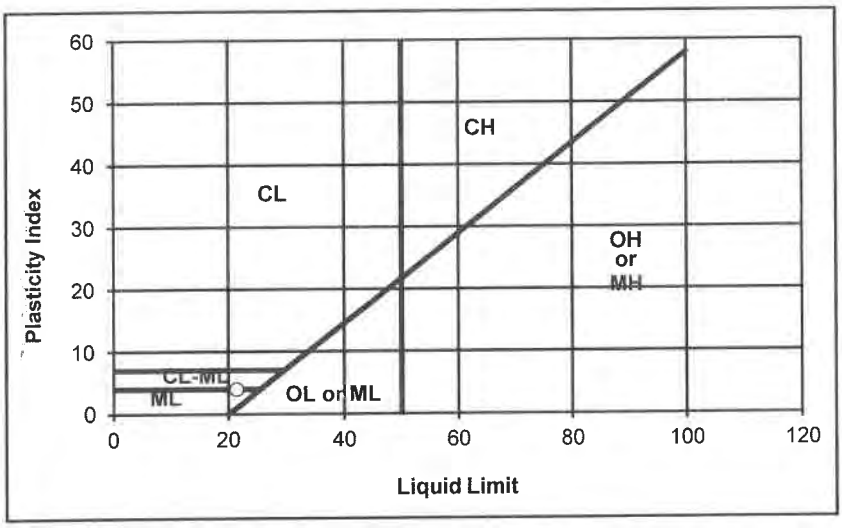
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/29/2022
Sampled By: DA
Sample Number: -
Sample Location: B2 @ 35-36'
Sample Description: SC/SM

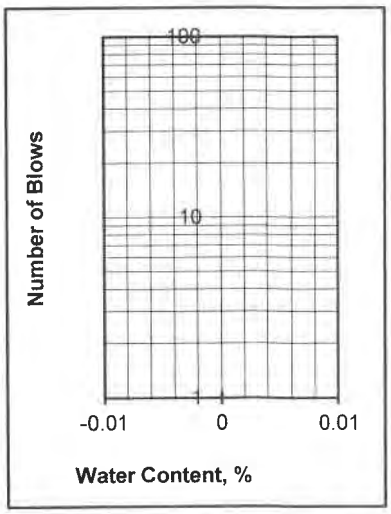
Date Tested: 9/15/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	36.17	33.30		39.15	39.62	
Weight of Dry Soil & Tare (g)	34.29	31.77		36.37	36.78	
Weight of Tare (g)	23.40	22.84		23.45	23.42	
Weight of water (g)	1.89	1.54		2.78	2.84	
Weight of Dry Soil (g)	10.89	8.93		12.91	13.36	
Water Content (% of dry wt.)	17.3%	17.2%		21.6%	21.3%	
Number of Blows				25	25	

Plastic Limit : 17 **Liquid Limit : 21**

Plasticity Index : 4
Unified Soil Classification : CL-ML **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

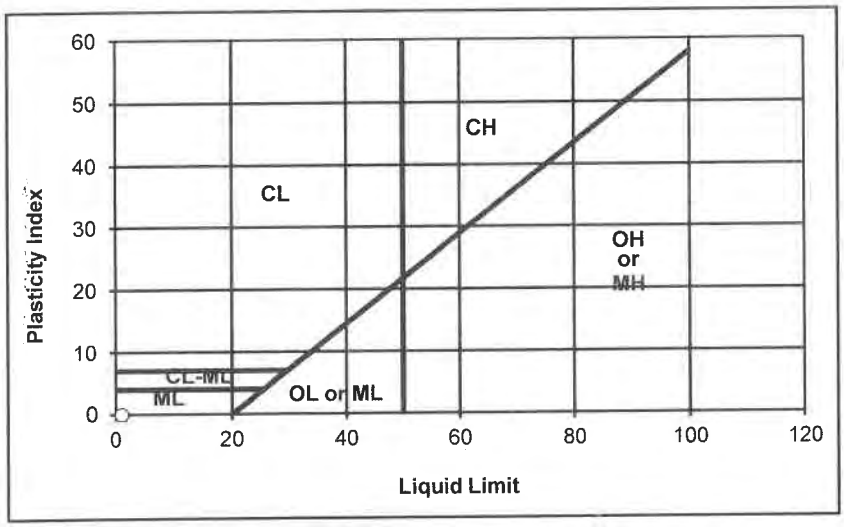
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/29/2022
Sampled By: DA
Sample Number: -
Sample Location: B2 @ 45-46'
Sample Description: SM

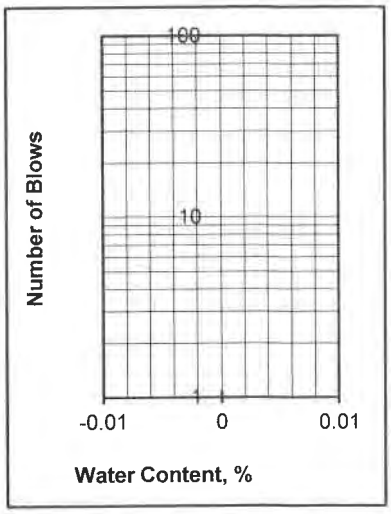
Date Tested: 9/15/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

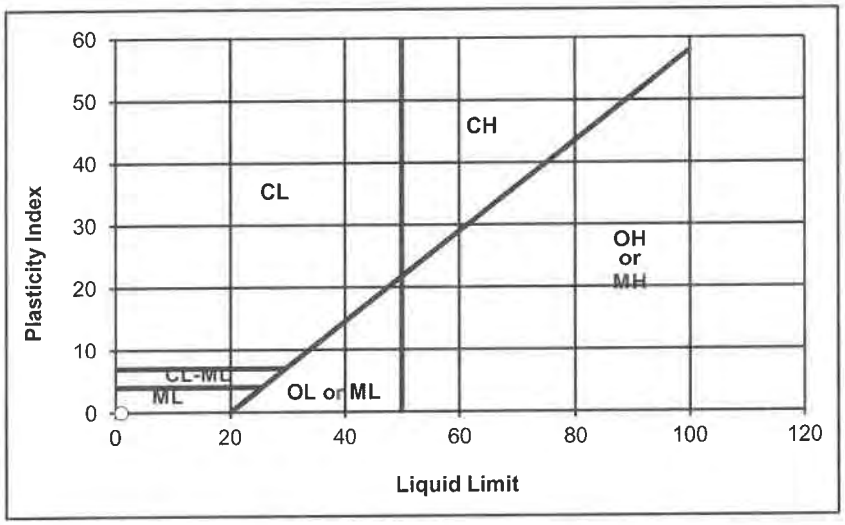
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/30/2022
Sampled By: DA
Sample Number: -
Sample Location: B3 @ 10-11'
Sample Description: SM

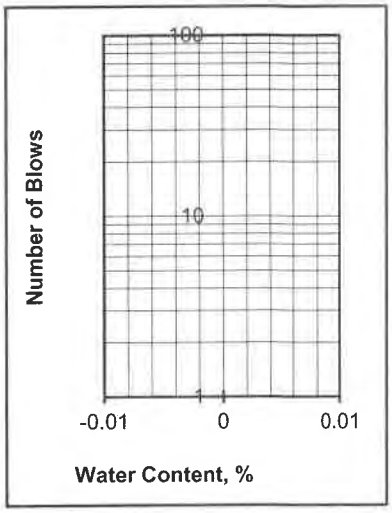
Date Tested: 9/15/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

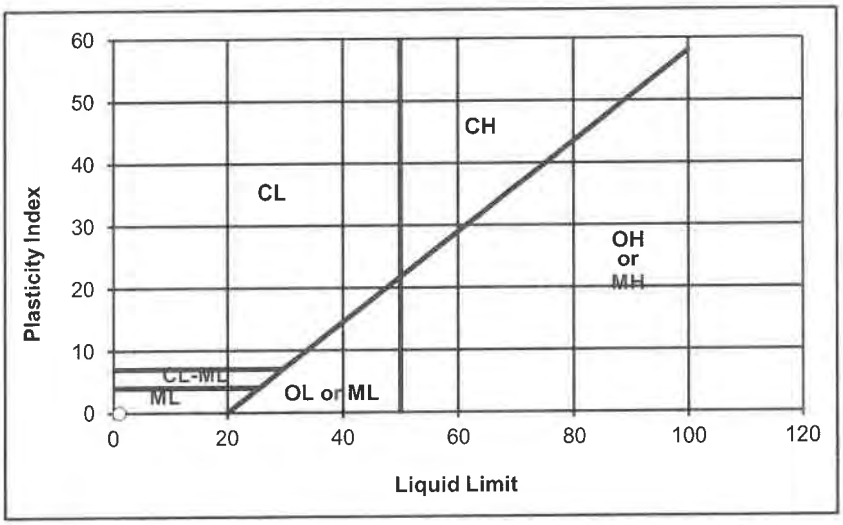
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/30/2022
Sampled By: DA
Sample Number: -
Sample Location: B3 @ 15-16'
Sample Description: SM

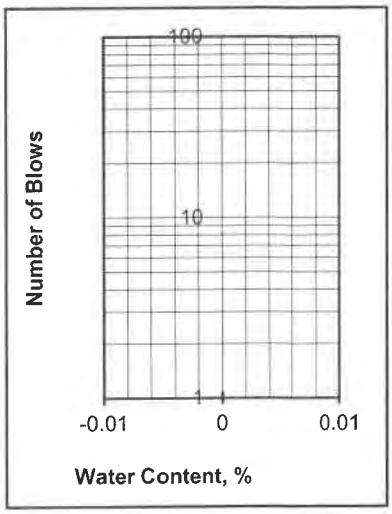
Date Tested: 9/16/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

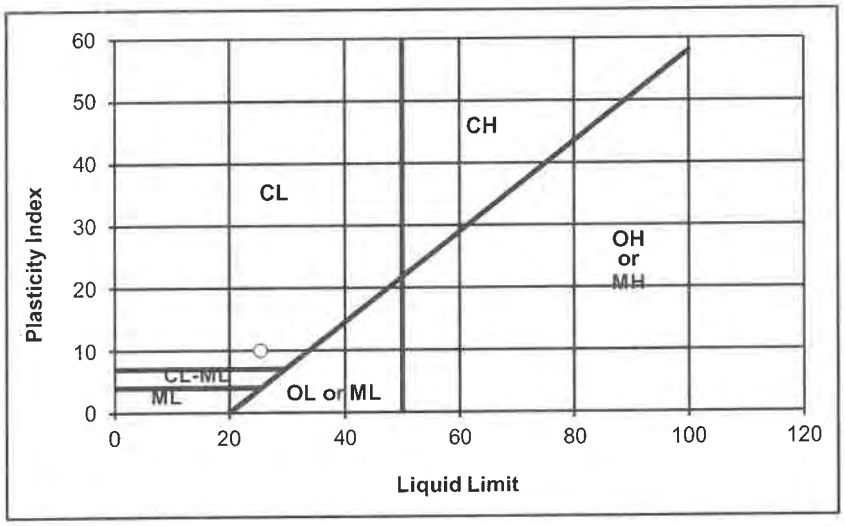
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/30/2022
Sampled By: DA
Sample Number: -
Sample Location: B3 @ 20-21'
Sample Description: SC

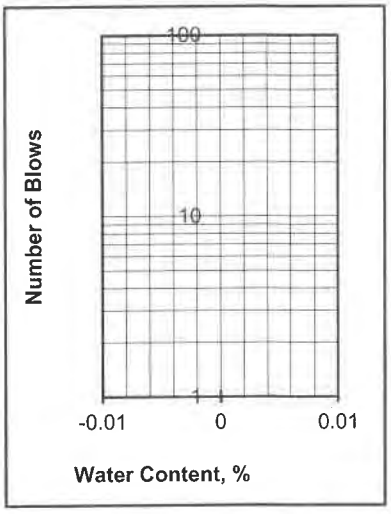
Date Tested: 9/16/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	38.11	37.08		38.49	38.48	
Weight of Dry Soil & Tare (g)	36.23	35.31		35.23	35.42	
Weight of Tare (g)	23.20	23.24		22.38	23.32	
Weight of water (g)	1.88	1.77		3.26	3.06	
Weight of Dry Soil (g)	13.03	12.07		12.86	12.10	
Water Content (% of dry wt.)	14.4%	14.7%		25.3%	25.3%	
Number of Blows				25	25	

Plastic Limit : 15 **Liquid Limit : 25**

Plasticity Index : 10
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

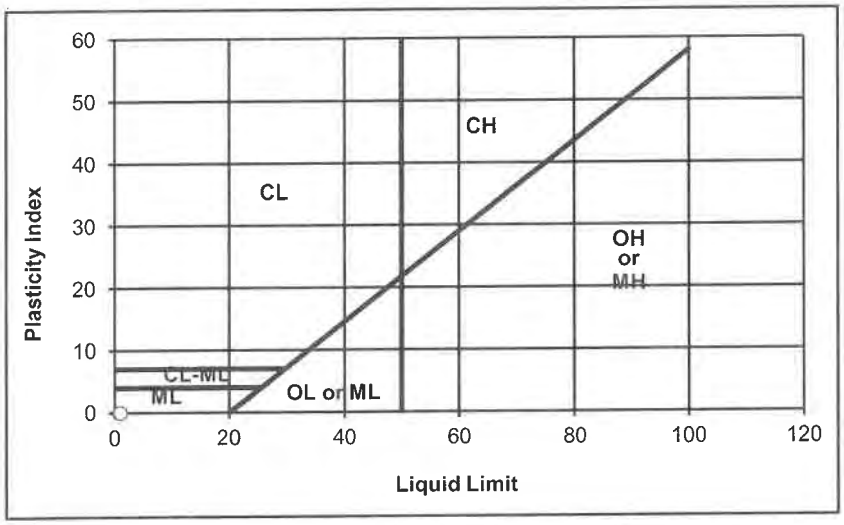
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/30/2022
Sampled By: DA
Sample Number: -
Sample Location: B3 @ 25-26'
Sample Description: SM

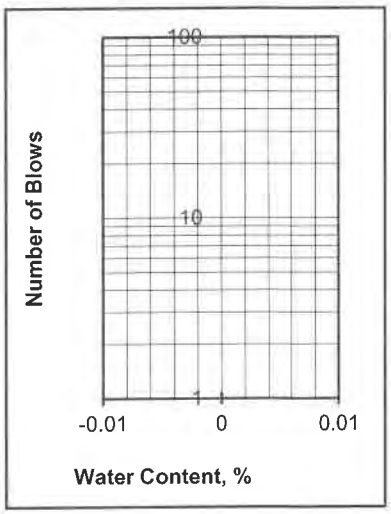
Date Tested: 9/15/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

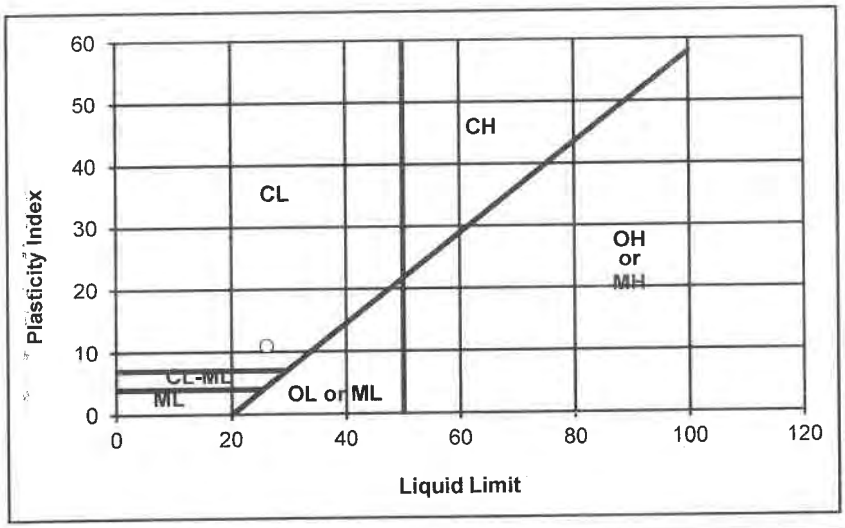
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/30/2022
Sampled By: DA
Sample Number: -
Sample Location: B4 @ 10-11'
Sample Description: SC/CL

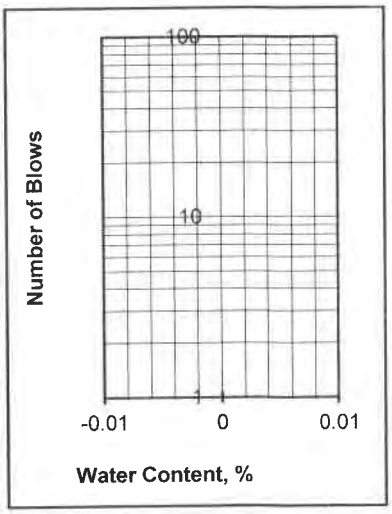
Date Tested: 9/16/2022
Tested By: JM
Verified By: JG

Trial Number	Plastic Limit 1	Plastic Limit 2	Plastic Limit 3	Liquid Limit 1	Liquid Limit 2	Liquid Limit 3
Weight of Wet Soil & Tare (g)	41.18	35.13		37.49	37.74	
Weight of Dry Soil & Tare (g)	38.82	33.54		34.57	34.78	
Weight of Tare (g)	23.38	22.84		23.45	23.42	
Weight of water (g)	2.36	1.59		2.92	2.96	
Weight of Dry Soil (g)	15.44	10.70		11.12	11.36	
Water Content (% of dry wt.)	15.3%	14.8%		26.3%	26.1%	
Number of Blows				25	25	

Plastic Limit : 15 **Liquid Limit : 26**

Plasticity Index : 11
Unified Soil Classification : CL
Requirement:
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 9/30/2022
Sample Number	: -
Sample Location	: B4 @ 15-16'
Soil Classification	: SM

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	116.5	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	12.5	Initial Length,cm	7.11	% Passing # 200	29.4
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (**B** Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	5:15	5:32	0.18	2.94	9.86	7.10	21.5	19.8	22.5
2	5:32	5:55	2.94	5.68	7.10	4.36	21.5	19.8	22.5
3	5:58	6:31	0.34	5.12	9.80	5.02	21.5	19.8	22.5
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	1020	0.75404	2.6E-05	2.601E-05
2	1380	0.67618	2.7E-05	2.664E-05
3	1980	0.57094	2.7E-05	2.66E-05
4				
5				
6				

Permeability
2.64E-05 cm/sec
2.64E-07 m/sec

Krazan Testing Laboratory

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

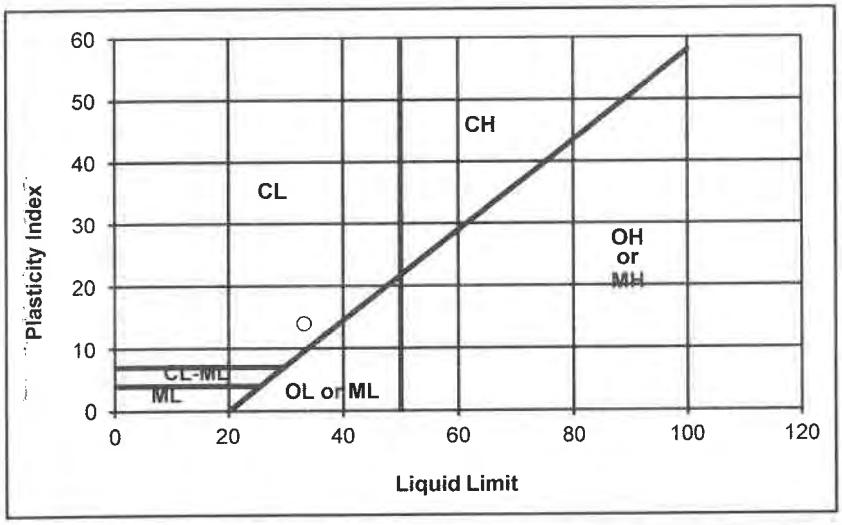
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/30/2022
Sampled By: DA
Sample Number: -
Sample Location: B4 @ 25-26'
Sample Description: SC

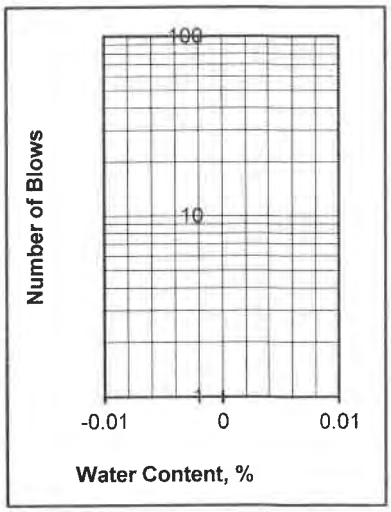
Date Tested: 9/19/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	32.98	36.46		38.30	41.63	
Weight of Dry Soil & Tare (g)	31.44	34.40		34.31	37.09	
Weight of Tare (g)	23.22	23.23		22.38	23.32	
Weight of water (g)	1.54	2.06		3.98	4.54	
Weight of Dry Soil (g)	8.22	11.18		11.93	13.77	
Water Content (% of dry wt.)	18.7%	18.4%		33.4%	33.0%	
Number of Blows				25	25	

Plastic Limit : 19 **Liquid Limit : 33**

Plasticity Index : 14
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

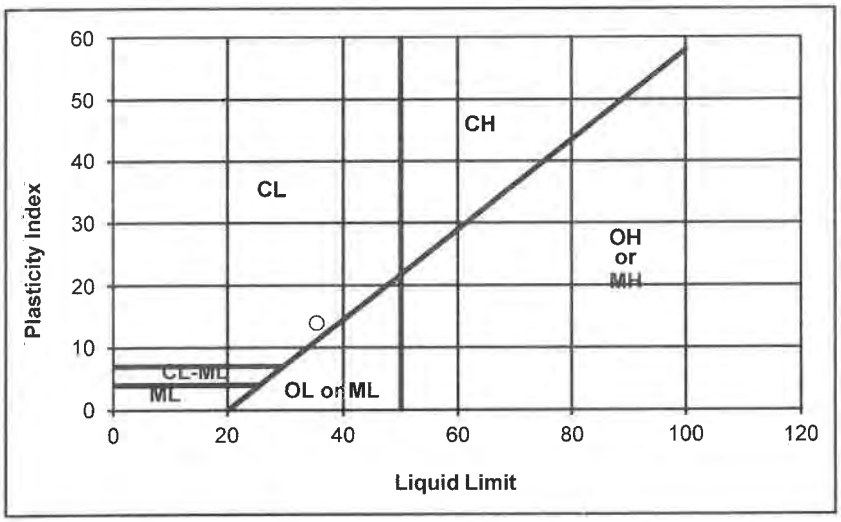
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/30/2022
Sampled By: DA
Sample Number: -
Sample Location: B4 @ 30-31'
Sample Description: CL

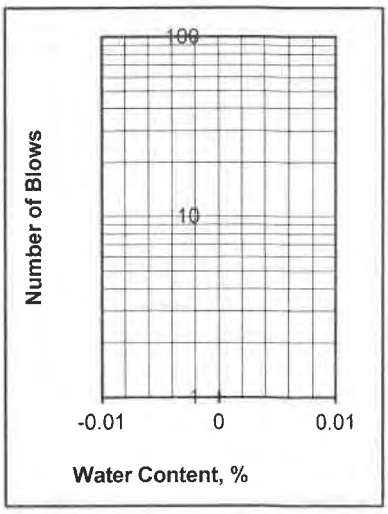
Date Tested: 9/19/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	39.05	38.40		35.91	35.72	
Weight of Dry Soil & Tare (g)	36.33	35.70		32.66	32.50	
Weight of Tare (g)	23.38	22.84		23.47	23.43	
Weight of water (g)	2.73	2.70		3.25	3.22	
Weight of Dry Soil (g)	12.95	12.86		9.19	9.07	
Water Content (% of dry wt.)	21.1%	21.0%		35.3%	35.6%	
Number of Blows				25	25	

Plastic Limit : 21 **Liquid Limit : 35**

Plasticity Index : 14
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

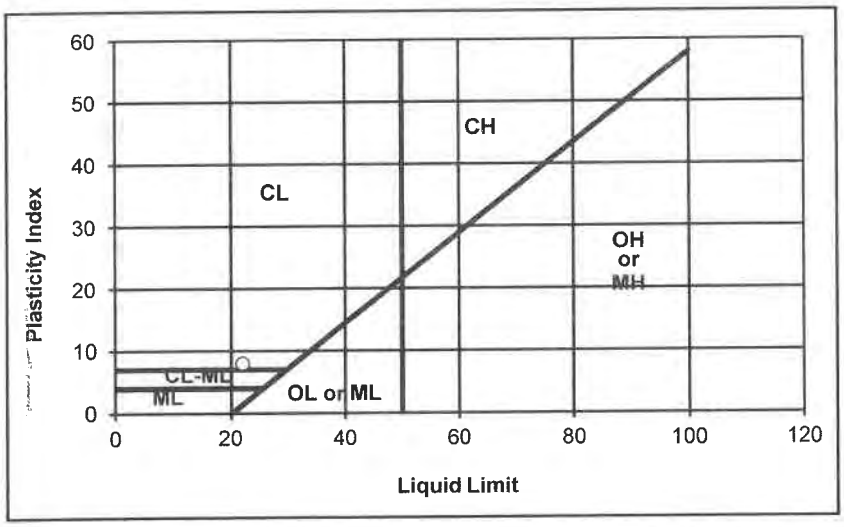
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/30/2022
Sampled By: DA
Sample Number: -
Sample Location: B5 @ 10-11'
Sample Description: SC

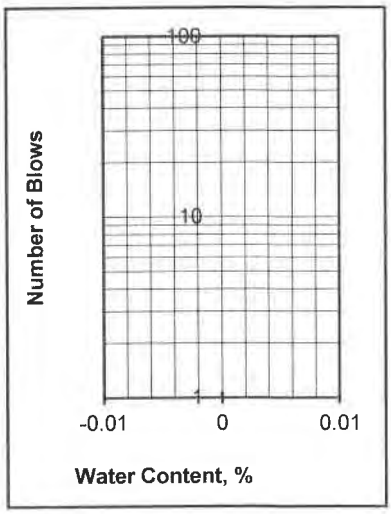
Date Tested: 9/15/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	47.58	49.70		43.44	47.87	
Weight of Dry Soil & Tare (g)	44.68	46.43		39.66	43.44	
Weight of Tare (g)	23.47	23.23		22.38	23.32	
Weight of water (g)	2.90	3.27		3.78	4.43	
Weight of Dry Soil (g)	21.21	23.20		17.28	20.13	
Water Content (% of dry wt.)	13.7%	14.1%		21.9%	22.0%	
Number of Blows				25	25	

Plastic Limit : 14 **Liquid Limit : 22**

Plasticity Index : 8
Unified Soil Classification : CL
Requirement:
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

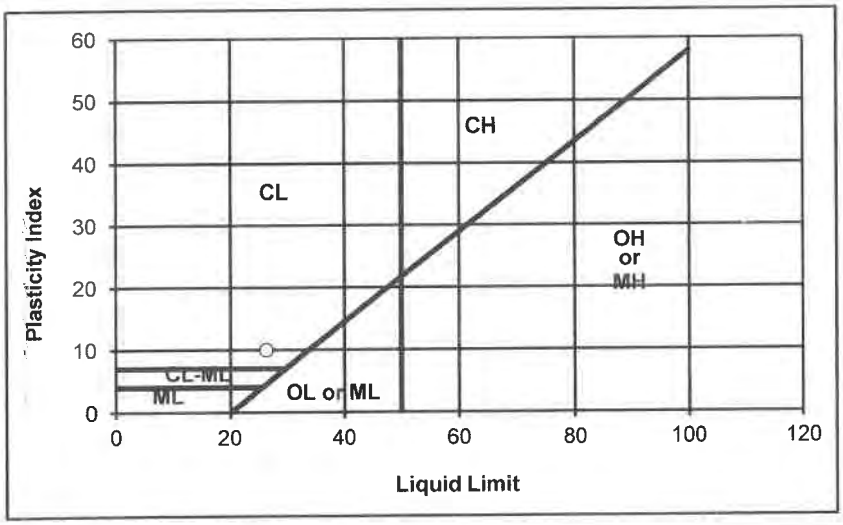
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/30/2022
Sampled By: DA
Sample Number: -
Sample Location: B5 @ 15-16'
Sample Description: SC

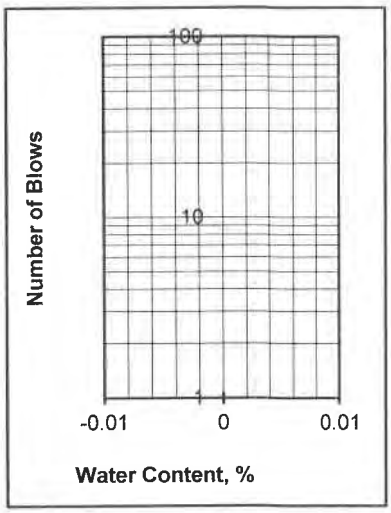
Date Tested: 9/15/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	37.93	34.92		36.62	35.28	
Weight of Dry Soil & Tare (g)	35.90	33.29		33.83	32.81	
Weight of Tare (g)	23.39	22.85		23.22	23.42	
Weight of water (g)	2.03	1.63		2.79	2.47	
Weight of Dry Soil (g)	12.51	10.45		10.62	9.40	
Water Content (% of dry wt.)	16.3%	15.6%		26.3%	26.3%	
Number of Blows				25	25	

Plastic Limit : 16 **Liquid Limit : 26**

Plasticity Index : 10
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

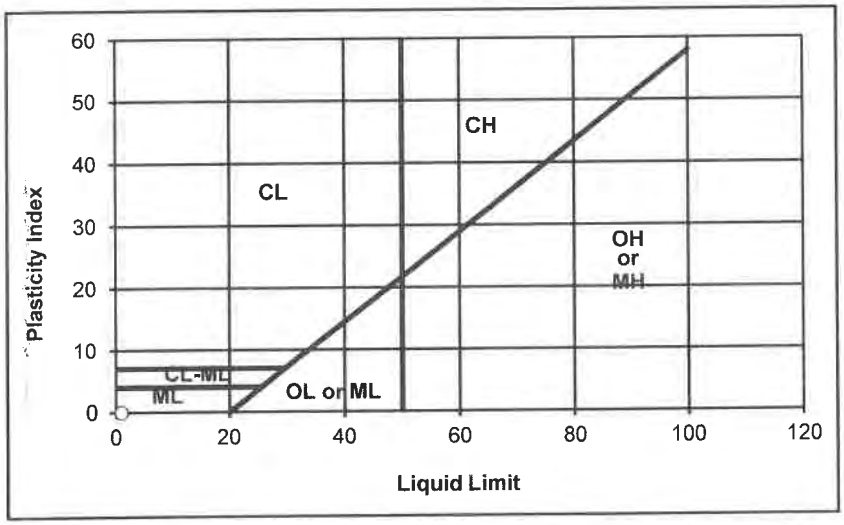
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/30/2022
Sampled By: DA
Sample Number: -
Sample Location: B5 @ 20-21'
Sample Description: SM

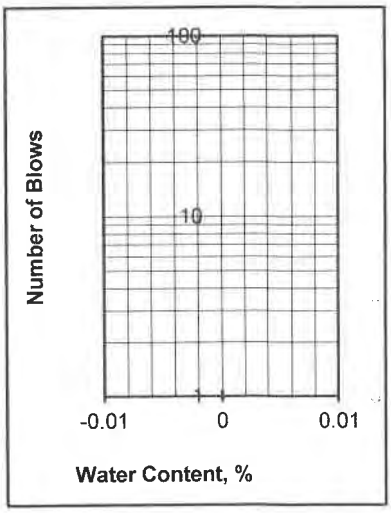
Date Tested: 9/15/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

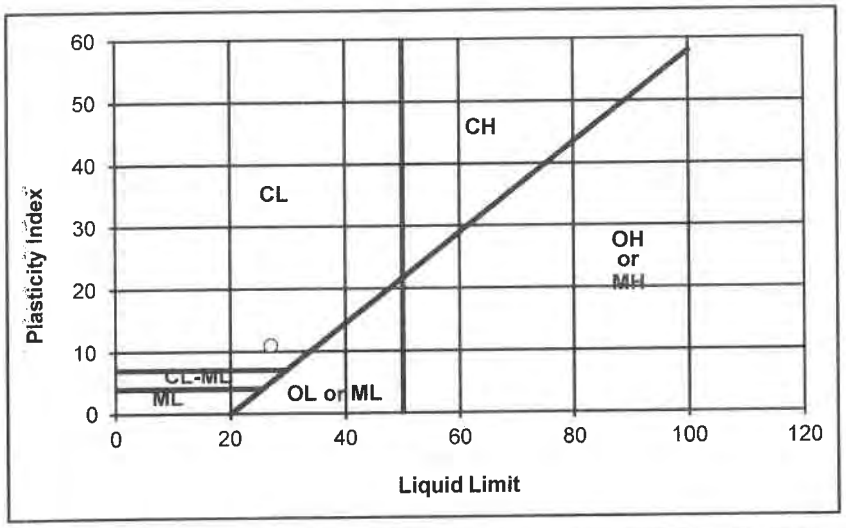
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/30/2022
Sampled By: DA
Sample Number: -
Sample Location: B5 @ 30-31'
Sample Description: SC

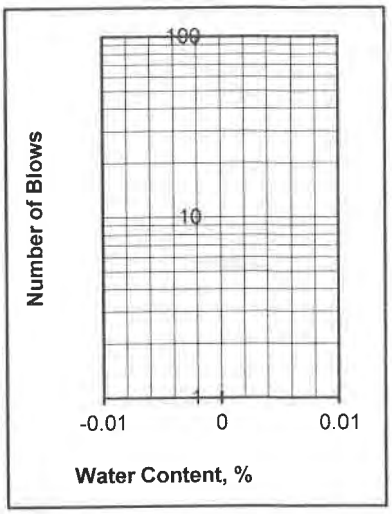
Date Tested: 9/15/2022
Tested By: JM
Verified By: JG

Trial Number	Plastic Limit			Liquid Limit		
	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	37.45	39.24		42.10	42.52	
Weight of Dry Soil & Tare (g)	35.51	37.07		38.01	38.46	
Weight of Tare (g)	23.27	23.28		22.88	23.38	
Weight of water (g)	1.95	2.17		4.09	4.07	
Weight of Dry Soil (g)	12.24	13.79		15.13	15.08	
Water Content (% of dry wt.)	15.9%	15.7%		27.0%	27.0%	
Number of Blows				25	25	

Plastic Limit : 16 **Liquid Limit : 27**

Plasticity Index : 11
Unified Soil Classification : CL
Requirement:
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

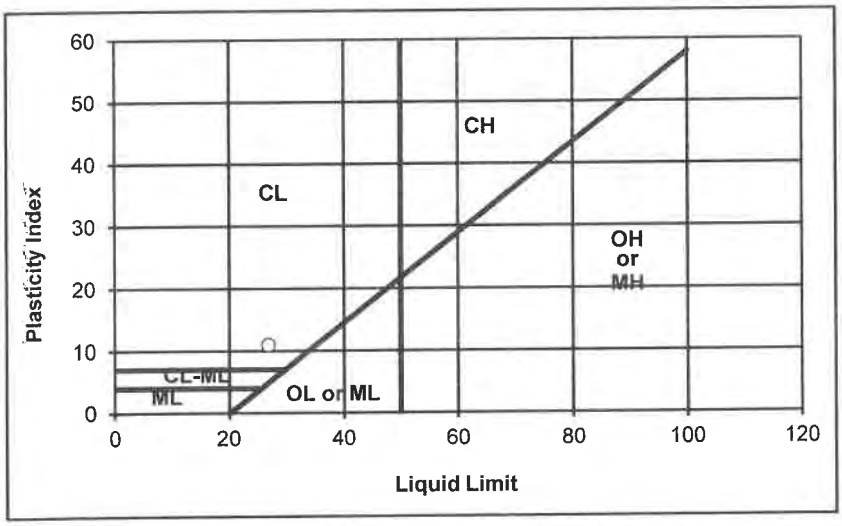
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/30/2022
Sampled By: DA
Sample Number: -
Sample Location: B5 @ 35-36'
Sample Description: SC

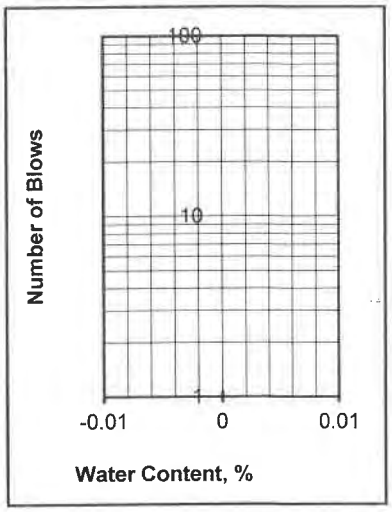
Date Tested: 9/15/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	39.88	42.32		40.49	37.83	
Weight of Dry Soil & Tare (g)	37.63	39.76		36.88	33.96	
Weight of Tare (g)	23.65	23.53		23.38	19.54	
Weight of water (g)	2.25	2.56		3.60	3.87	
Weight of Dry Soil (g)	13.98	16.23		13.51	14.42	
Water Content (% of dry wt.)	16.1%	15.8%		26.7%	26.9%	
Number of Blows				25	25	

Plastic Limit : 16 **Liquid Limit : 27**

Plasticity Index : 11
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

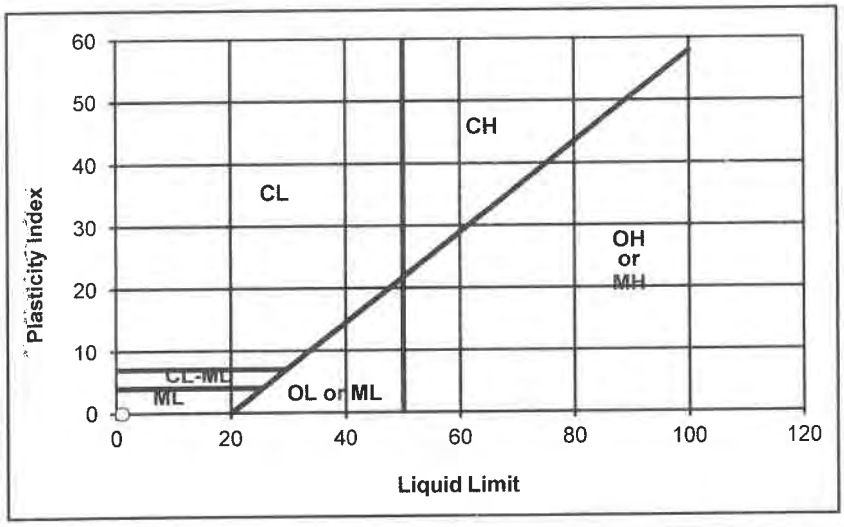
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/30/2022
Sampled By: DA
Sample Number: -
Sample Location: B6 @ 5-6'
Sample Description: SM

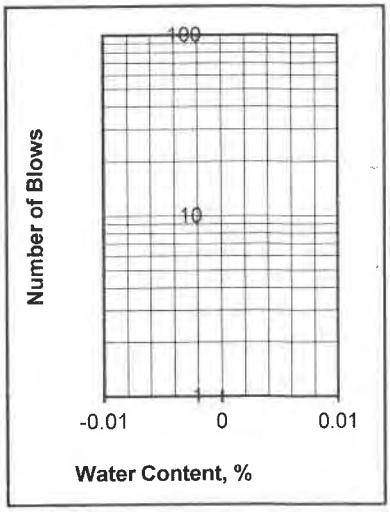
Date Tested: 9/19/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

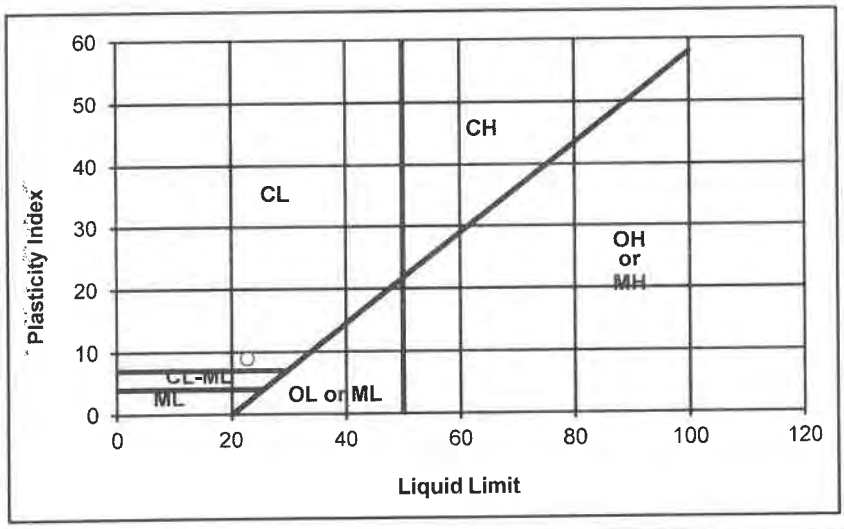
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/30/2022
Sampled By: DA
Sample Number: -
Sample Location: B6 @ 10-11'
Sample Description: SC

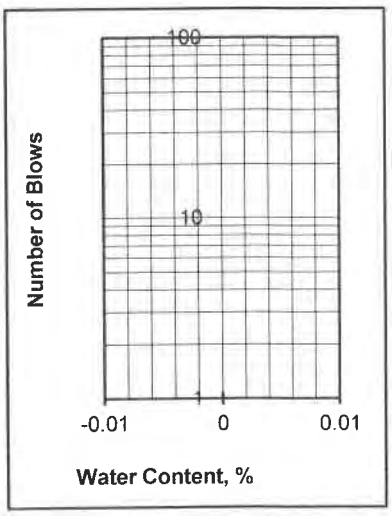
Date Tested: 9/21/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	39.07	41.36		35.15	35.29	
Weight of Dry Soil & Tare (g)	37.07	39.12		32.79	33.11	
Weight of Tare (g)	23.22	23.38		22.38	23.52	
Weight of water (g)	1.99	2.24		2.36	2.18	
Weight of Dry Soil (g)	13.85	15.75		10.41	9.59	
Water Content (% of dry wt.)	14.4%	14.2%		22.7%	22.7%	
Number of Blows				25	25	

Plastic Limit : 14 **Liquid Limit : 23**

Plasticity Index : 9
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

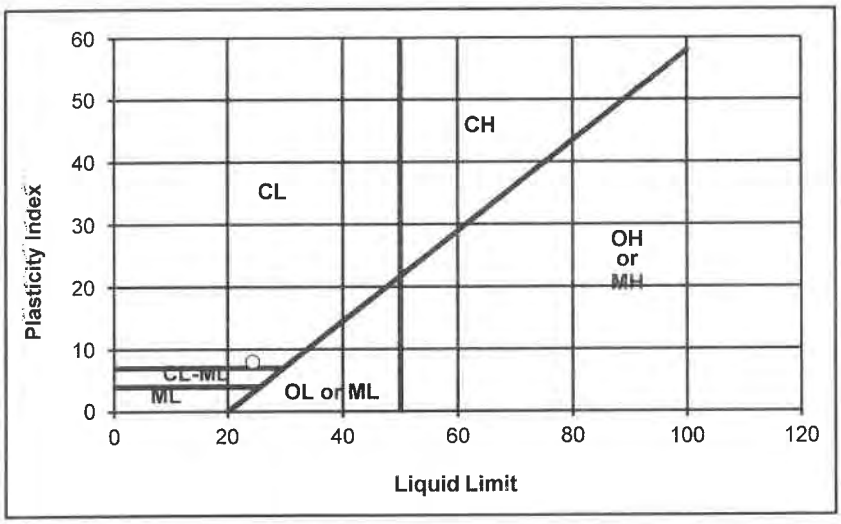
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/30/2022
Sampled By: DA
Sample Number: -
Sample Location: B6 @ 15-16'
Sample Description: SC

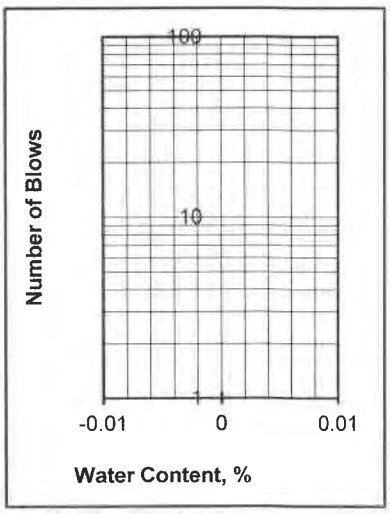
Date Tested: 9/15/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	39.54	43.27		36.76	43.93	
Weight of Dry Soil & Tare (g)	37.38	40.52		34.20	39.92	
Weight of Tare (g)	23.40	23.22		23.47	23.64	
Weight of water (g)	2.16	2.76		2.56	4.01	
Weight of Dry Soil (g)	13.98	17.30		10.73	16.28	
Water Content (% of dry wt.)	15.4%	15.9%		23.8%	24.7%	
Number of Blows				25	25	

Plastic Limit : 16 **Liquid Limit : 24**

Plasticity Index : 8
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

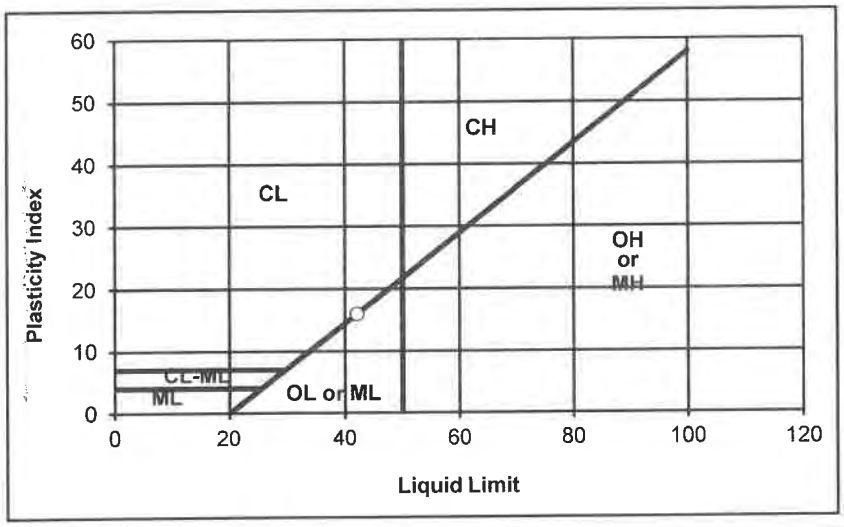
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/30/2022
Sampled By: DA
Sample Number: -
Sample Location: B6 @ 20-21'
Sample Description: CL

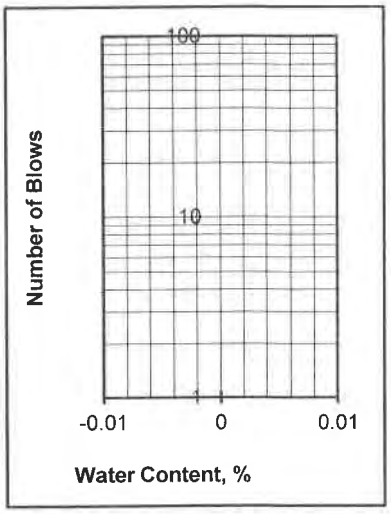
Date Tested: 9/15/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	41.70	38.88		30.82	37.17	
Weight of Dry Soil & Tare (g)	37.97	35.72		27.45	32.96	
Weight of Tare (g)	23.43	23.32		19.53	22.84	
Weight of water (g)	3.73	3.16		3.37	4.22	
Weight of Dry Soil (g)	14.54	12.40		7.92	10.12	
Water Content (% of dry wt.)	25.6%	25.5%		42.6%	41.7%	
Number of Blows				25	25	

Plastic Limit : 26 **Liquid Limit : 42**

Plasticity Index : 16
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

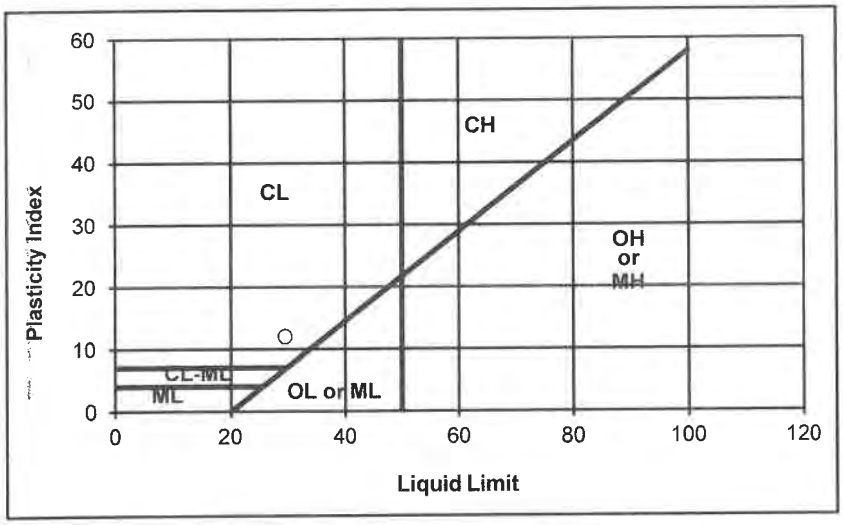
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 8/30/2022
Sampled By: DA
Sample Number: -
Sample Location: B6 @ 25-26'
Sample Description: SC

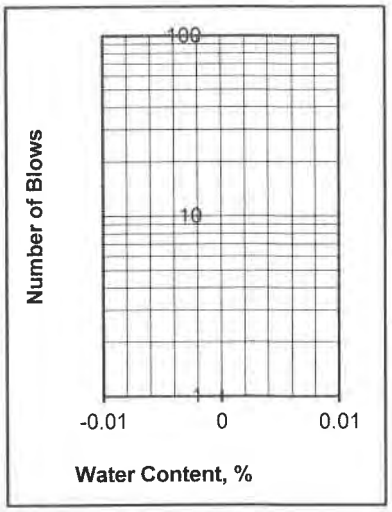
Date Tested: 9/15/2022
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	36.96	45.22		39.89	40.10	
Weight of Dry Soil & Tare (g)	34.96	42.10		36.02	36.31	
Weight of Tare (g)	23.26	23.26		22.90	23.39	
Weight of water (g)	2.00	3.12		3.87	3.78	
Weight of Dry Soil (g)	11.70	18.84		13.12	12.92	
Water Content (% of dry wt.)	17.1%	16.5%		29.5%	29.3%	
Number of Blows				25	25	

Plastic Limit : 17 **Liquid Limit : 29**

Plasticity Index : 12
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

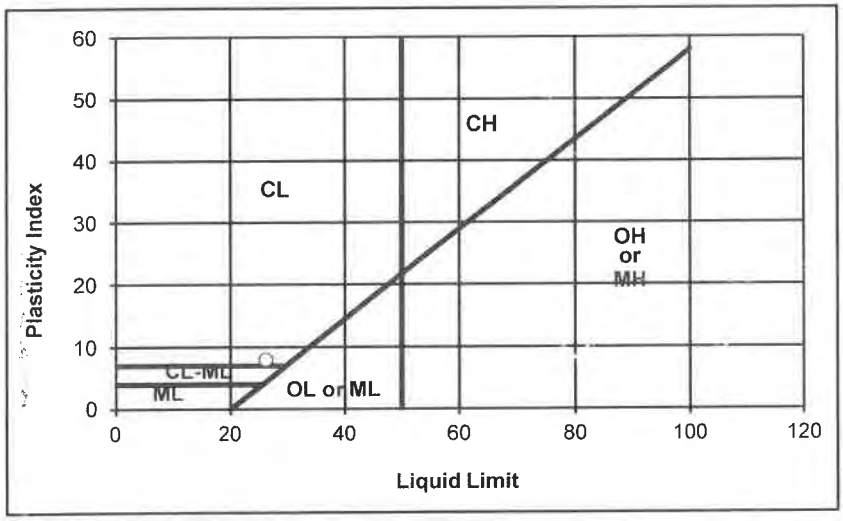
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/14/2023
Sampled By: DA
Sample Number: -
Sample Location: B7 @ 20-21'
Sample Description: SC

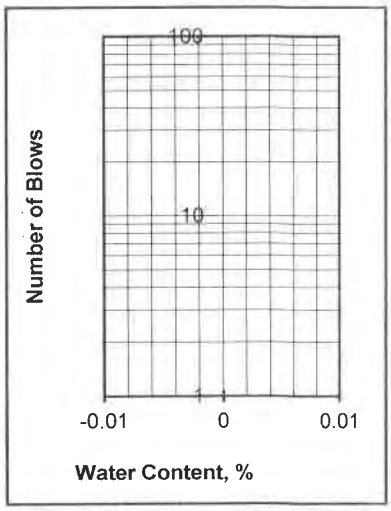
Date Tested: 2/22/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	31.22	30.56		38.74	39.86	
Weight of Dry Soil & Tare (g)	29.72	28.94		34.57	35.84	
Weight of Tare (g)	21.17	19.66		18.45	20.58	
Weight of water (g)	1.50	1.62		4.17	4.02	
Weight of Dry Soil (g)	8.55	9.28		16.12	15.26	
Water Content (% of dry wt.)	17.6%	17.5%		25.9%	26.3%	
Number of Blows				25	25	

Plastic Limit : 18 **Liquid Limit : 26**

Plasticity Index : 8
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

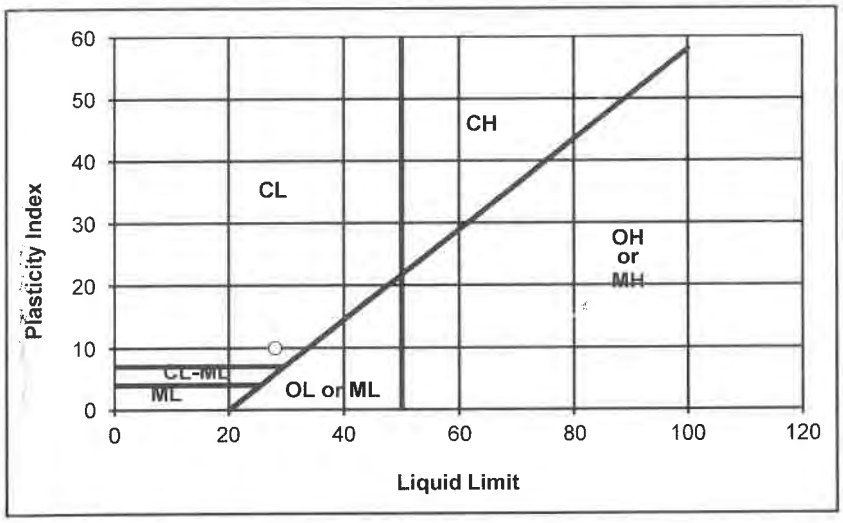
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/14/2023
Sampled By: DA
Sample Number: -
Sample Location: B7 @ 25-26'
Sample Description: SC

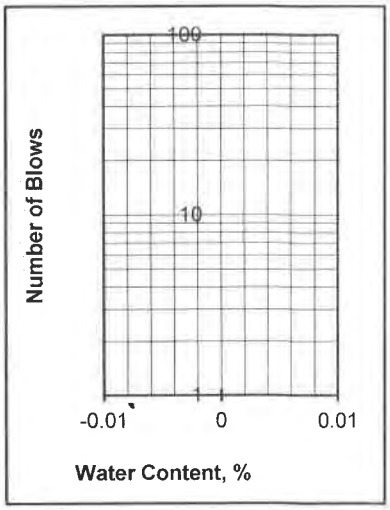
Date Tested: 2/22/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	32.13	34.82		38.39	40.17	
Weight of Dry Soil & Tare (g)	30.21	32.98		35.24	36.58	
Weight of Tare (g)	19.58	22.67		23.79	24.02	
Weight of water (g)	1.92	1.84		3.15	3.59	
Weight of Dry Soil (g)	10.63	10.31		11.45	12.56	
Water Content (% of dry wt.)	18.1%	17.8%		27.5%	28.6%	
Number of Blows				25	25	

Plastic Limit : 18 **Liquid Limit : 28**

Plasticity Index : 10
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

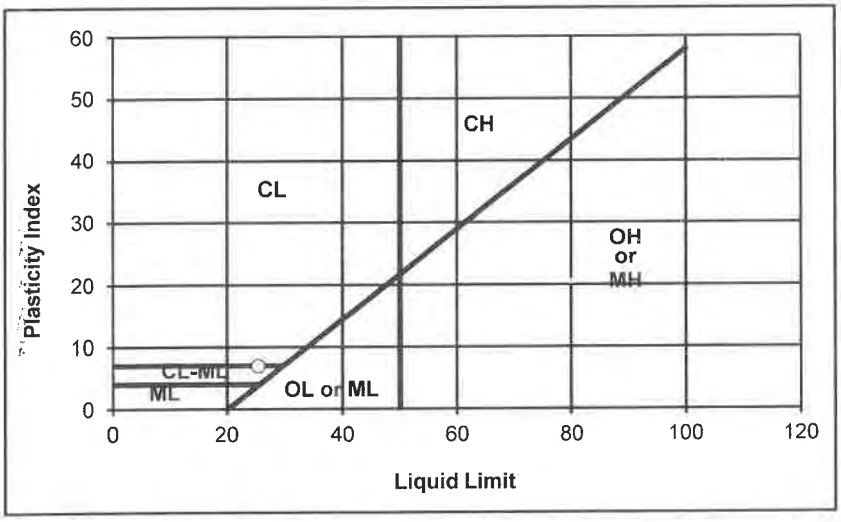
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/14/2023
Sampled By: DA
Sample Number: -
Sample Location: B7 @ 30-31'
Sample Description: SC/SM

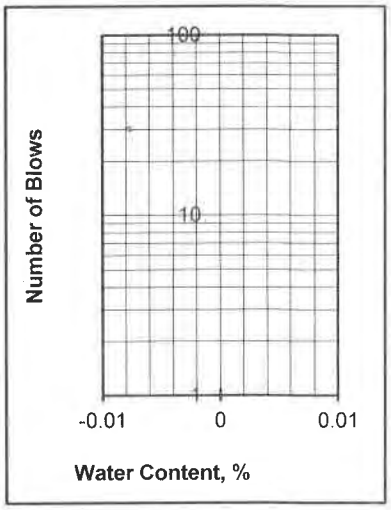
Date Tested: 2/22/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	37.75	37.99		37.73	41.04	
Weight of Dry Soil & Tare (g)	35.71	35.89		34.90	37.75	
Weight of Tare (g)	24.00	24.10		23.79	24.68	
Weight of water (g)	2.04	2.10		2.83	3.29	
Weight of Dry Soil (g)	11.71	11.79		11.11	13.07	
Water Content (% of dry wt.)	17.4%	17.8%		25.5%	25.2%	
Number of Blows				25	25	

Plastic Limit : 18 **Liquid Limit : 25**

Plasticity Index : 7
Unified Soil Classification : CL-ML **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

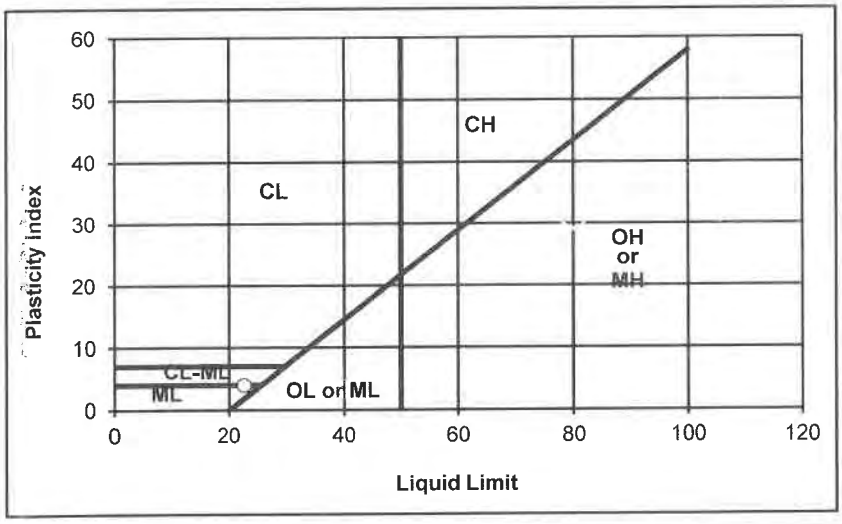
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/14/2023
Sampled By: DA
Sample Number: -
Sample Location: B7 @ 35-36'
Sample Description: SC/SM

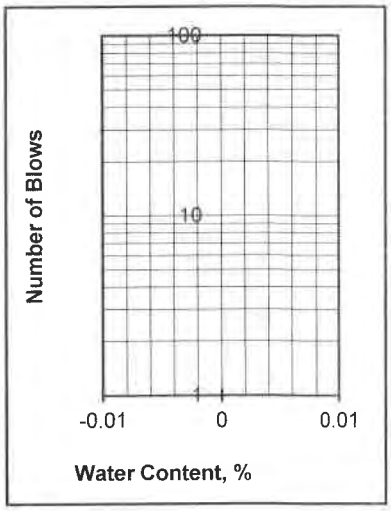
Date Tested: 2/22/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	38.38	36.71		46.18	43.48	
Weight of Dry Soil & Tare (g)	36.11	34.72		42.07	40.04	
Weight of Tare (g)	24.03	24.12		23.86	24.77	
Weight of water (g)	2.27	1.99		4.11	3.44	
Weight of Dry Soil (g)	12.08	10.60		18.21	15.27	
Water Content (% of dry wt.)	18.8%	18.8%		22.6%	22.5%	
Number of Blows				25	25	

Plastic Limit : 19 **Liquid Limit : 23**

Plasticity Index : 4
Unified Soil Classification : CL-ML **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

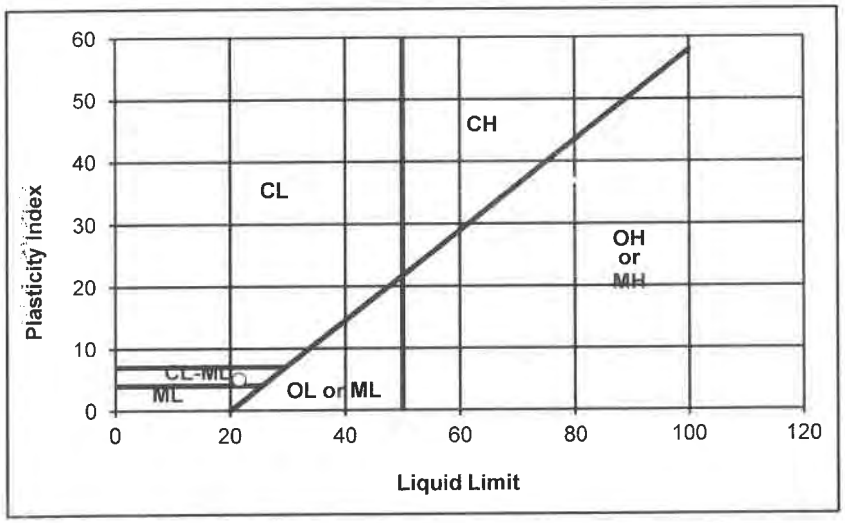
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/14/2023
Sampled By: DA
Sample Number: -
Sample Location: B7 @ 40-41'
Sample Description: SC/SM

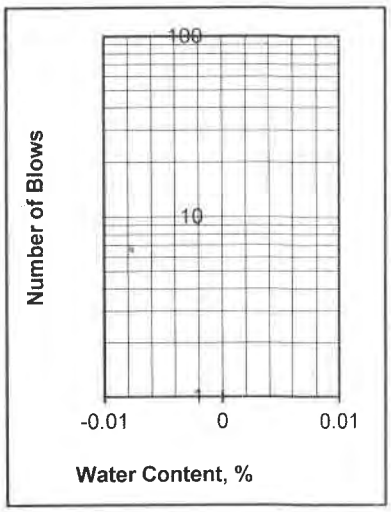
Date Tested: 2/22/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	31.97	36.38		43.49	39.90	
Weight of Dry Soil & Tare (g)	30.85	34.65		40.11	37.14	
Weight of Tare (g)	23.72	23.80		24.24	24.36	
Weight of water (g)	1.12	1.73		3.38	2.76	
Weight of Dry Soil (g)	7.13	10.85		15.87	12.78	
Water Content (% of dry wt.)	15.7%	15.9%		21.3%	21.6%	
Number of Blows				25	25	

Plastic Limit : 16 **Liquid Limit : 21**

Plasticity Index : 5
Unified Soil Classification : CL-ML **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

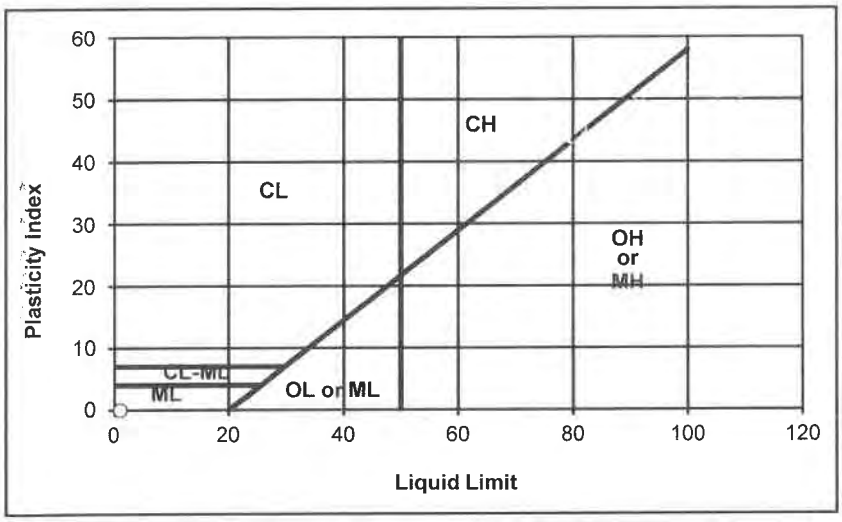
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/14/2023
Sampled By: DA
Sample Number: -
Sample Location: B7 @ 45-46'
Sample Description: SM

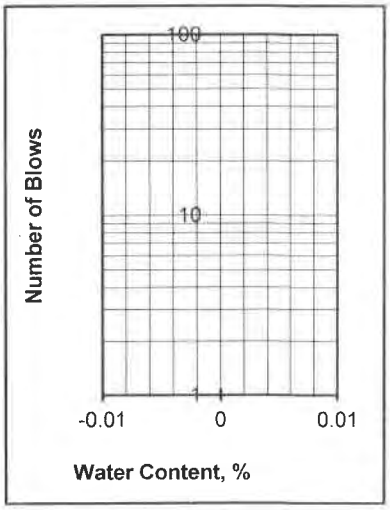
Date Tested: 2/22/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

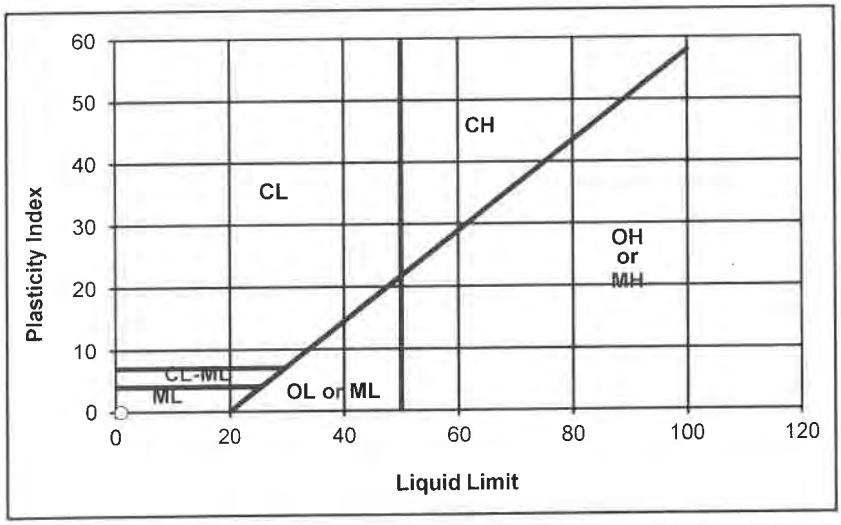
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/14/2023
Sampled By: DA
Sample Number: -
Sample Location: B8 @ 20-21'
Sample Description: SM/ML

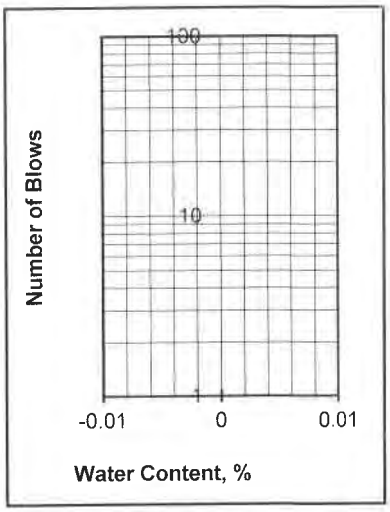
Date Tested: 2/22/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

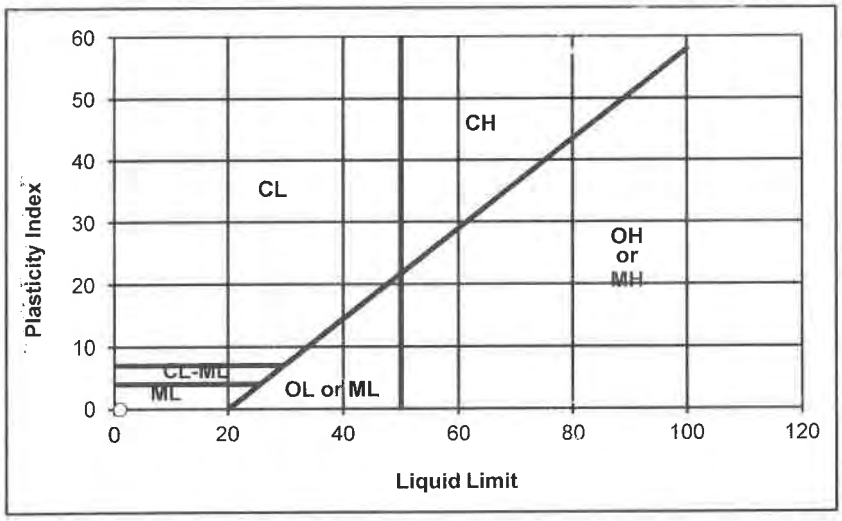
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/14/2023
Sampled By: DA
Sample Number: -
Sample Location: B8 @ 25-26'
Sample Description: SM

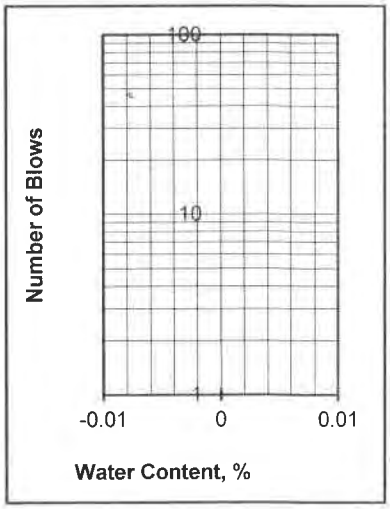
Date Tested: 2/22/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

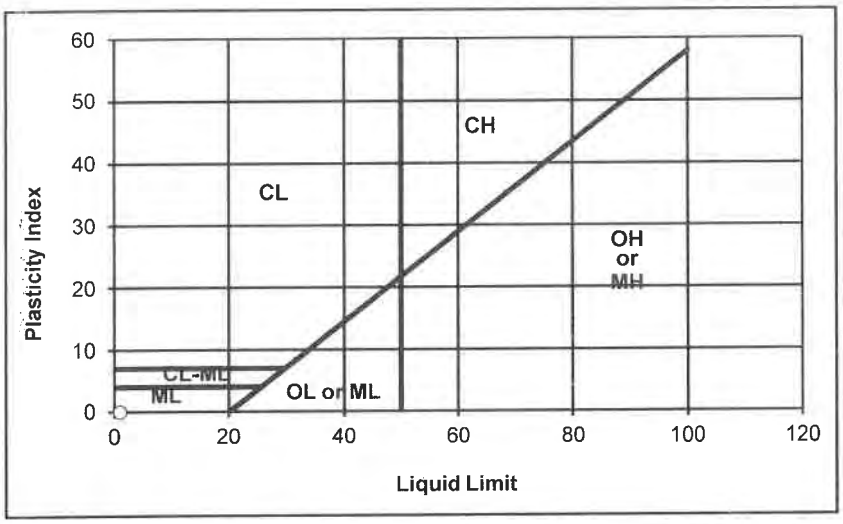
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/14/2023
Sampled By: DA
Sample Number: -
Sample Location: B8 @ 30-31'
Sample Description: SM

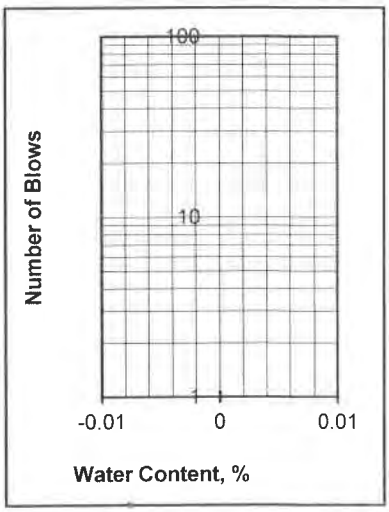
Date Tested: 2/22/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

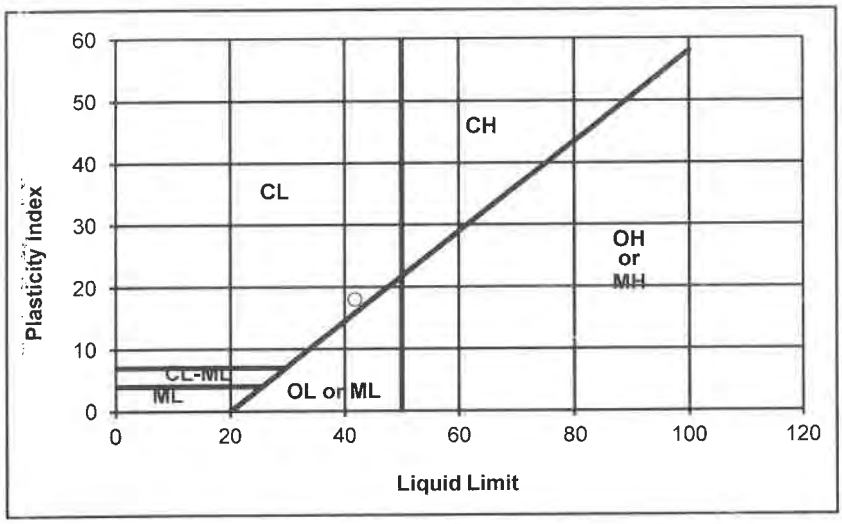
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/14/2023
Sampled By: DA
Sample Number: -
Sample Location: B8 @ 35-36'
Sample Description: CL

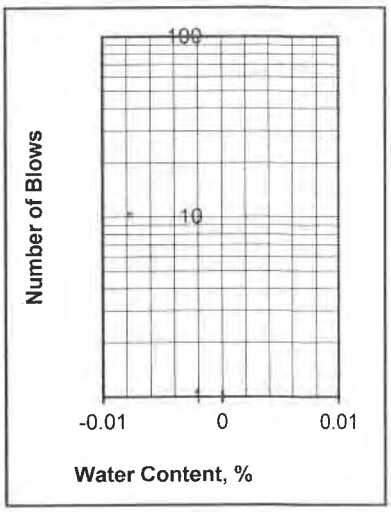
Date Tested: 2/22/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	35.52	35.59		41.48	43.29	
Weight of Dry Soil & Tare (g)	33.26	33.33		36.27	37.77	
Weight of Tare (g)	24.01	24.09		23.78	24.60	
Weight of water (g)	2.26	2.26		5.21	5.52	
Weight of Dry Soil (g)	9.25	9.24		12.49	13.17	
Water Content (% of dry wt.)	24.4%	24.5%		41.7%	41.9%	
Number of Blows				25	25	

Plastic Limit : 24 **Liquid Limit : 42**

Plasticity Index : 18
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

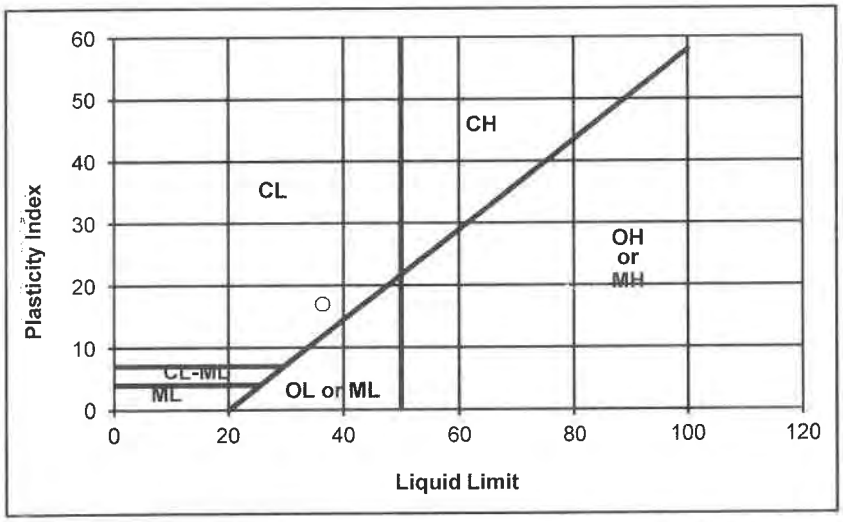
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/14/2023
Sampled By: DA
Sample Number: -
Sample Location: B8 @ 40-41'
Sample Description: SC/CL

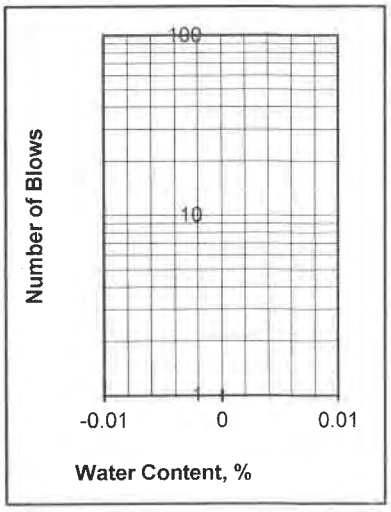
Date Tested: 2/22/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	38.18	45.69		41.52	37.82	
Weight of Dry Soil & Tare (g)	35.89	42.33		36.93	34.25	
Weight of Tare (g)	23.74	23.82		24.33	24.43	
Weight of water (g)	2.29	3.36		4.59	3.57	
Weight of Dry Soil (g)	12.15	18.51		12.60	9.82	
Water Content (% of dry wt.)	18.8%	18.2%		36.4%	36.4%	
Number of Blows				25	25	

Plastic Limit : 19 **Liquid Limit : 36**

Plasticity Index : 17
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

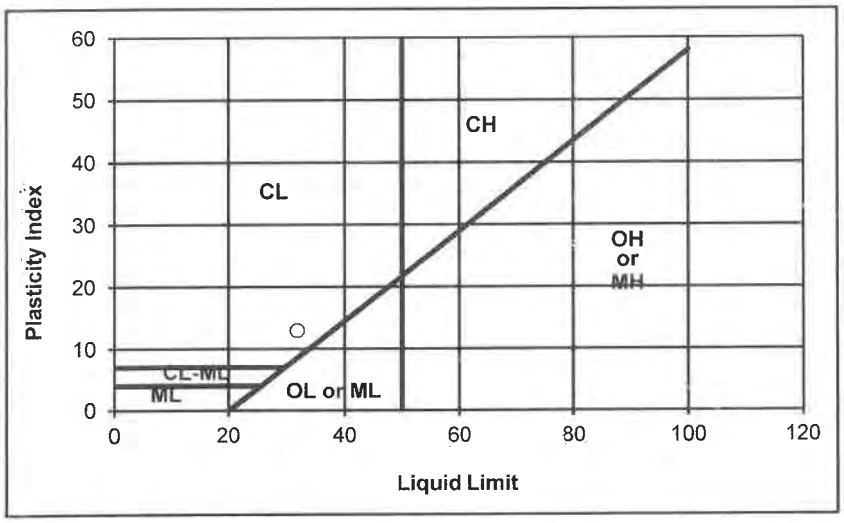
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/14/2023
Sampled By: DA
Sample Number: -
Sample Location: B8 @ 45-46'
Sample Description: SC/CL

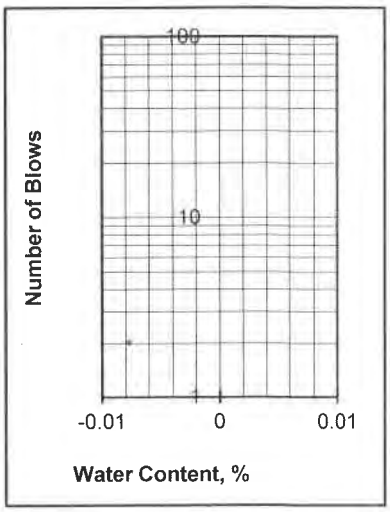
Date Tested: 2/22/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	31.60	33.14		35.39	39.80	
Weight of Dry Soil & Tare (g)	29.68	31.49		32.58	36.01	
Weight of Tare (g)	19.58	22.68		23.75	24.02	
Weight of water (g)	1.92	1.65		2.81	3.79	
Weight of Dry Soil (g)	10.10	8.81		8.83	11.99	
Water Content (% of dry wt.)	19.0%	18.7%		31.8%	31.6%	
Number of Blows				25	25	

Plastic Limit : 19 **Liquid Limit : 32**

Plasticity Index : 13
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

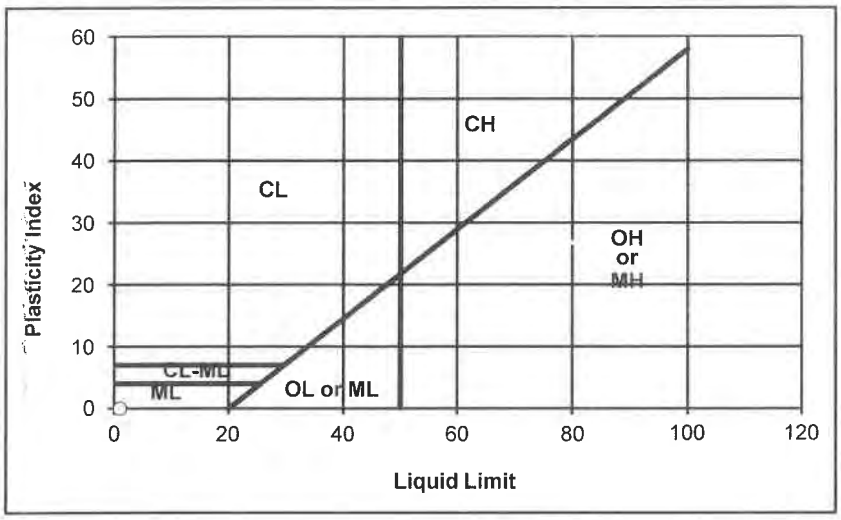
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B9 @ 2-3'
Sample Description: ML

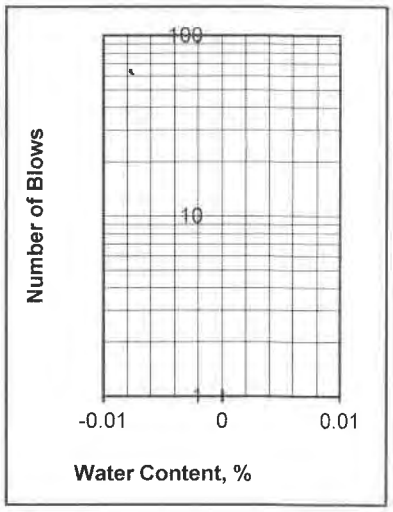
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

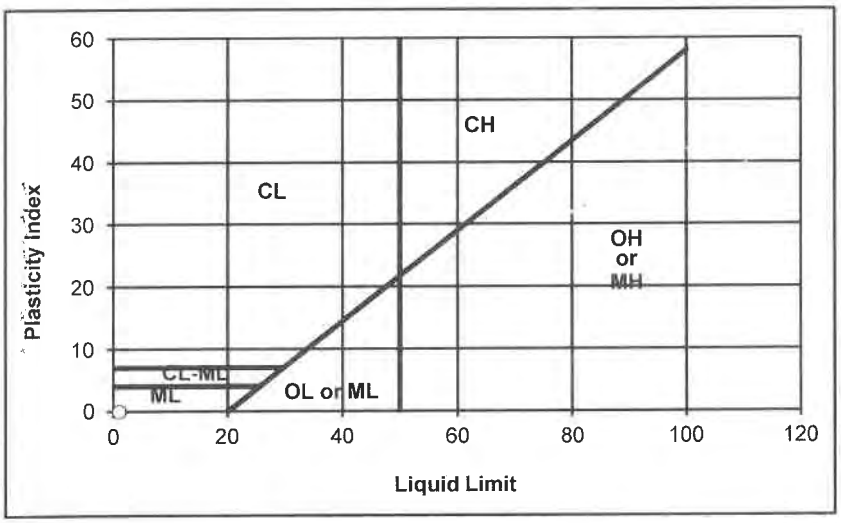
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B9 @ 5-6'
Sample Description: SM/ML

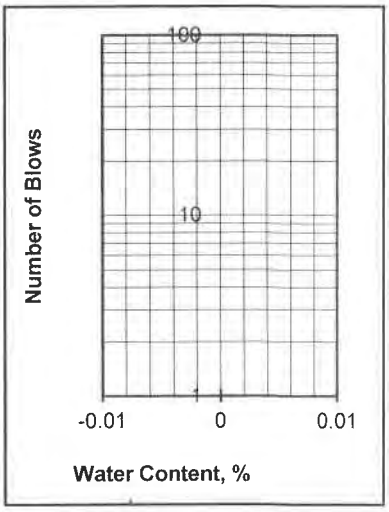
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

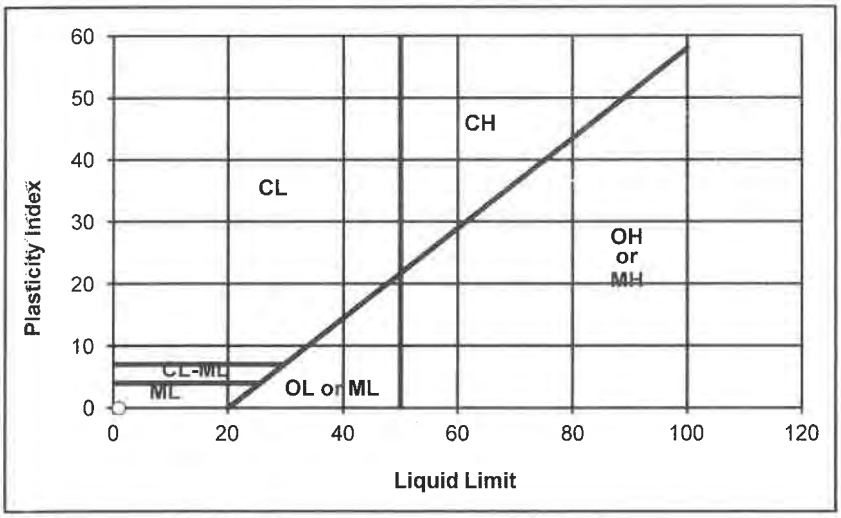
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B9 @ 25-26'
Sample Description: SM

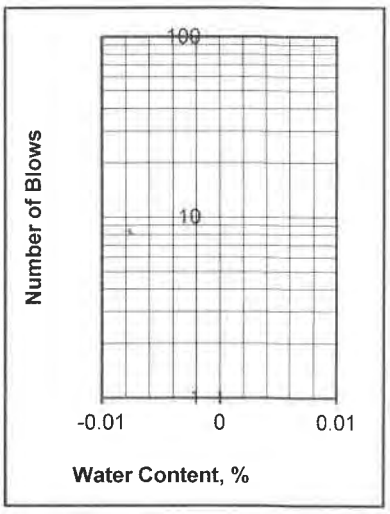
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

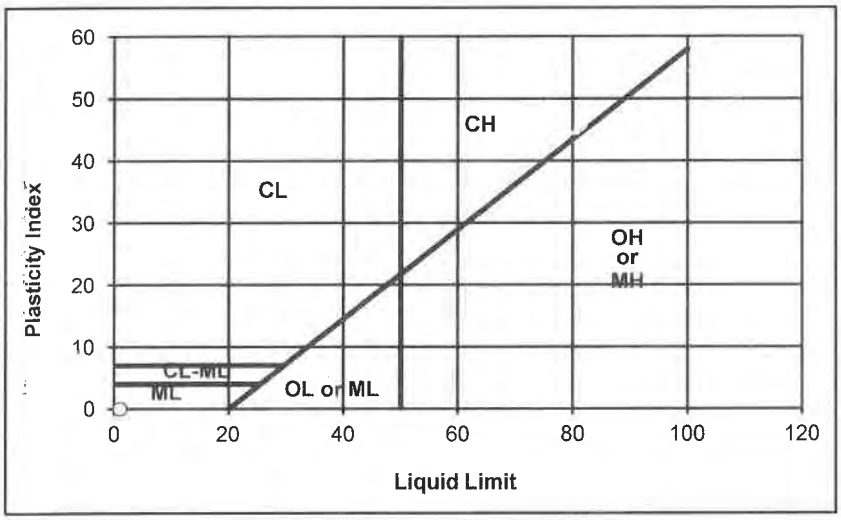
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B9 @ 30-31'
Sample Description: SM

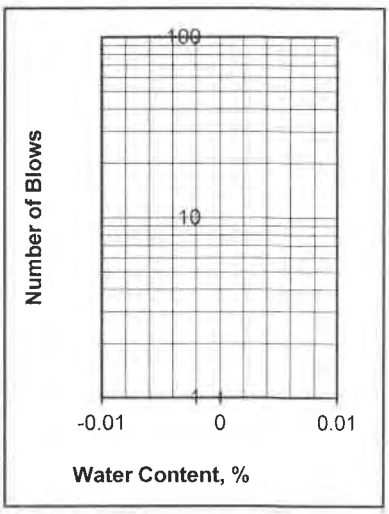
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

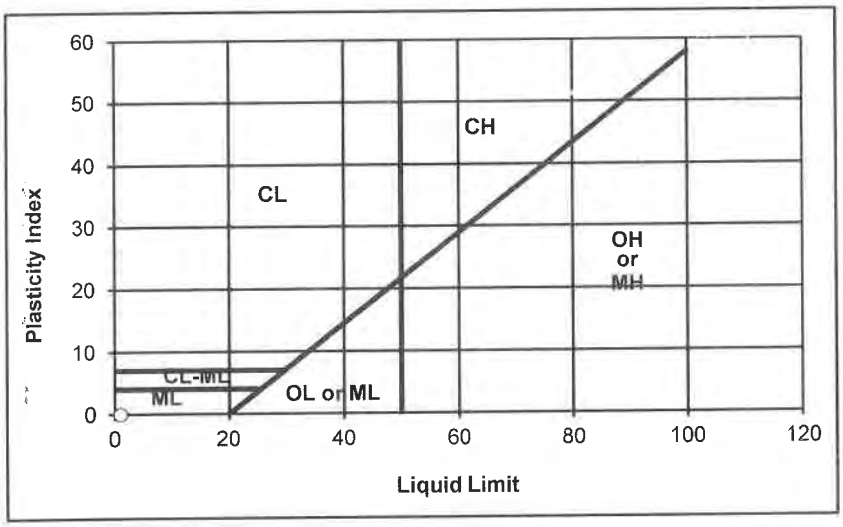
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B9 @ 35-36'
Sample Description: SM

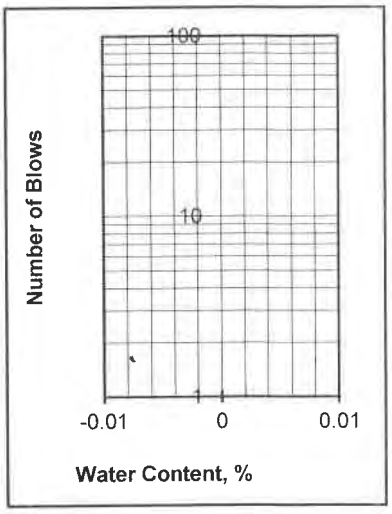
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

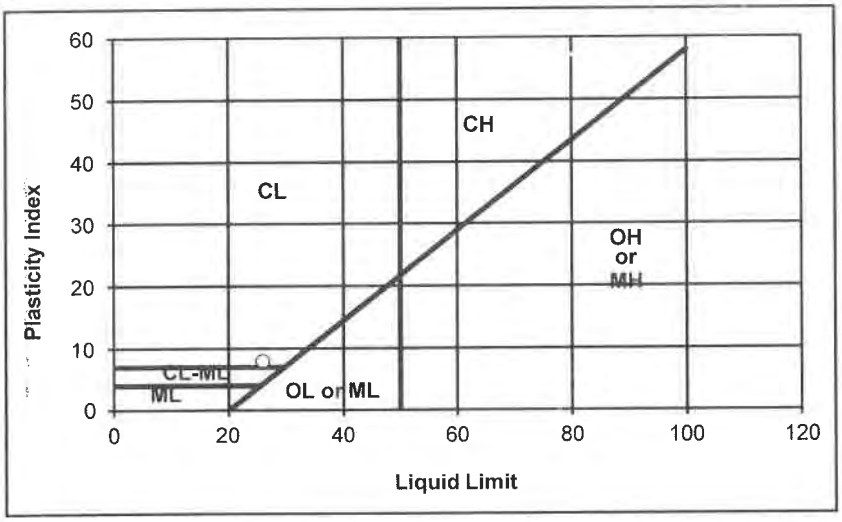
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B9 @ 40-41'
Sample Description: SC

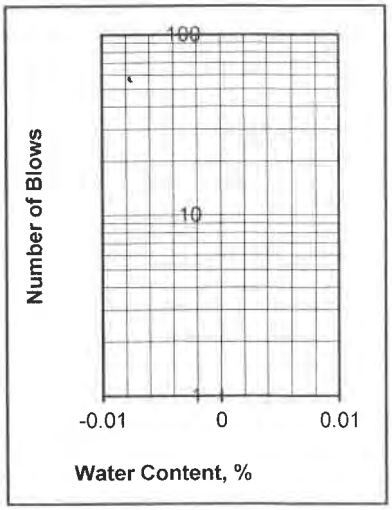
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	39.22	39.53		37.83	38.90	
Weight of Dry Soil & Tare (g)	36.92	37.27		35.02	36.02	
Weight of Tare (g)	24.10	24.18		24.08	25.00	
Weight of water (g)	2.30	2.26		2.81	2.88	
Weight of Dry Soil (g)	12.82	13.09		10.94	11.02	
Water Content (% of dry wt.)	17.9%	17.3%		25.7%	26.1%	
Number of Blows				25	25	

Plastic Limit : 18 **Liquid Limit : 26**

Plasticity Index : 8
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

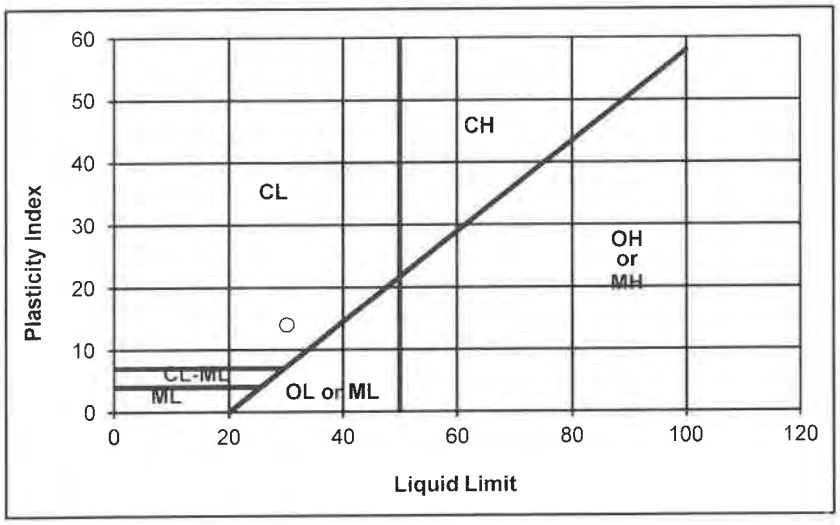
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B9 @ 45-46'
Sample Description: SC

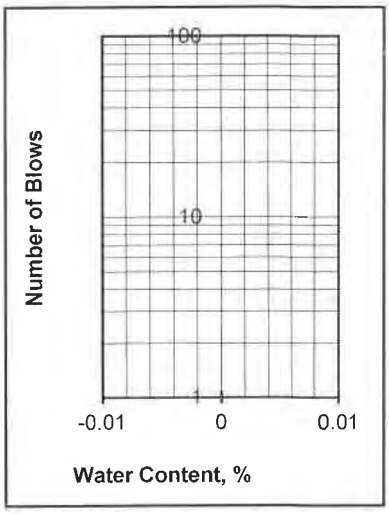
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	39.43	42.09		41.92	37.24	
Weight of Dry Soil & Tare (g)	37.23	39.59		37.75	34.39	
Weight of Tare (g)	24.07	24.15		23.96	24.89	
Weight of water (g)	2.20	2.50		4.17	2.85	
Weight of Dry Soil (g)	13.16	15.44		13.79	9.50	
Water Content (% of dry wt.)	16.7%	16.2%		30.2%	30.0%	
Number of Blows				25	25	

Plastic Limit : 16 **Liquid Limit : 30**

Plasticity Index : 14
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

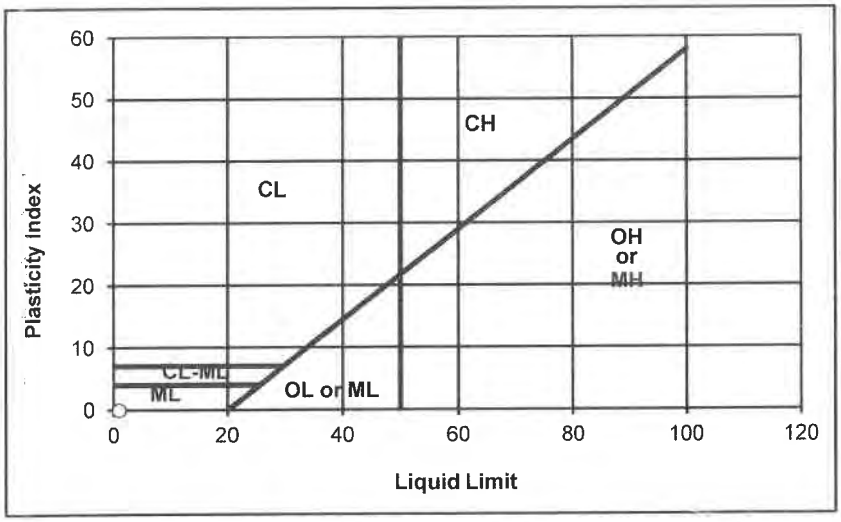
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B10 @ 2-3'
Sample Description: ML

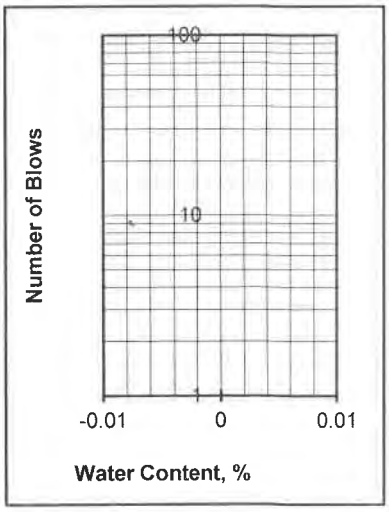
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

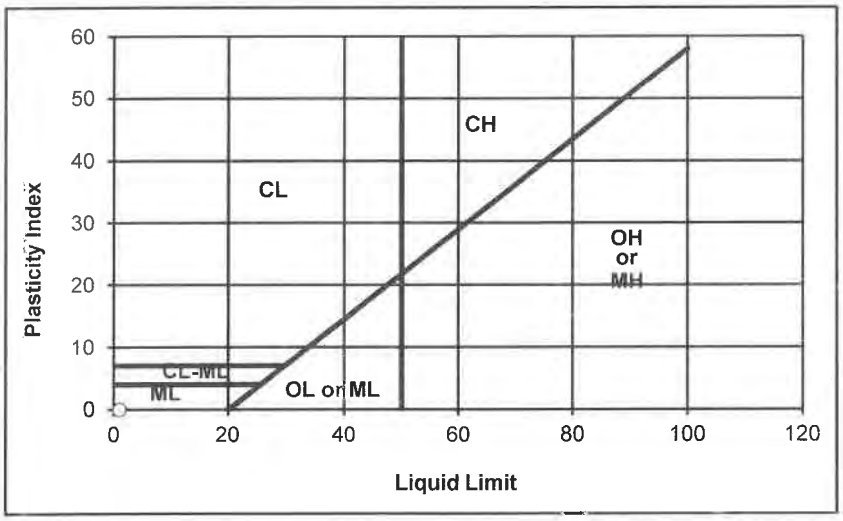
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B10 @ 5-6'
Sample Description: ML

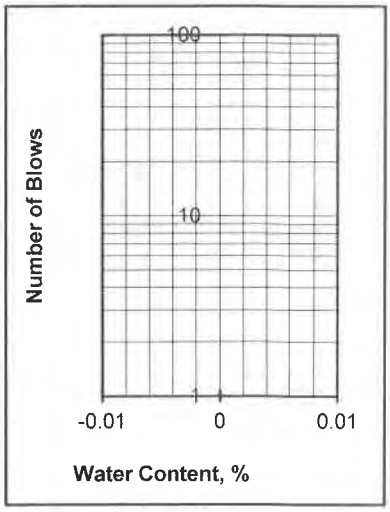
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

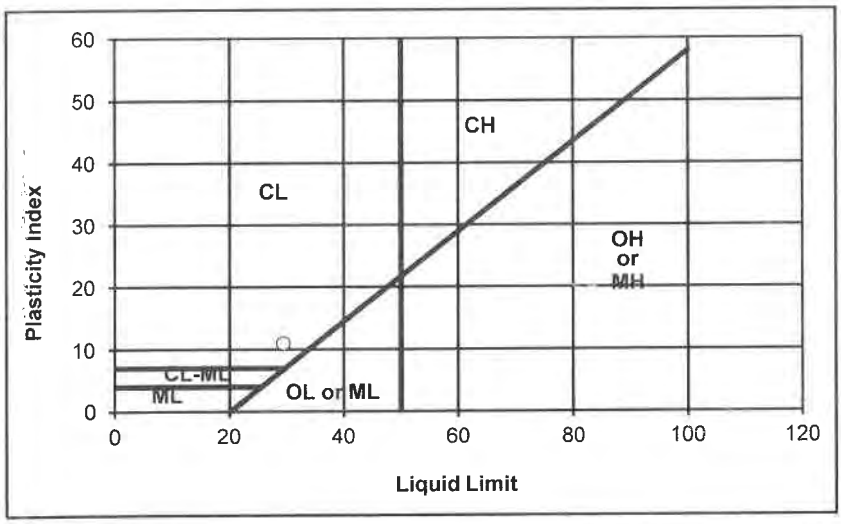
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B10 @ 15-16'
Sample Description: SC/CL

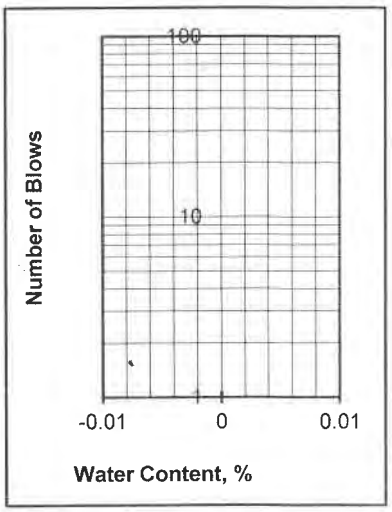
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	38.61	38.90		39.07	40.24	
Weight of Dry Soil & Tare (g)	37.10	36.66		35.65	36.78	
Weight of Tare (g)	28.61	24.16		24.05	24.96	
Weight of water (g)	1.51	2.24		3.42	3.46	
Weight of Dry Soil (g)	8.49	12.50		11.60	11.82	
Water Content (% of dry wt.)	17.8%	17.9%		29.5%	29.3%	
Number of Blows				25	25	

Plastic Limit : 18 **Liquid Limit : 29**

Plasticity Index : 11
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

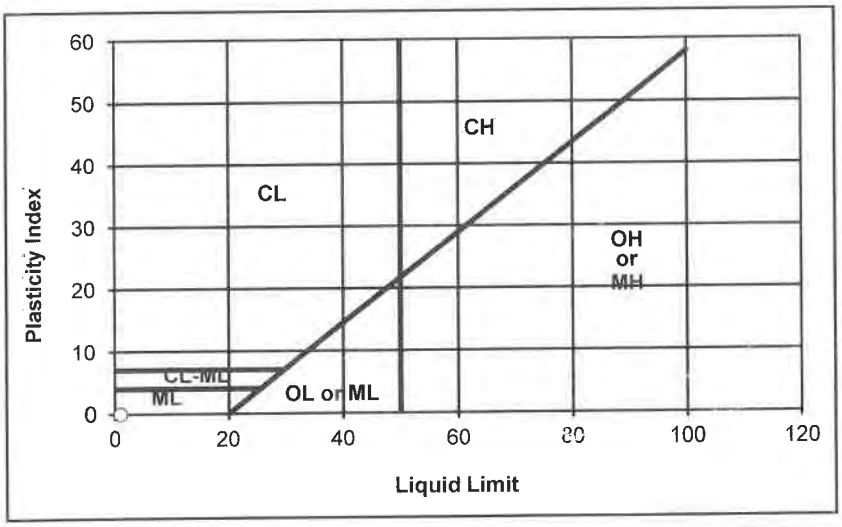
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B10 @ 20-21'
Sample Description: SM

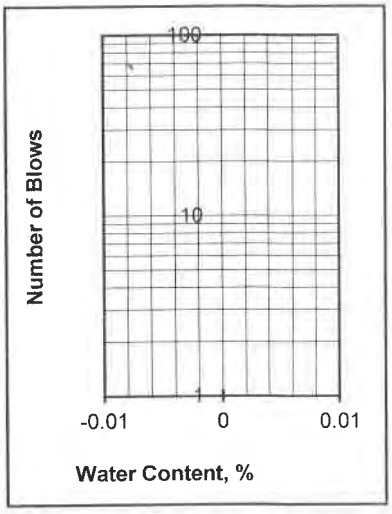
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

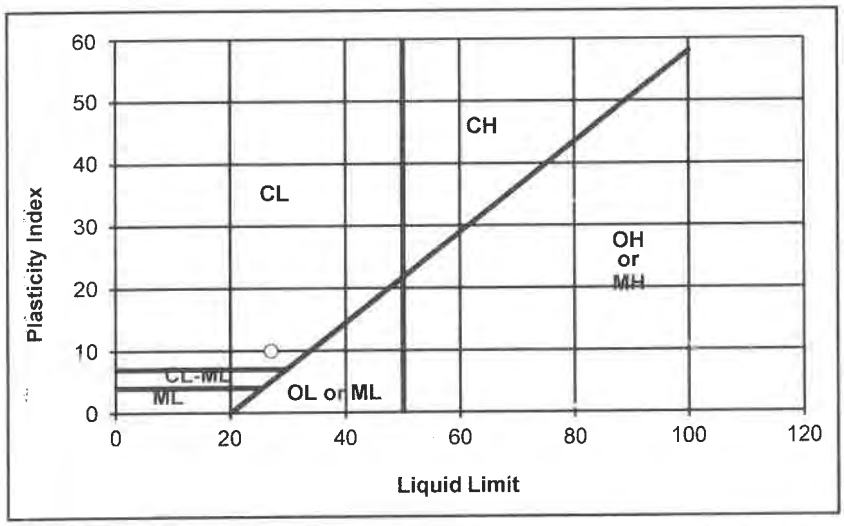
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B10 @ 25-26'
Sample Description: SC

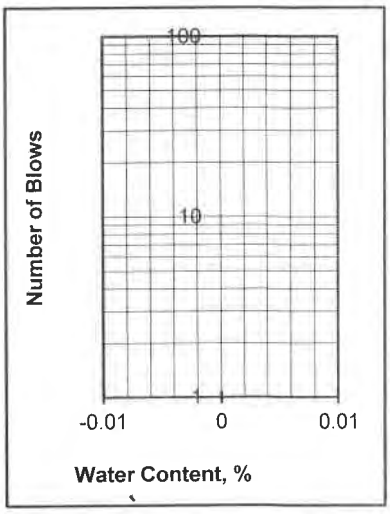
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	39.36	39.07		42.74	37.18	
Weight of Dry Soil & Tare (g)	37.00	36.57		38.61	34.00	
Weight of Tare (g)	23.44	21.81		23.38	22.19	
Weight of water (g)	2.36	2.50		4.13	3.18	
Weight of Dry Soil (g)	13.56	14.76		15.23	11.81	
Water Content (% of dry wt.)	17.4%	16.9%		27.1%	26.9%	
Number of Blows				25	25	

Plastic Limit : 17 **Liquid Limit : 27**

Plasticity Index : 10
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

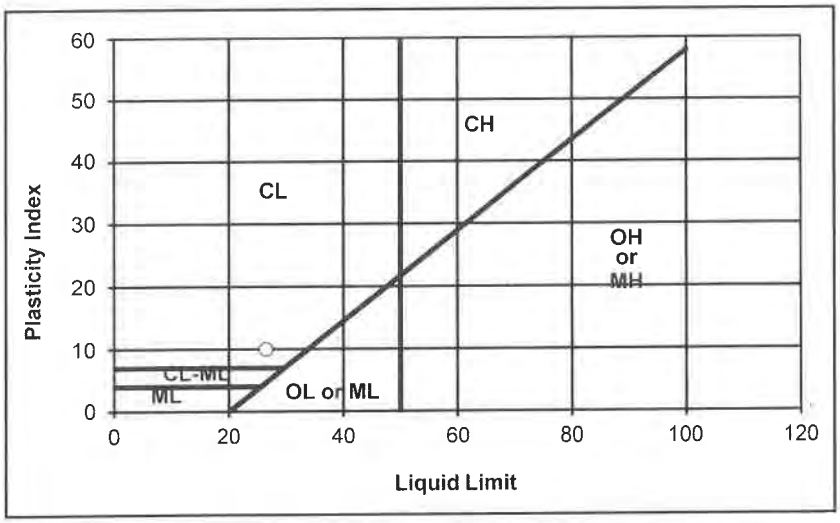
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B10 @ 30-31'
Sample Description: SC

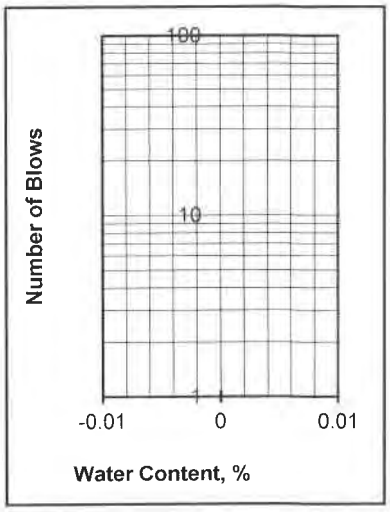
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	42.12	39.88		42.14	38.39	
Weight of Dry Soil & Tare (g)	39.66	37.72		38.40	35.51	
Weight of Tare (g)	23.80	23.87		24.23	24.62	
Weight of water (g)	2.46	2.16		3.74	2.88	
Weight of Dry Soil (g)	15.86	13.85		14.17	10.89	
Water Content (% of dry wt.)	15.5%	15.6%		26.4%	26.4%	
Number of Blows				25	25	

Plastic Limit : 16 **Liquid Limit : 26**

Plasticity Index : 10
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

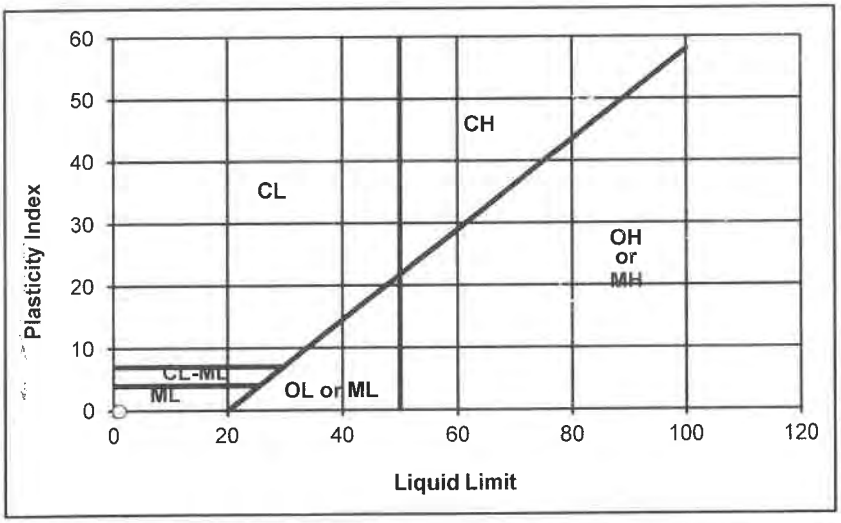
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B11 @ 2-3'
Sample Description: SM/ML

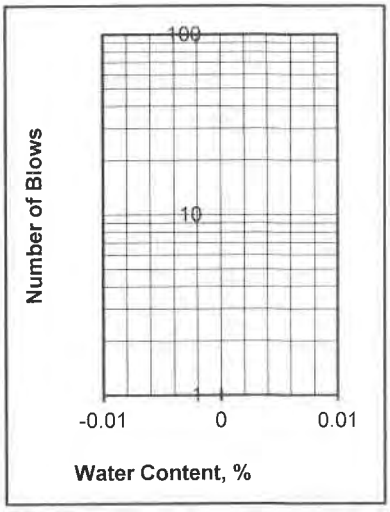
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

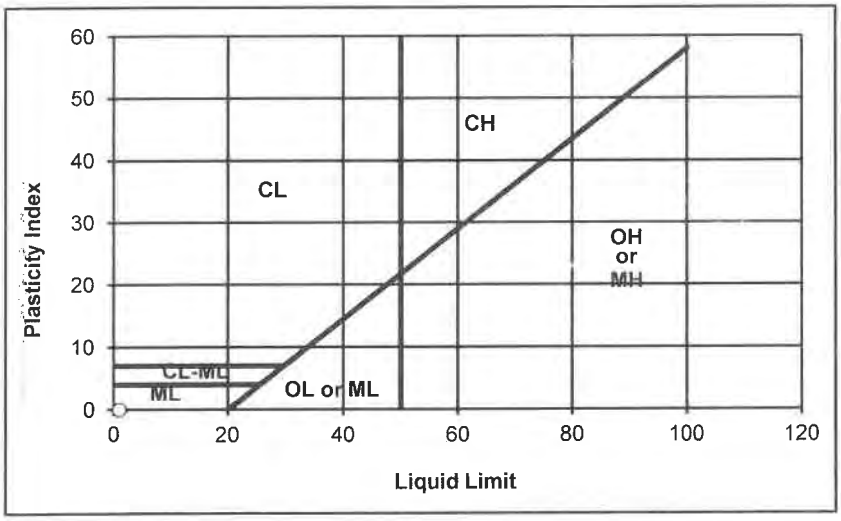
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B11 @ 5-6'
Sample Description: ML

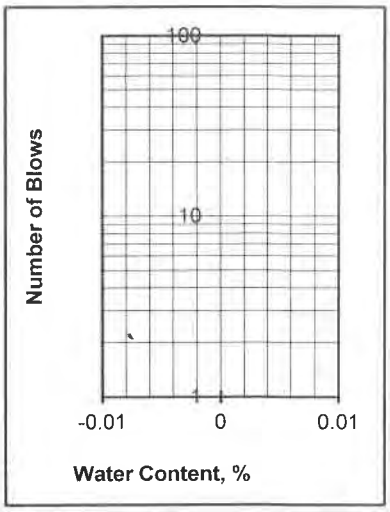
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

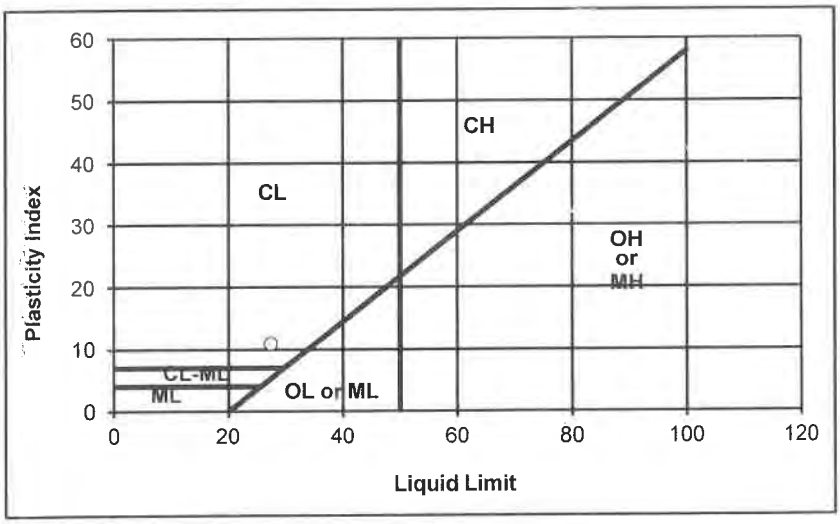
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B11 @ 10-11'
Sample Description: SC/CL

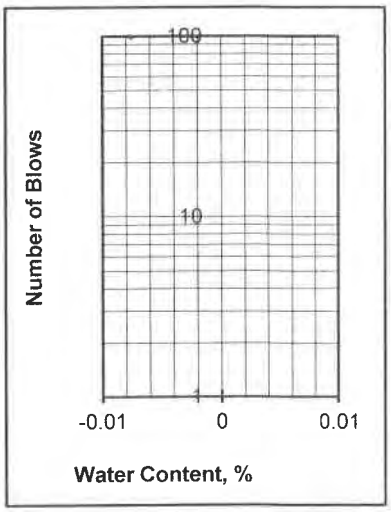
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

Trial Number	Plastic Limit 1	Plastic Limit 2	Plastic Limit 3	Liquid Limit 1	Liquid Limit 2	Liquid Limit 3
Weight of Wet Soil & Tare (g)	40.17	40.11		38.15	38.17	
Weight of Dry Soil & Tare (g)	37.93	37.92		35.07	35.32	
Weight of Tare (g)	24.02	24.18		23.88	24.79	
Weight of water (g)	2.24	2.19		3.08	2.85	
Weight of Dry Soil (g)	13.91	13.74		11.19	10.53	
Water Content (% of dry wt.)	16.1%	15.9%		27.5%	27.1%	
Number of Blows				25	25	

Plastic Limit : 16 **Liquid Limit : 27**

Plasticity Index : 11
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

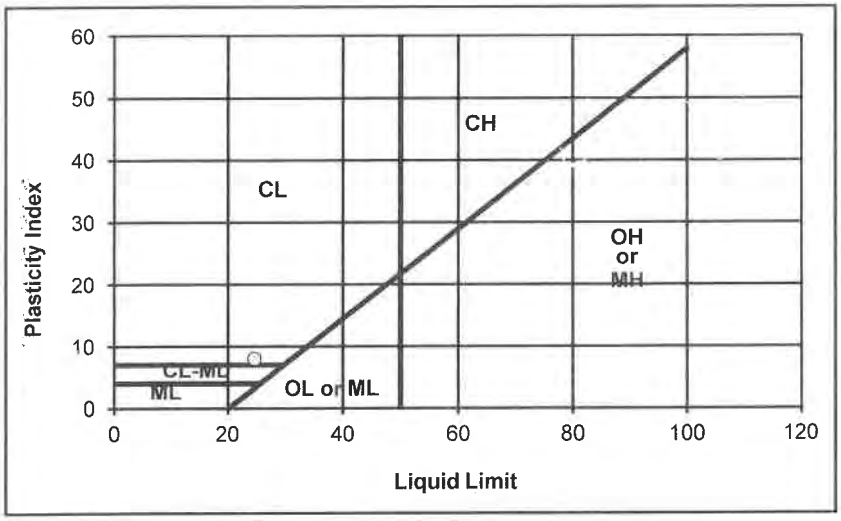
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B11 @ 15-16'
Sample Description: SC

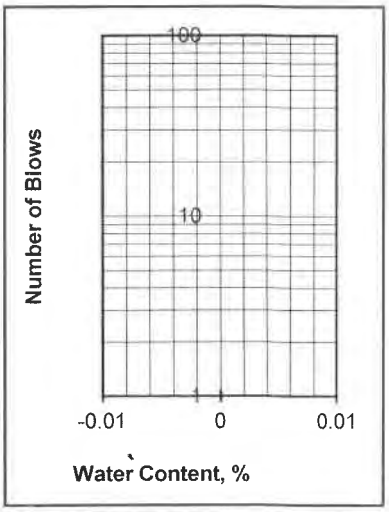
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	42.45	39.48		46.48	38.25	
Weight of Dry Soil & Tare (g)	39.67	37.17		42.11	35.56	
Weight of Tare (g)	23.75	23.83		24.43	24.49	
Weight of water (g)	2.78	2.31		4.37	2.69	
Weight of Dry Soil (g)	15.92	13.34		17.68	11.07	
Water Content (% of dry wt.)	17.5%	17.3%		24.7%	24.3%	
Number of Blows				25	25	

Plastic Limit : 17 **Liquid Limit : 25**

Plasticity Index : 8
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

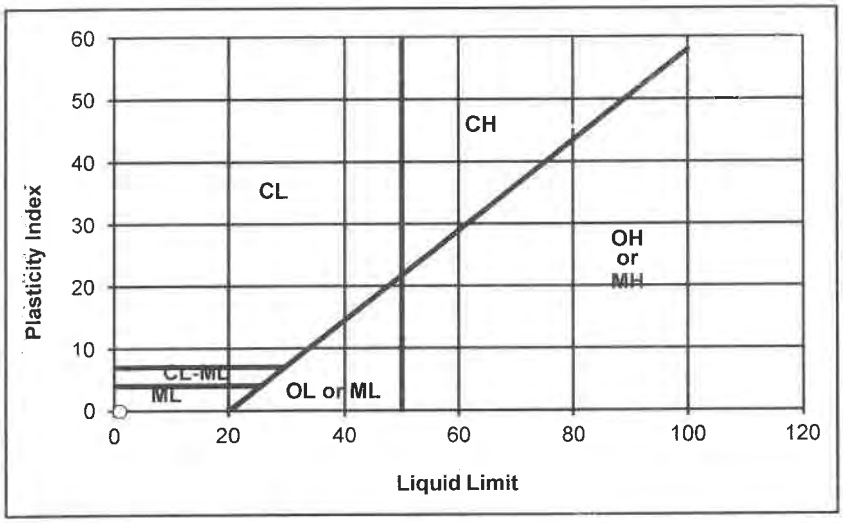
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B11 @ 20-21'
Sample Description: SM

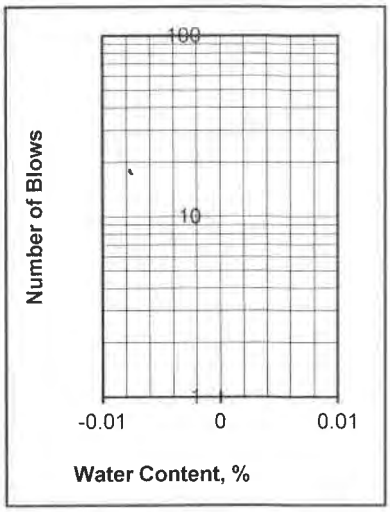
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

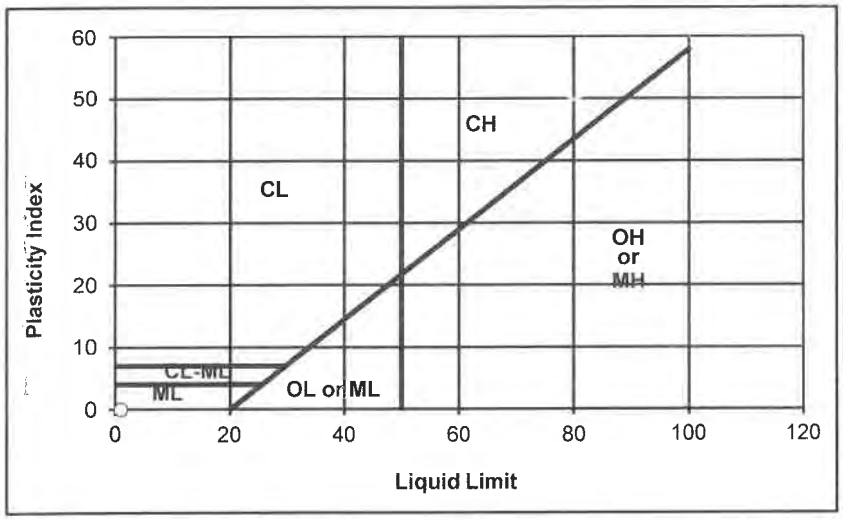
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B11 @ 25-26'
Sample Description: SM

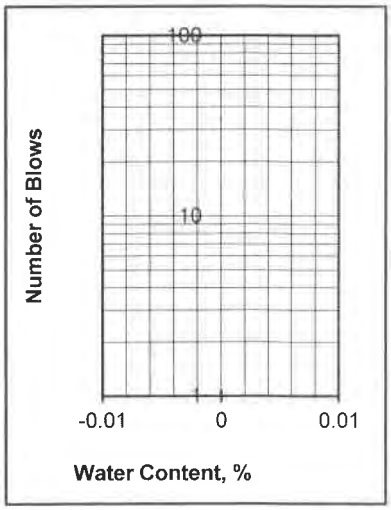
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

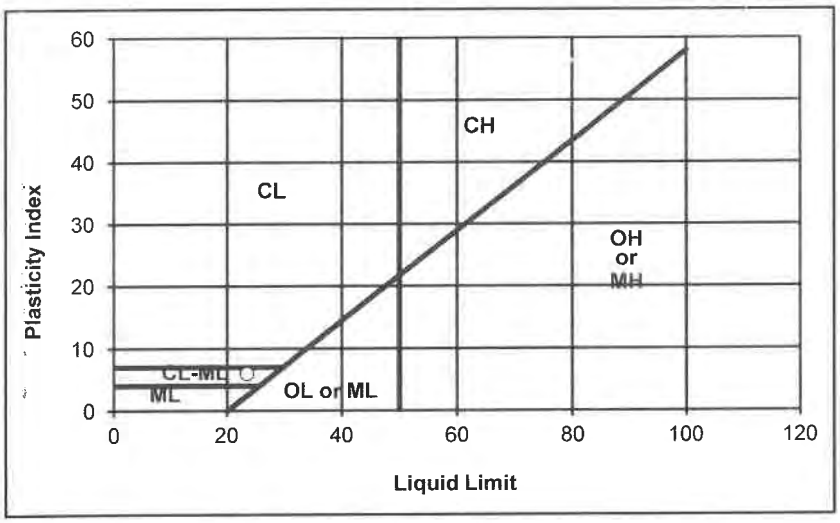
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B11 @ 30-31'
Sample Description: SC/SM

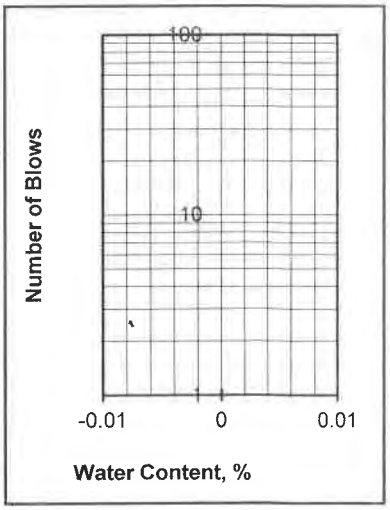
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	32.51	41.01		43.10	44.57	
Weight of Dry Soil & Tare (g)	30.62	38.30		39.41	40.67	
Weight of Tare (g)	19.60	22.68		23.82	23.83	
Weight of water (g)	1.89	2.71		3.69	3.90	
Weight of Dry Soil (g)	11.02	15.62		15.59	16.84	
Water Content (% of dry wt.)	17.2%	17.3%		23.7%	23.2%	
Number of Blows				25	25	

Plastic Limit : 17 **Liquid Limit : 23**

Plasticity Index : 6
Unified Soil Classification : CL-ML **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

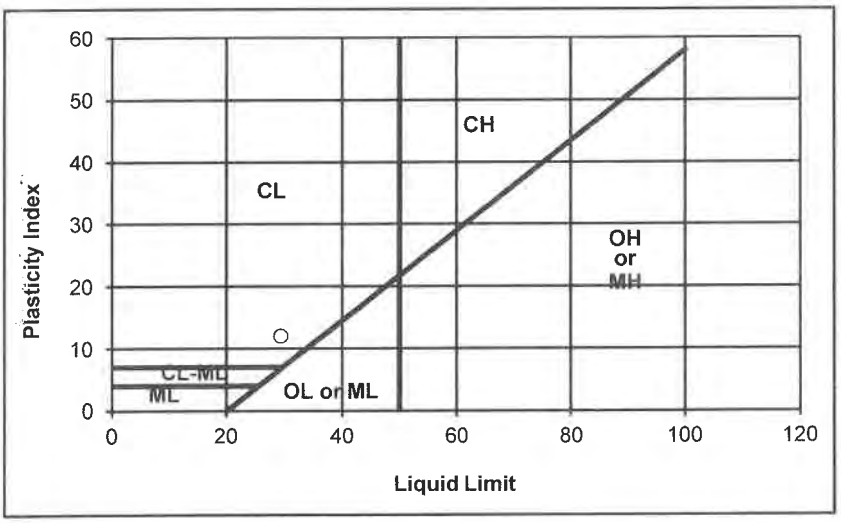
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B11 @ 35-36'
Sample Description: SC/CL

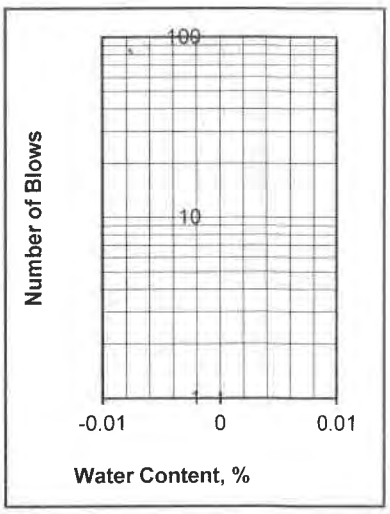
Date Tested: 3/6/2023
Tested By: JM`
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	44.36	39.10		40.85	38.00	
Weight of Dry Soil & Tare (g)	41.37	36.63		36.86	34.43	
Weight of Tare (g)	23.45	21.83		23.39	22.20	
Weight of water (g)	2.99	2.47		3.99	3.57	
Weight of Dry Soil (g)	17.92	14.80		13.47	12.23	
Water Content (% of dry wt.)	16.7%	16.7%		29.6%	29.2%	
Number of Blows				25	25	

Plastic Limit : 17 **Liquid Limit : 29**

Plasticity Index : 12
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

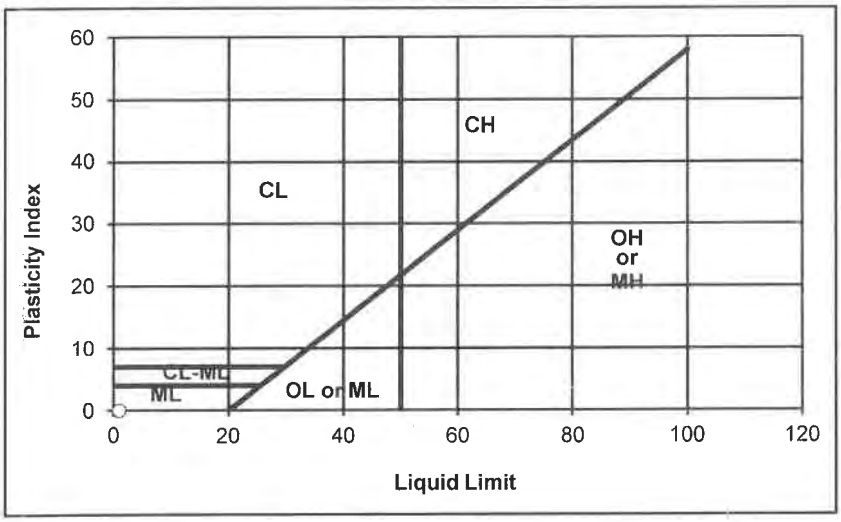
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B11 @ 40-41'
Sample Description: SM

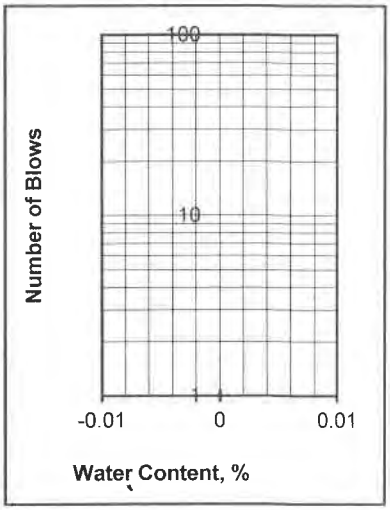
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

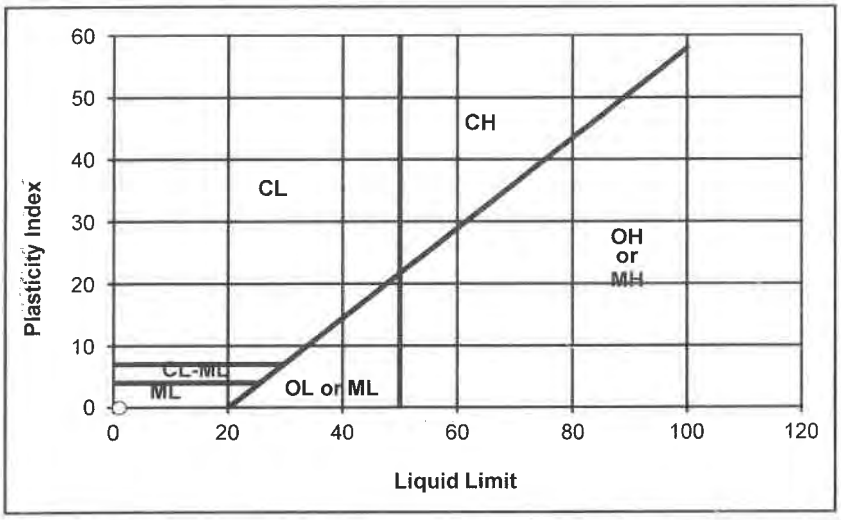
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B11 @ 45-46'
Sample Description: SM

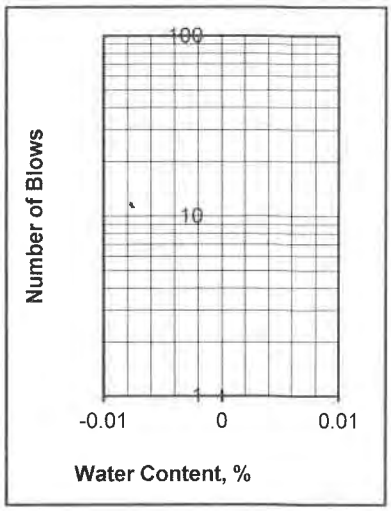
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

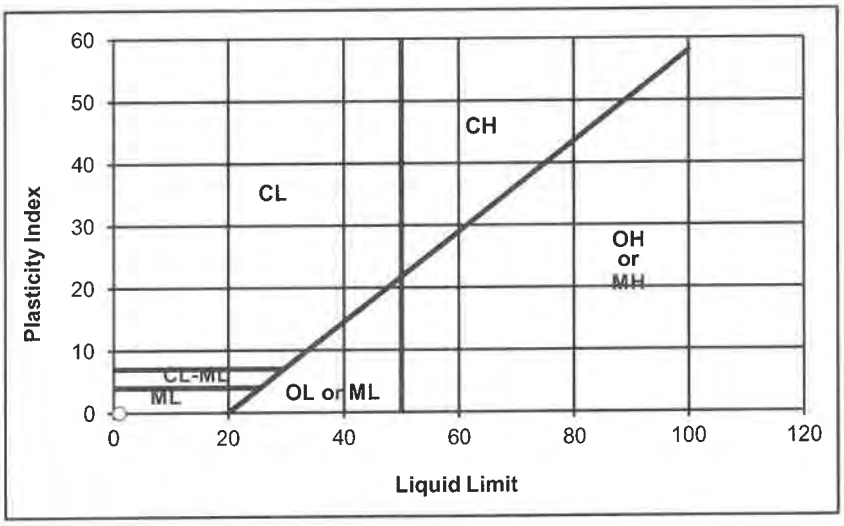
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B12 @ 2-3'
Sample Description: SM/ML

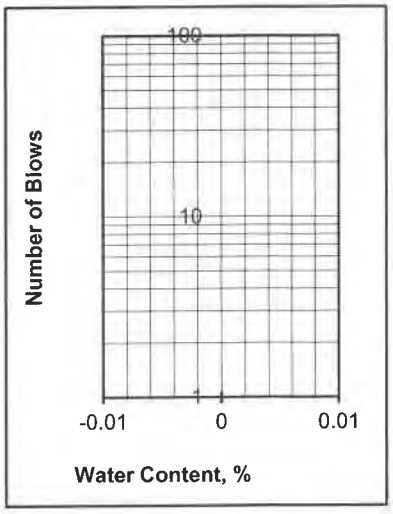
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

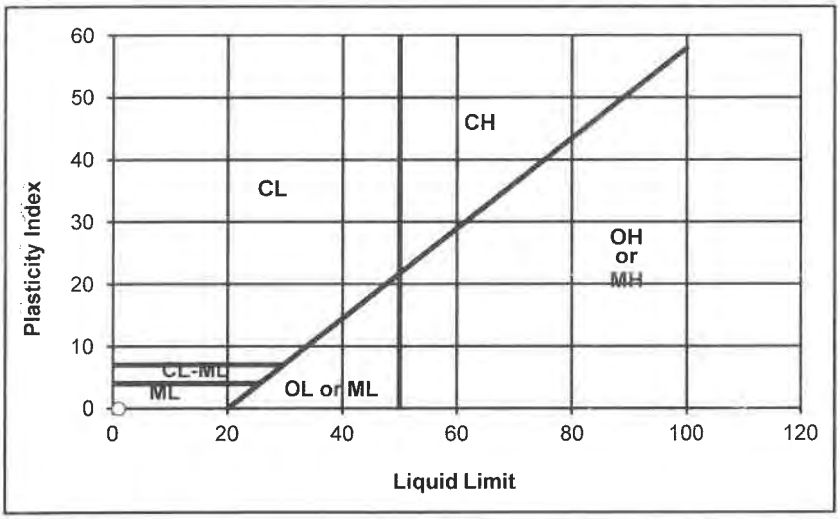
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B12 @ 5-6'
Sample Description: SM/ML

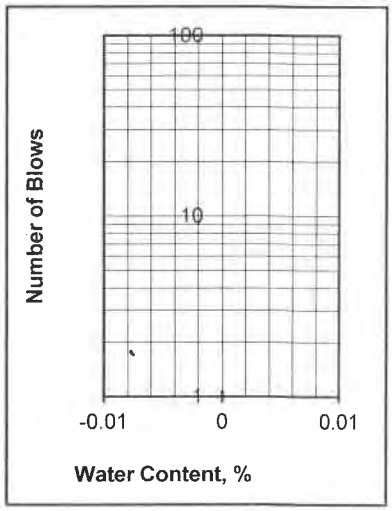
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

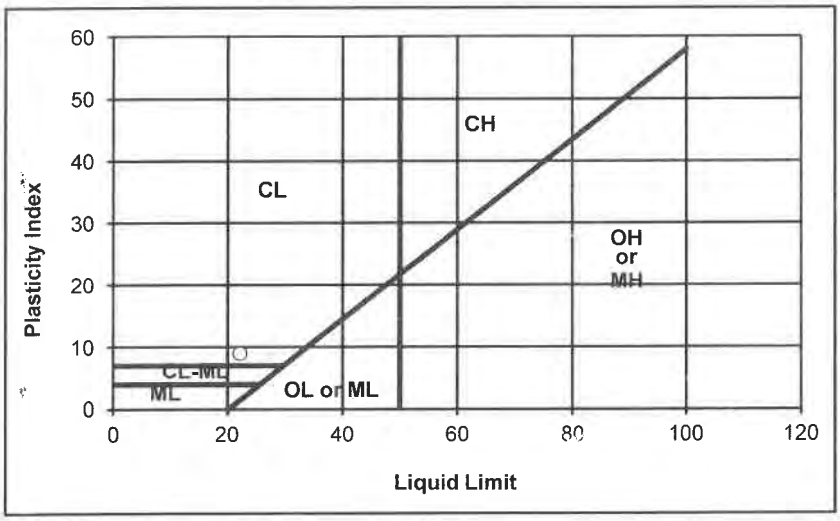
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B12 @ 10-11'
Sample Description: SC/CL

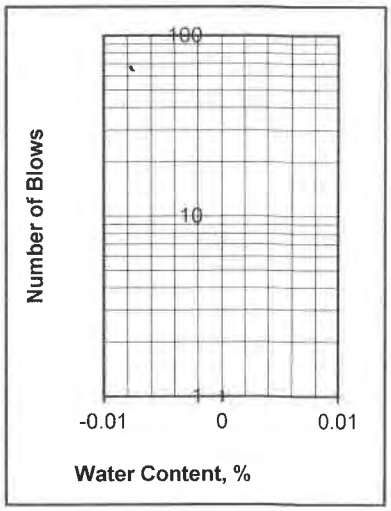
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	34.95	38.98		40.04	42.16	
Weight of Dry Soil & Tare (g)	33.62	37.18		37.20	38.97	
Weight of Tare (g)	23.73	23.82		24.39	24.48	
Weight of water (g)	1.33	1.80		2.84	3.19	
Weight of Dry Soil (g)	9.89	13.36		12.81	14.49	
Water Content (% of dry wt.)	13.4%	13.5%		22.2%	22.0%	
Number of Blows				25	25	

Plastic Limit : 13 **Liquid Limit : 22**

Plasticity Index : 9
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

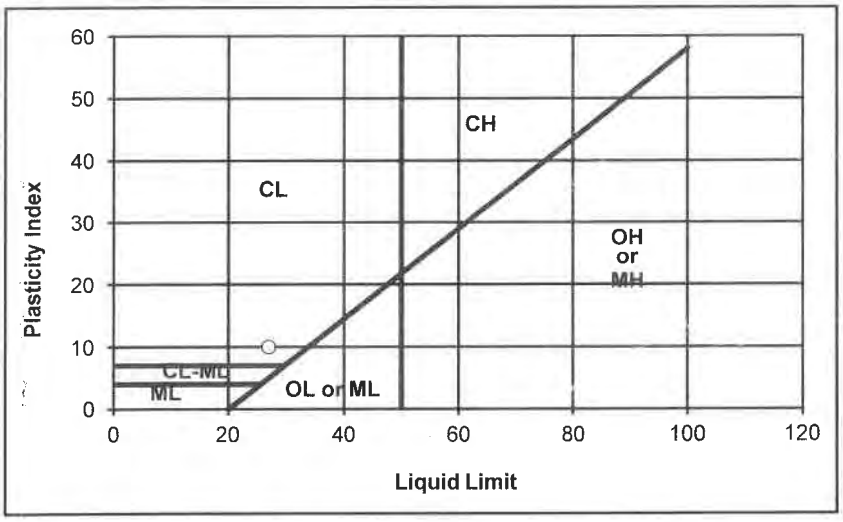
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B12 @ 15-16'
Sample Description: SC

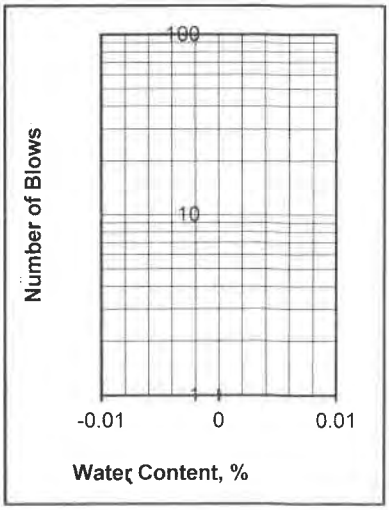
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	34.72	36.19		42.75	40.95	
Weight of Dry Soil & Tare (g)	32.49	34.20		38.75	37.36	
Weight of Tare (g)	19.59	22.68		23.80	24.06	
Weight of water (g)	2.23	1.99		4.00	3.59	
Weight of Dry Soil (g)	12.90	11.52		14.95	13.30	
Water Content (% of dry wt.)	17.3%	17.3%		26.8%	27.0%	
Number of Blows				25	25	

Plastic Limit : 17 **Liquid Limit : 27**

Plasticity Index : 10
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

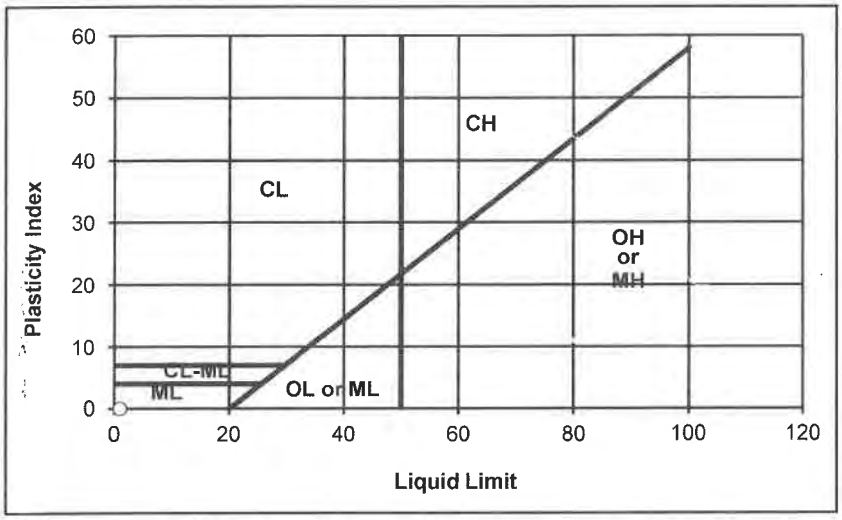
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B12 @ 20-21'
Sample Description: SM

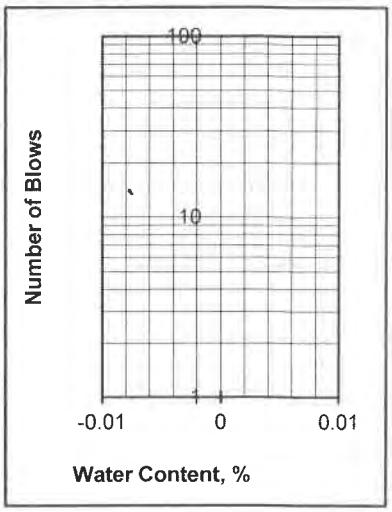
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

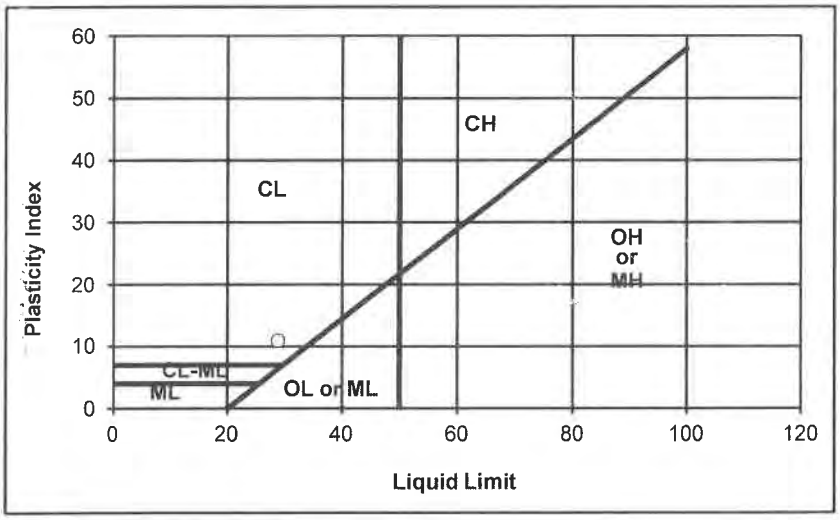
ASTM D4318/AASHTO T89 T90/CT 204

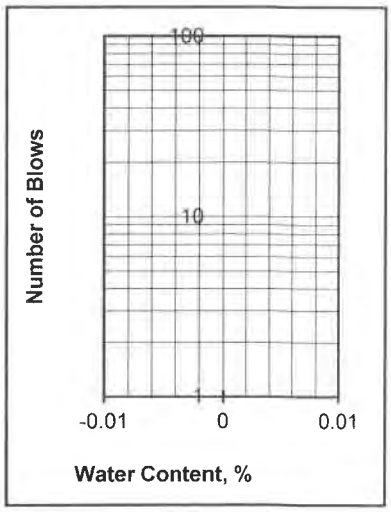
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023 — Date Tested: 3/6/2023
Sampled By: DA — Tested By: JM
Sample Number: - — Verified By: JG
Sample Location: B12 @ 25-26'
Sample Description: SC

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	34.29	37.48		41.38	40.17	
Weight of Dry Soil & Tare (g)	32.49	35.06		37.43	36.22	
Weight of Tare (g)	22.45	21.07		23.62	22.62	
Weight of water (g)	1.80	2.42		3.95	3.95	
Weight of Dry Soil (g)	10.04	13.99		13.81	13.60	
Water Content (% of dry wt.)	17.9%	17.3%		28.6%	29.0%	
Number of Blows				25	25	

Plastic Limit : 18 **Liquid Limit : 29**

Plasticity Index : 11
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

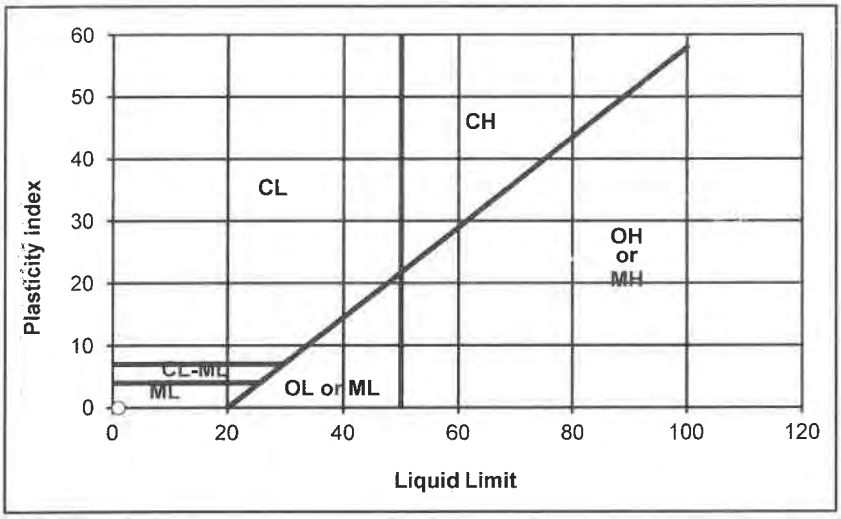
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B12 @ 30-31'
Sample Description: SM

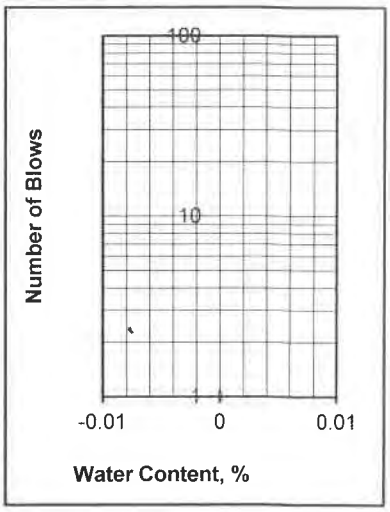
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

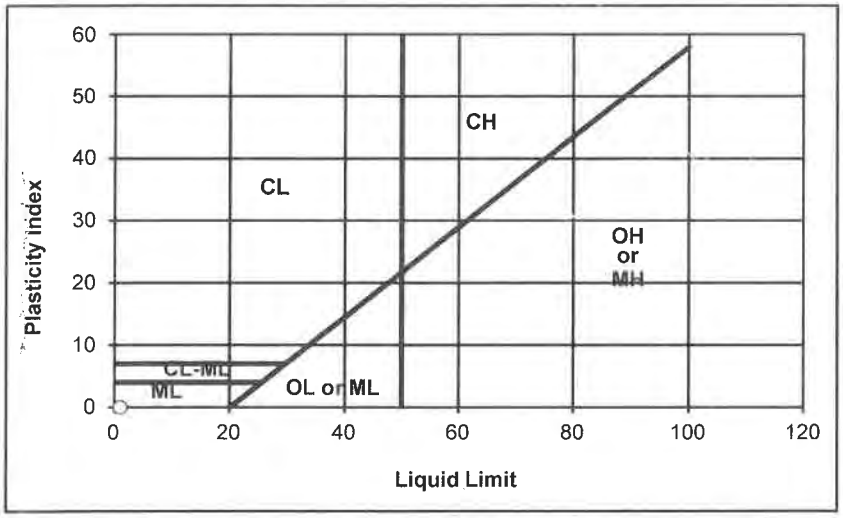
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B12 @ 35-36'
Sample Description: SM

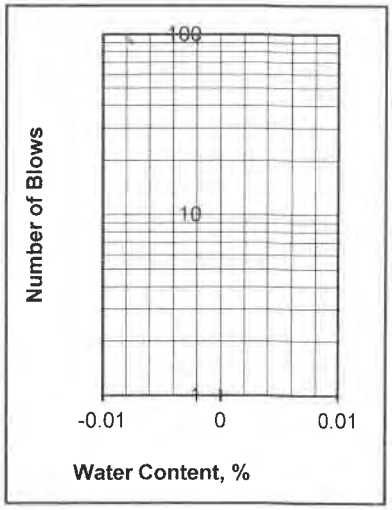
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

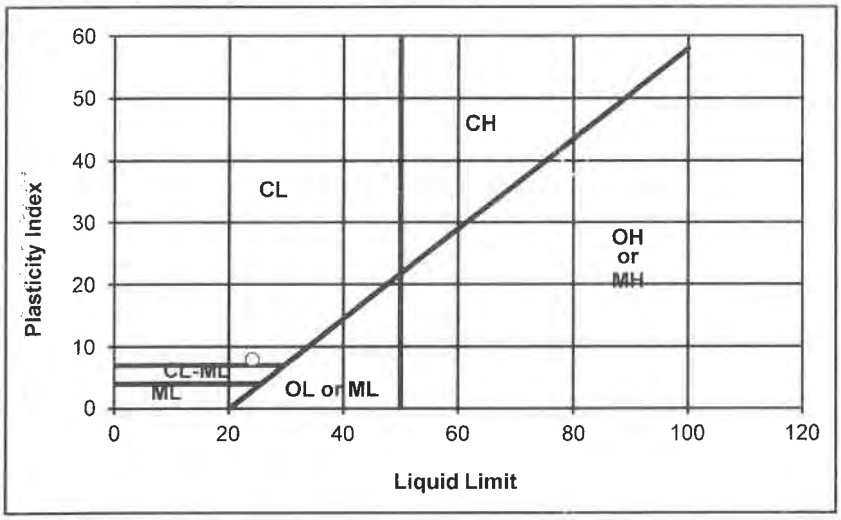
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B12 @ 40-41'
Sample Description: SC

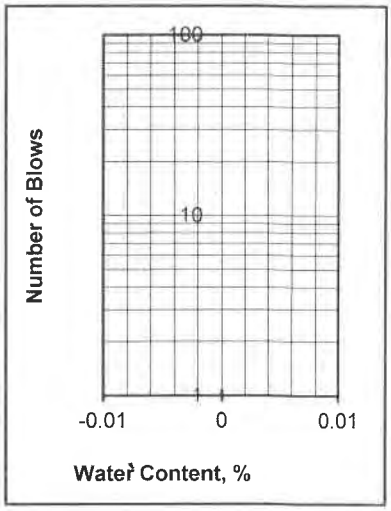
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	42.93	45.71		40.33	38.96	
Weight of Dry Soil & Tare (g)	40.31	42.74		37.14	36.23	
Weight of Tare (g)	24.03	24.12		23.90	24.81	
Weight of water (g)	2.62	2.97		3.19	2.73	
Weight of Dry Soil (g)	16.28	18.62		13.24	11.42	
Water Content (% of dry wt.)	16.1%	16.0%		24.1%	23.9%	
Number of Blows				25	25	

Plastic Limit : 16 **Liquid Limit : 24**

Plasticity Index : 8
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

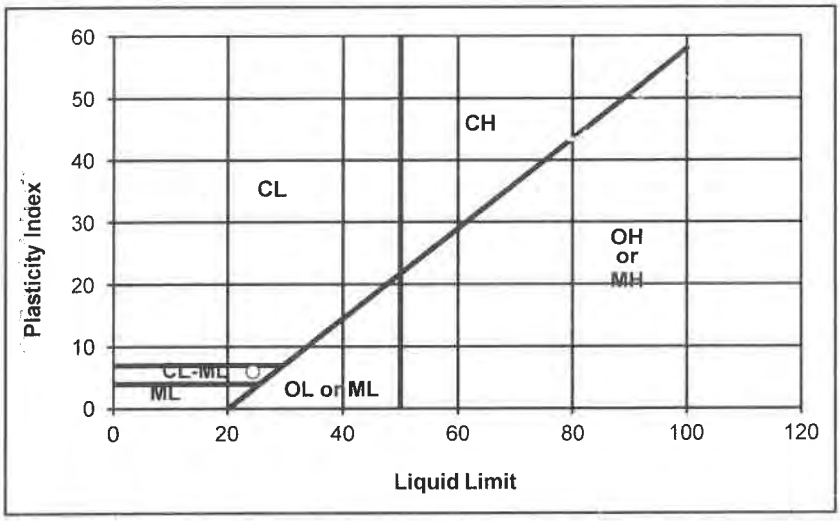
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 2/16/2023
Sampled By: DA
Sample Number: -
Sample Location: B12 @ 45-46'
Sample Description: SC/SM

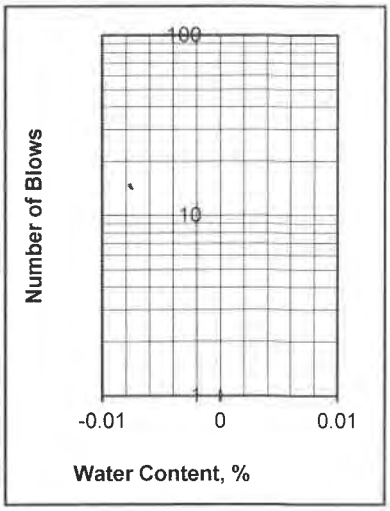
Date Tested: 3/6/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	35.47	41.24		41.53	38.89	
Weight of Dry Soil & Tare (g)	32.98	38.38		38.10	35.93	
Weight of Tare (g)	19.59	22.69		23.87	23.88	
Weight of water (g)	2.49	2.86		3.43	2.96	
Weight of Dry Soil (g)	13.39	15.69		14.23	12.05	
Water Content (% of dry wt.)	18.6%	18.2%		24.1%	24.6%	
Number of Blows				25	25	

Plastic Limit : 18 **Liquid Limit : 24**

Plasticity Index : 6
Unified Soil Classification : CL-ML **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

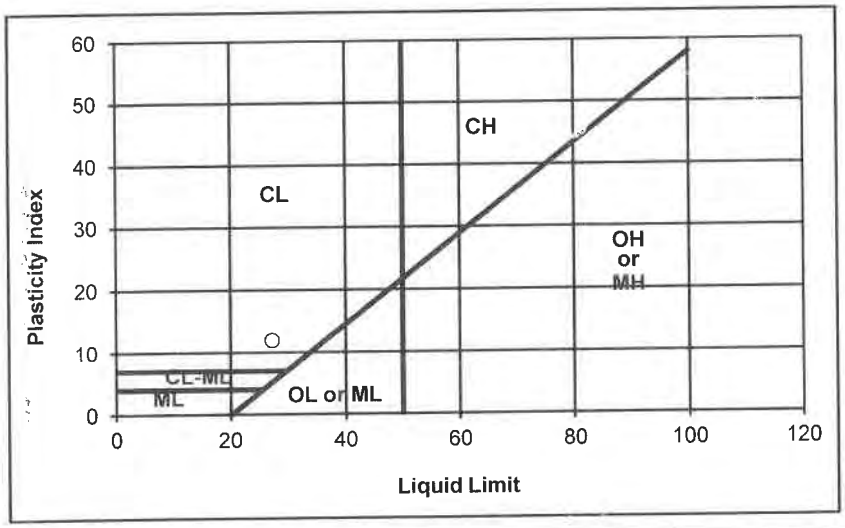
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B13 @ 25-26'
Sample Description: SC

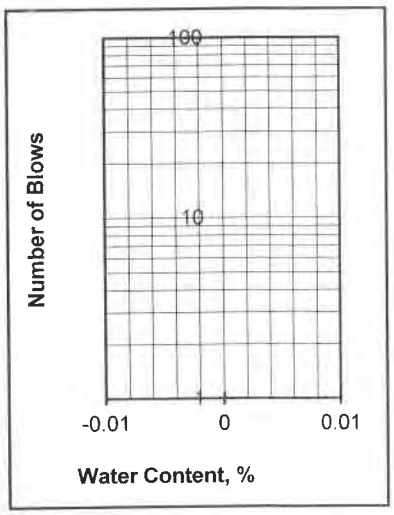
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	31.95	34.61		36.26	35.56	
Weight of Dry Soil & Tare (g)	30.35	33.02		32.79	32.17	
Weight of Tare (g)	19.74	22.80		20.06	19.64	
Weight of water (g)	1.60	1.59		3.47	3.39	
Weight of Dry Soil (g)	10.61	10.22		12.73	12.53	
Water Content (% of dry wt.)	15.1%	15.6%		27.3%	27.1%	
Number of Blows				25	25	

Plastic Limit : 15 **Liquid Limit : 27**

Plasticity Index : 12
Unified Soil Classification : CL
Requirement:
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

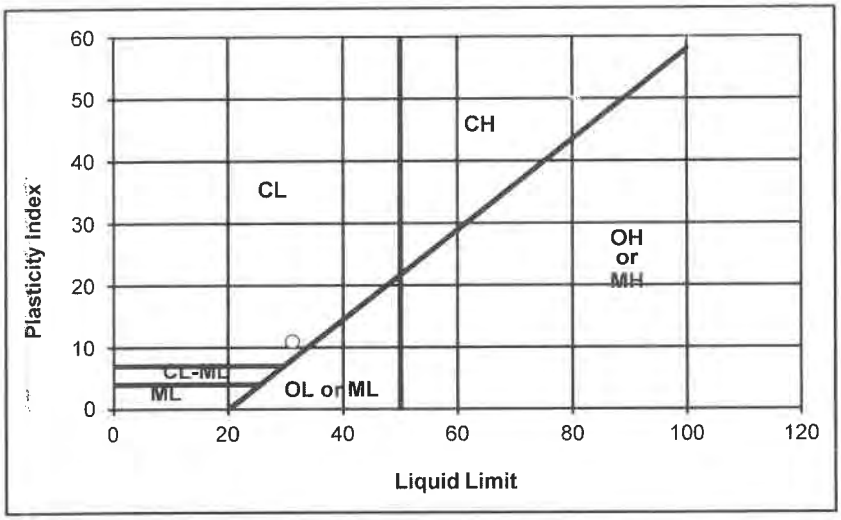
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B13 @ 40-41'
Sample Description: SC

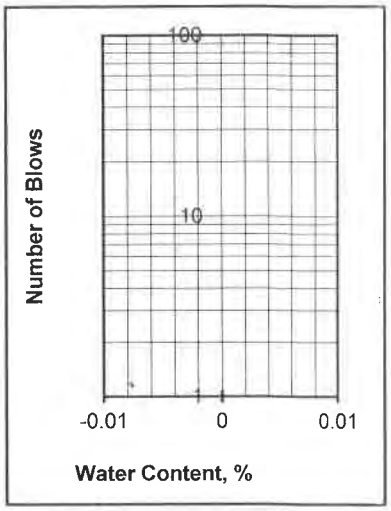
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	35.85	45.48		35.88	37.80	
Weight of Dry Soil & Tare (g)	33.93	41.87		33.00	33.58	
Weight of Tare (g)	24.31	24.30		23.79	20.01	
Weight of water (g)	1.92	3.61		2.88	4.22	
Weight of Dry Soil (g)	9.62	17.57		9.21	13.57	
Water Content (% of dry wt.)	20.0%	20.5%		31.3%	31.1%	
Number of Blows				25	25	

Plastic Limit : 20 **Liquid Limit : 31**

Plasticity Index : 11
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

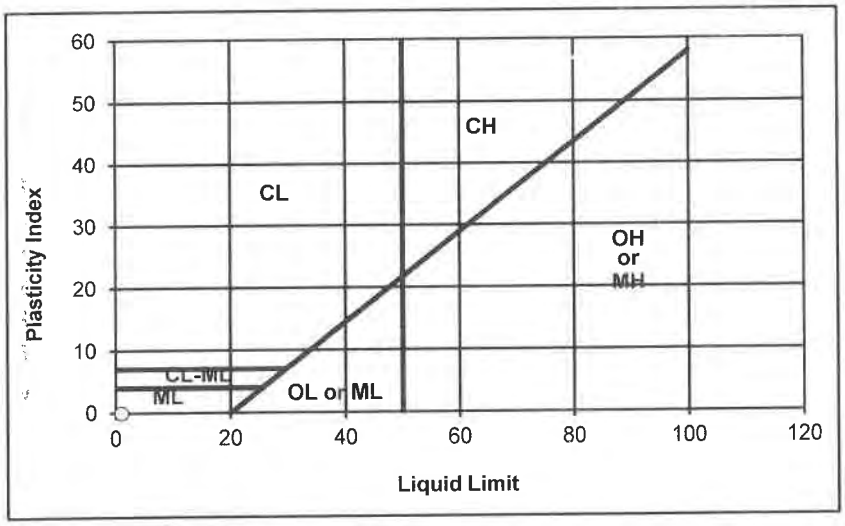
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B13 @ 45-46'
Sample Description: SM

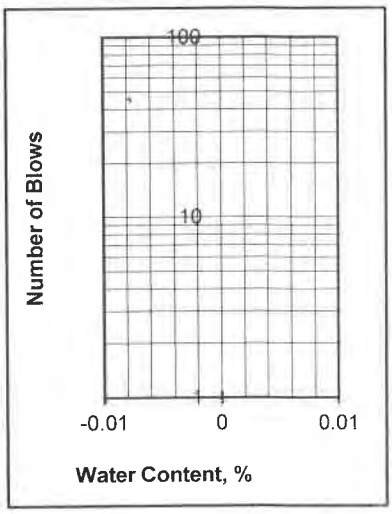
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

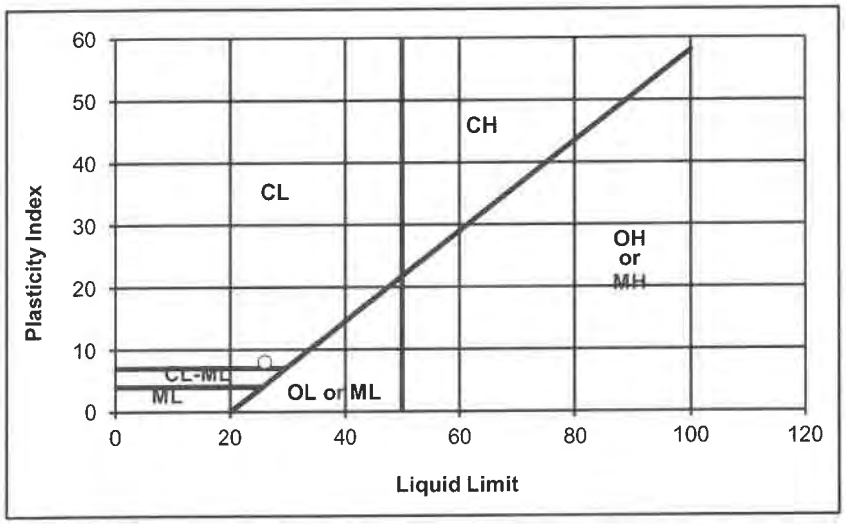
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B14 @ 35-36'
Sample Description: CL

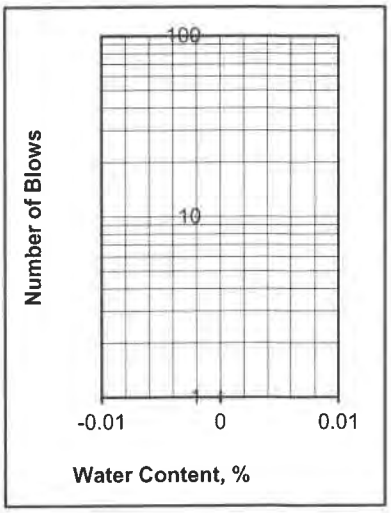
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	38.19	36.58		39.35	35.12	
Weight of Dry Soil & Tare (g)	36.08	34.69		36.15	32.02	
Weight of Tare (g)	24.34	24.34		23.83	20.04	
Weight of water (g)	2.11	1.89		3.20	3.10	
Weight of Dry Soil (g)	11.74	10.35		12.32	11.98	
Water Content (% of dry wt.)	18.0%	18.3%		26.0%	25.9%	
Number of Blows				25	25	

Plastic Limit : 18 **Liquid Limit : 26**

Plasticity Index : 8
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

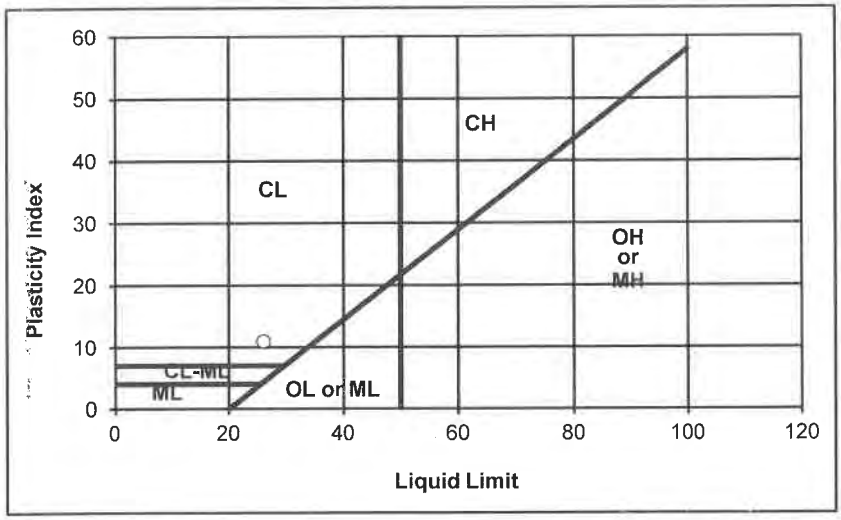
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B14 @ 40-41'
Sample Description: CL

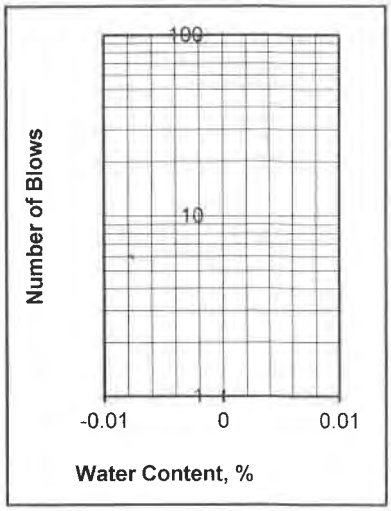
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	32.42	36.96		35.96	32.20	
Weight of Dry Soil & Tare (g)	30.42	35.15		33.34	29.99	
Weight of Tare (g)	16.49	23.04		23.30	21.50	
Weight of water (g)	2.00	1.81		2.62	2.21	
Weight of Dry Soil (g)	13.93	12.11		10.04	8.49	
Water Content (% of dry wt.)	14.4%	14.9%		26.1%	26.0%	
Number of Blows				25	25	

Plastic Limit : 15 **Liquid Limit : 26**

Plasticity Index : 11
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

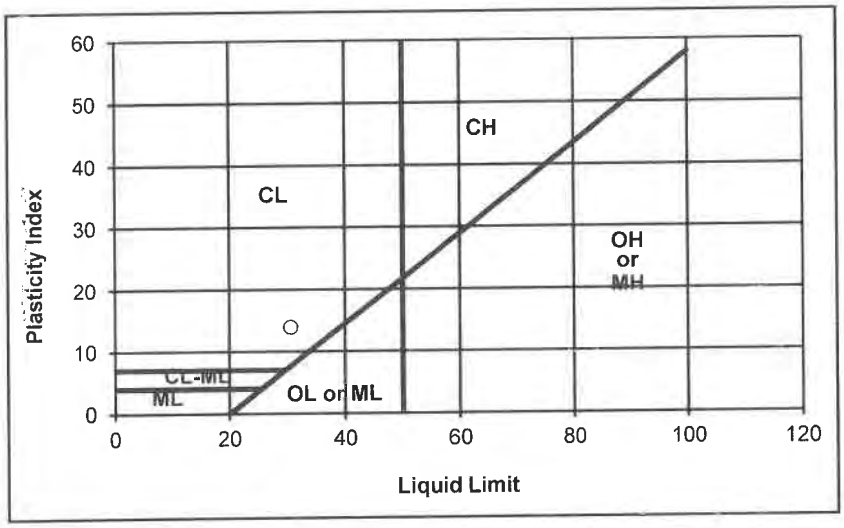
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B14 @ 45-46'
Sample Description: SC/CL

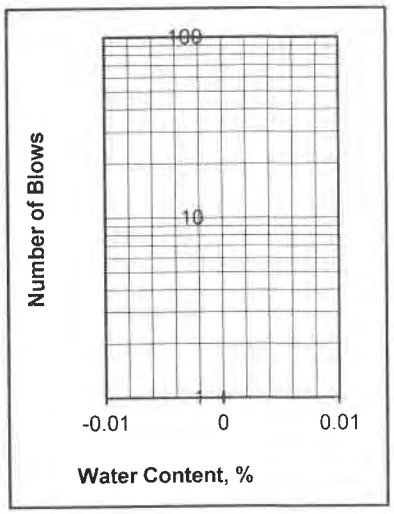
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	33.54	35.70		32.58	34.44	
Weight of Dry Soil & Tare (g)	32.13	34.01		30.19	31.33	
Weight of Tare (g)	24.05	24.07		22.26	21.28	
Weight of water (g)	1.41	1.69		2.39	3.11	
Weight of Dry Soil (g)	8.08	9.94		7.93	10.05	
Water Content (% of dry wt.)	17.5%	17.0%		30.1%	30.9%	
Number of Blows				25	25	

Plastic Limit : 17 **Liquid Limit : 31**

Plasticity Index : 14
Unified Soil Classification : CL
Requirement:
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

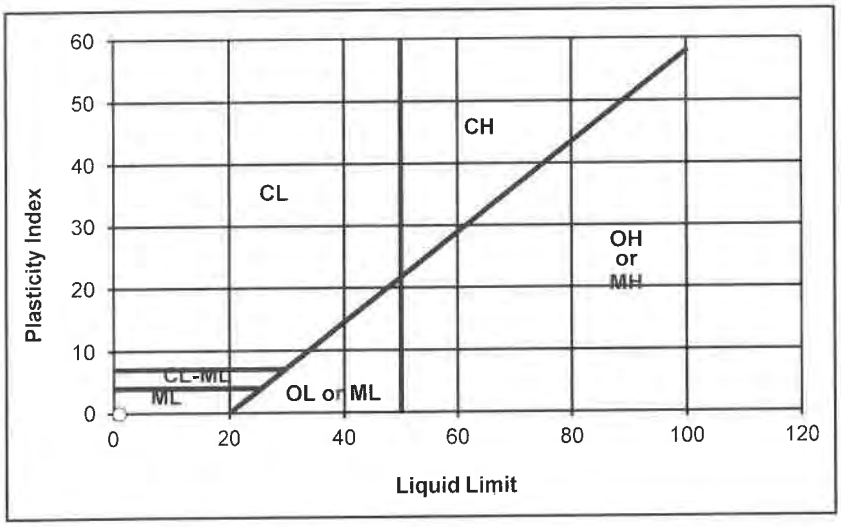
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B15 @ 30-31'
Sample Description: SM/ML

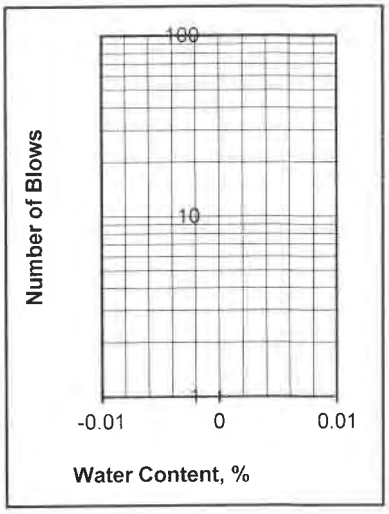
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

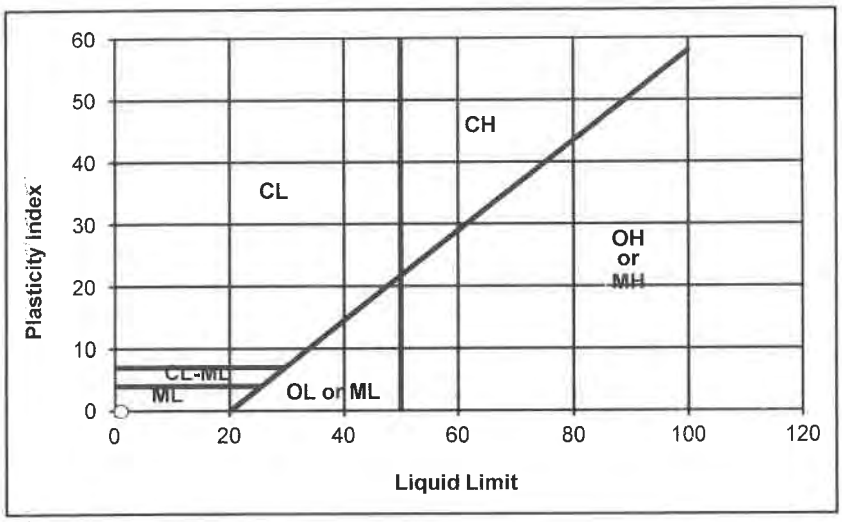
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B15 @ 35-36'
Sample Description: SM/ML

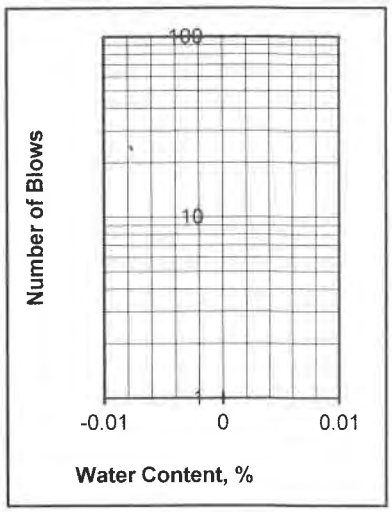
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

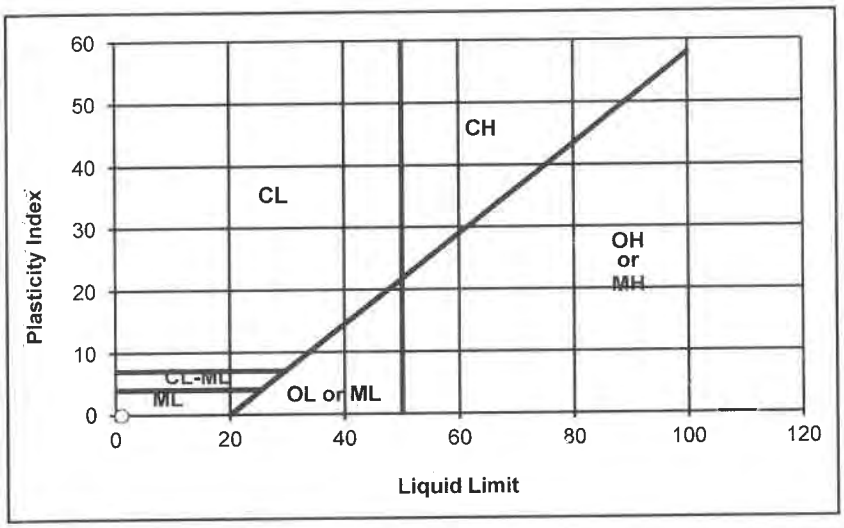
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B15 @ 45-46'
Sample Description: SM/ML w/ trace of clay

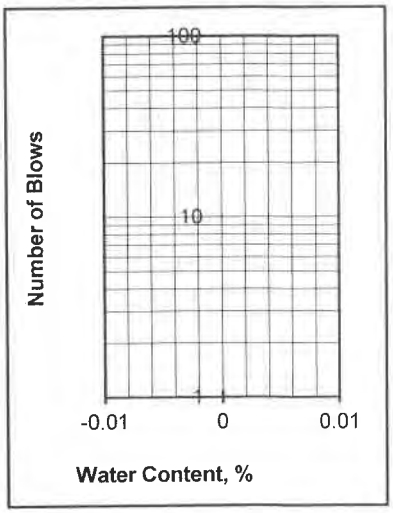
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

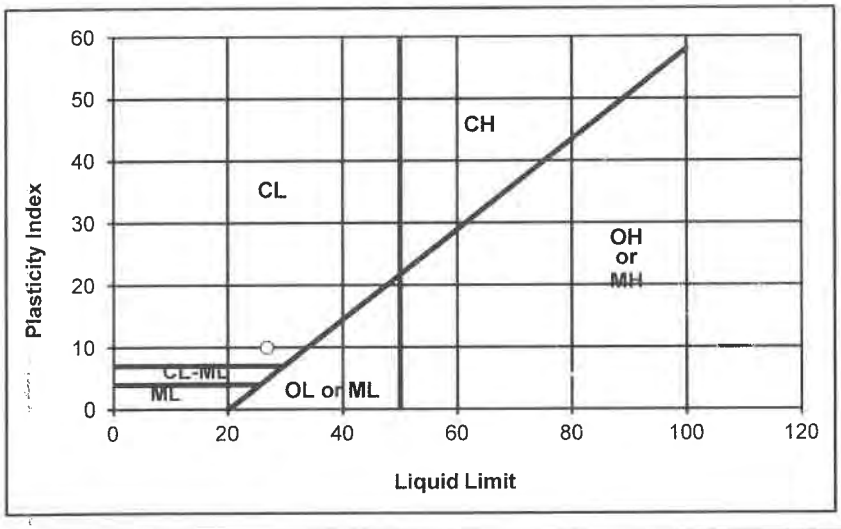
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B17 @ 20-21'
Sample Description: CL

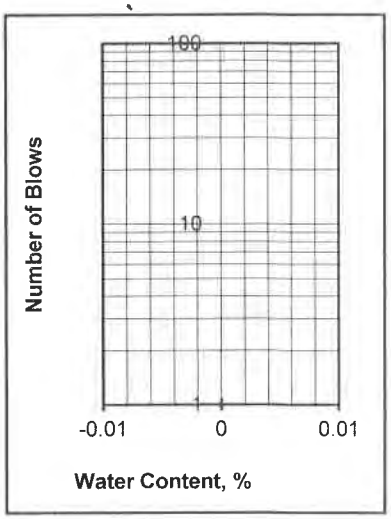
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	42.15	39.95		33.71	32.71	
Weight of Dry Soil & Tare (g)	39.60	37.68		31.26	30.30	
Weight of Tare (g)	24.03	24.06		22.16	21.24	
Weight of water (g)	2.55	2.27		2.45	2.41	
Weight of Dry Soil (g)	15.57	13.62		9.10	9.06	
Water Content (% of dry wt.)	16.4%	16.7%		26.9%	26.6%	
Number of Blows				25	25	

Plastic Limit : 17 **Liquid Limit : 27**

Plasticity Index : 10
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

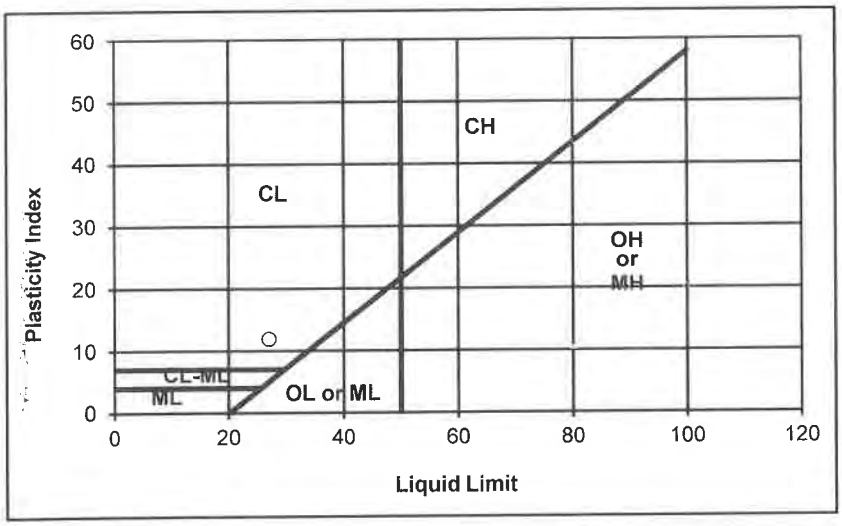
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B17 @ 25-26'
Sample Description: SC

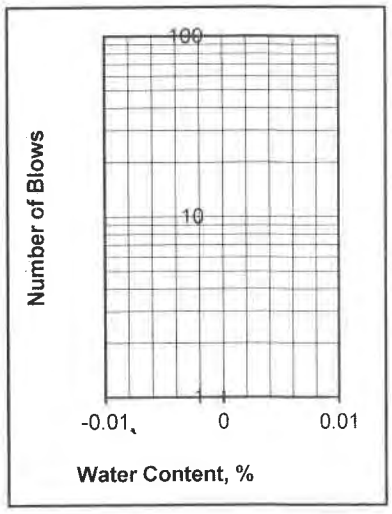
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	35.01	38.77		40.20	37.81	
Weight of Dry Soil & Tare (g)	33.55	36.80		36.40	34.27	
Weight of Tare (g)	24.04	24.05		22.22	21.20	
Weight of water (g)	1.46	1.97		3.80	3.54	
Weight of Dry Soil (g)	9.51	12.75		14.18	13.07	
Water Content (% of dry wt.)	15.4%	15.5%		26.8%	27.1%	
Number of Blows				25	25	

Plastic Limit : 15 **Liquid Limit : 27**

Plasticity Index : 12
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

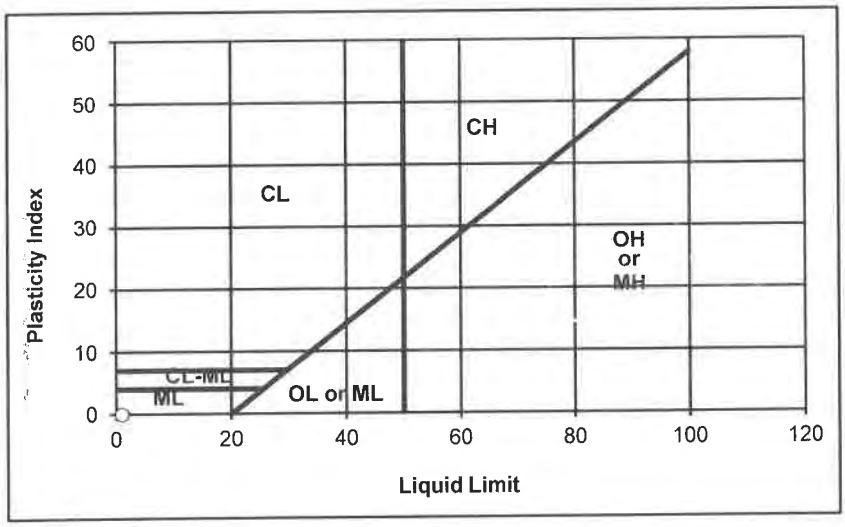
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B17 @ 30-31'
Sample Description: SM

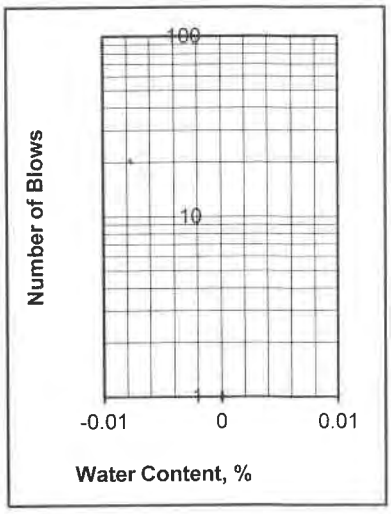
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

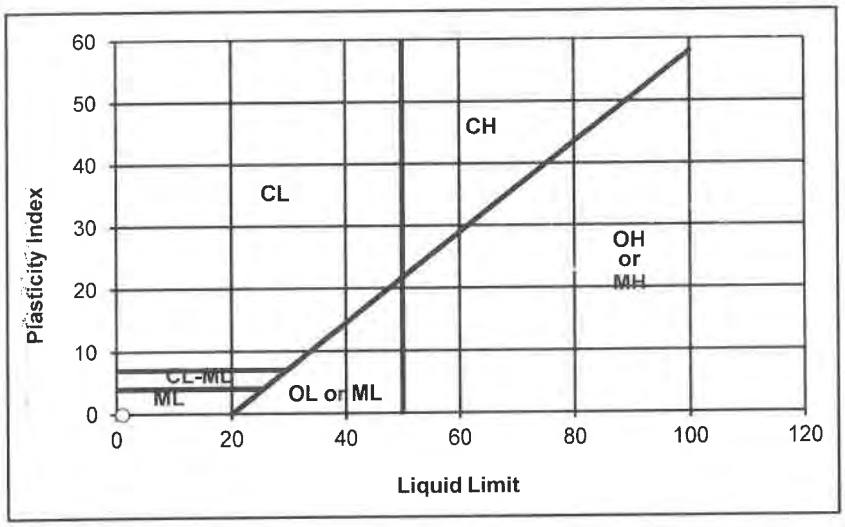
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B18 @ 10-11'
Sample Description: SM

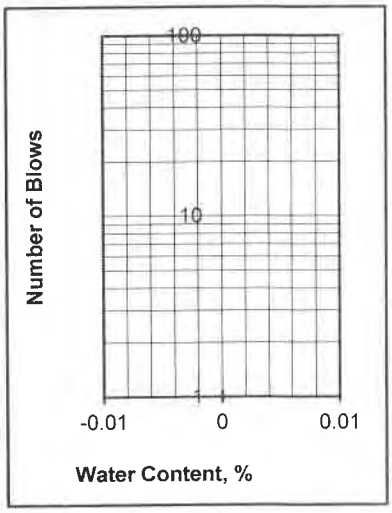
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

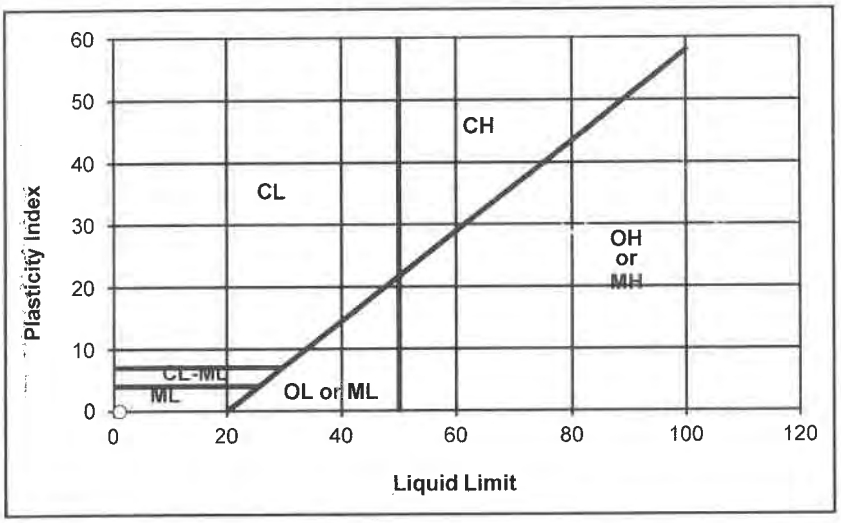
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B18 @ 20-21'
Sample Description: SM

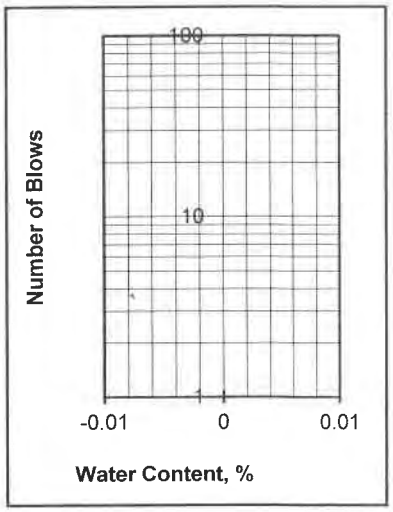
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

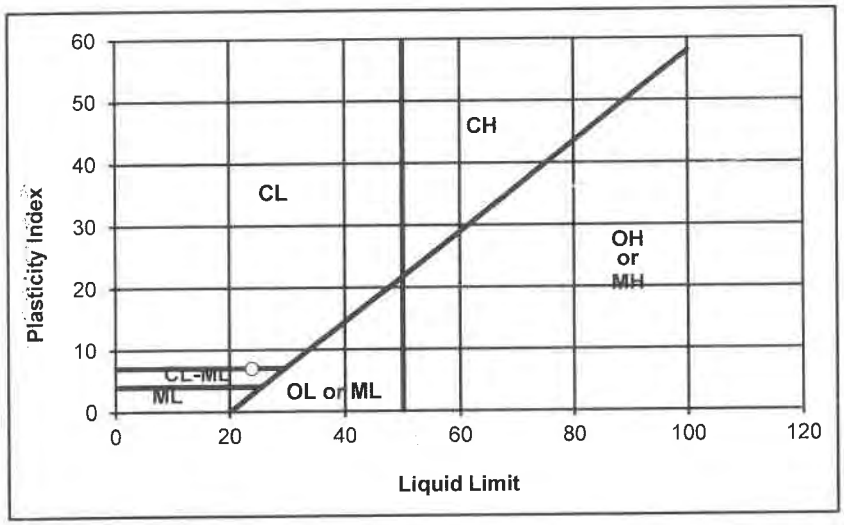
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B18 @ 30-31'
Sample Description: SM/ML

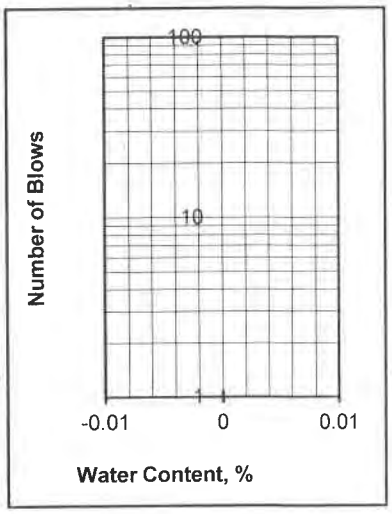
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	35.16	39.36		29.48	31.55	
Weight of Dry Soil & Tare (g)	32.91	36.91		27.65	29.26	
Weight of Tare (g)	19.70	22.77		20.02	19.61	
Weight of water (g)	2.25	2.46		1.83	2.29	
Weight of Dry Soil (g)	13.21	14.14		7.63	9.65	
Water Content (% of dry wt.)	17.0%	17.4%		24.0%	23.7%	
Number of Blows				25	25	

Plastic Limit : 17 **Liquid Limit : 24**

Plasticity Index : 7
Unified Soil Classification : CL-ML **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

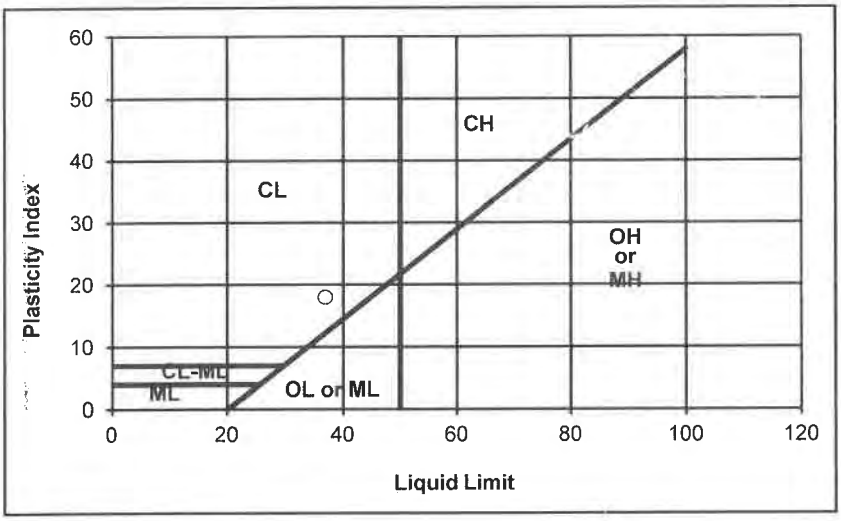
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B18 @ 35-36'
Sample Description: SC/CL

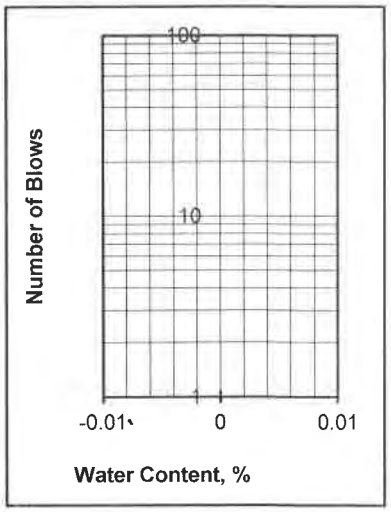
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	36.27	40.42		40.61	32.07	
Weight of Dry Soil & Tare (g)	33.94	37.70		35.80	27.92	
Weight of Tare (g)	21.47	23.29		23.02	16.46	
Weight of water (g)	2.33	2.72		4.81	4.15	
Weight of Dry Soil (g)	12.47	14.41		12.78	11.46	
Water Content (% of dry wt.)	18.7%	18.9%		37.6%	36.2%	
Number of Blows				25	25	

Plastic Limit : 19 **Liquid Limit : 37**

Plasticity Index : 18
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

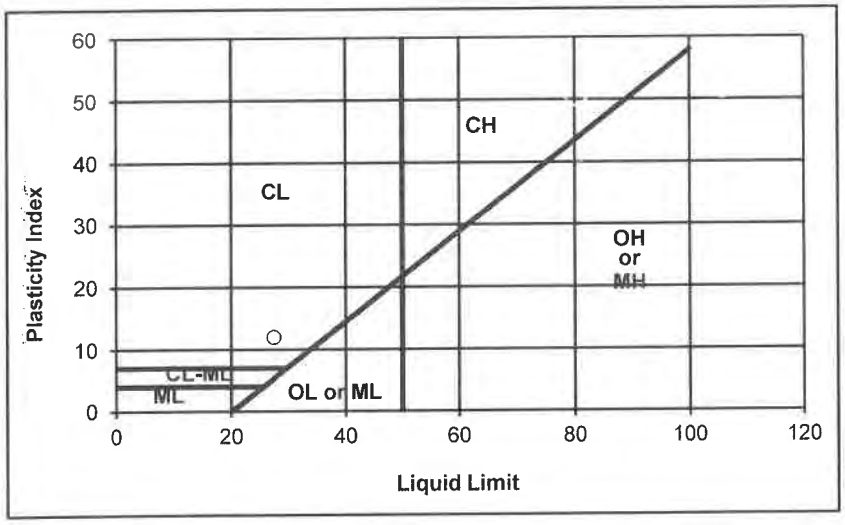
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B18 @ 40-41'
Sample Description: SC

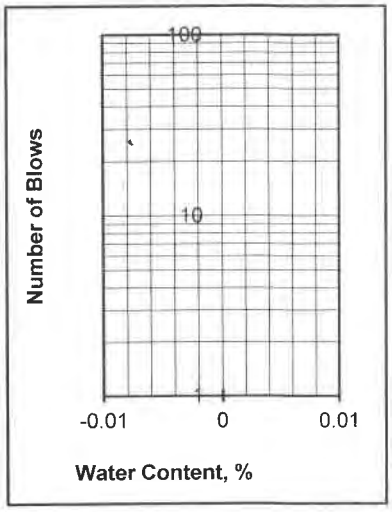
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	40.36	38.40		40.48	33.35	
Weight of Dry Soil & Tare (g)	38.22	36.57		36.85	30.51	
Weight of Tare (g)	24.31	24.31		23.76	20.01	
Weight of water (g)	2.14	1.83		3.63	2.84	
Weight of Dry Soil (g)	13.91	12.26		13.09	10.50	
Water Content (% of dry wt.)	15.4%	14.9%		27.7%	27.0%	
Number of Blows				25	25	

Plastic Limit : 15 **Liquid Limit : 27**

Plasticity Index : 12
Unified Soil Classification : CL
Requirement:
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

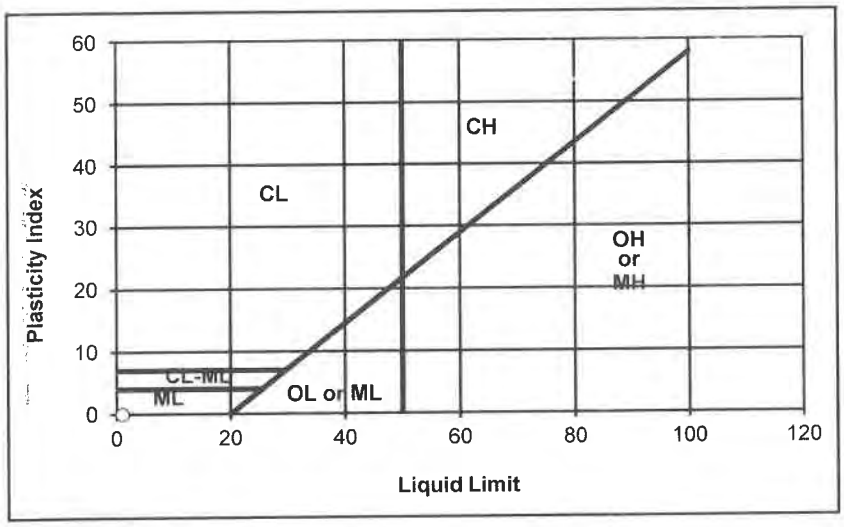
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B18 @ 45-46'
Sample Description: SM w/ trace of clay

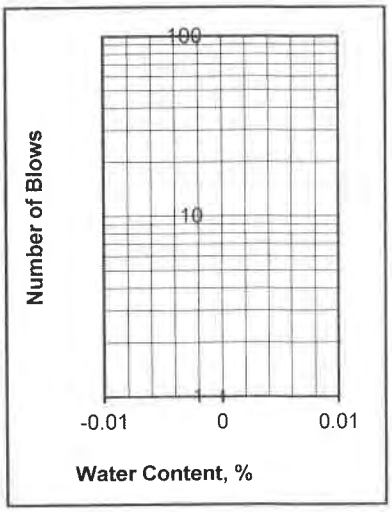
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

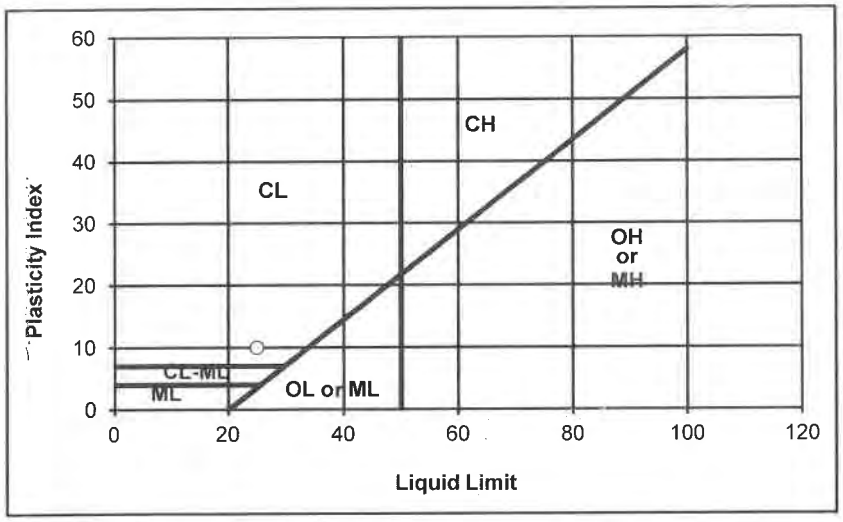
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B19 @ 10-11'
Sample Description: CL

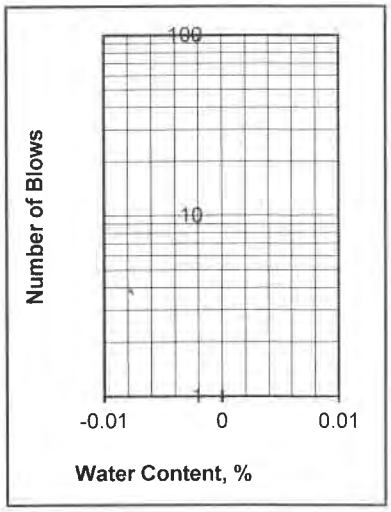
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	35.35	37.27		34.63	40.18	
Weight of Dry Soil & Tare (g)	33.87	35.57		32.10	36.49	
Weight of Tare (g)	24.03	24.07		22.18	21.28	
Weight of water (g)	1.48	1.70		2.53	3.69	
Weight of Dry Soil (g)	9.84	11.50		9.92	15.21	
Water Content (% of dry wt.)	15.0%	14.8%		25.5%	24.3%	
Number of Blows				25	25	

Plastic Limit : 15 **Liquid Limit : 25**

Plasticity Index : 10
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

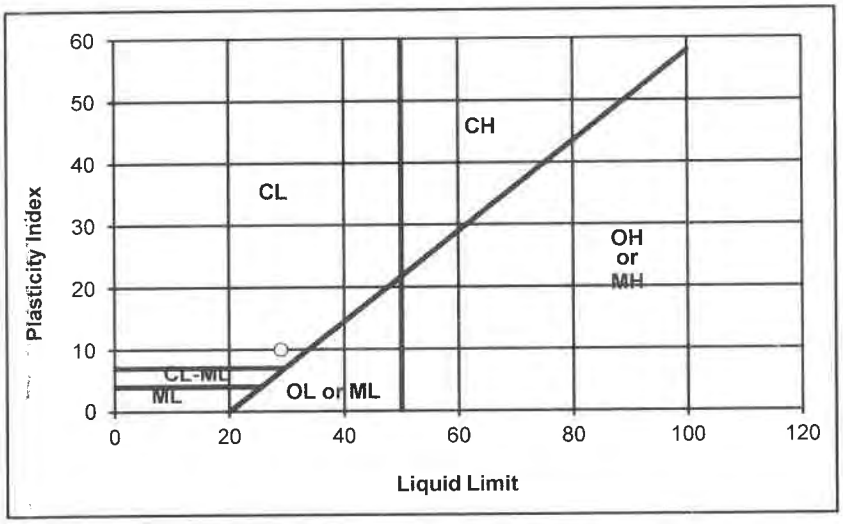
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B19 @ 15-16'
Sample Description: SC

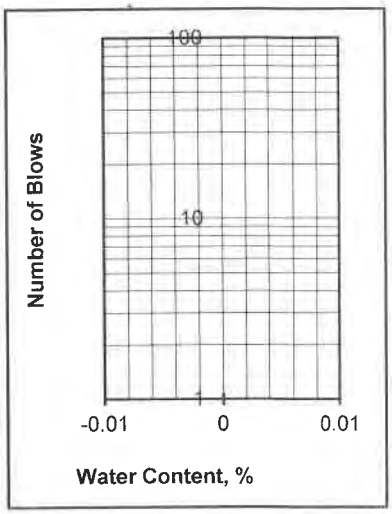
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	30.57	35.76		36.27	31.00	
Weight of Dry Soil & Tare (g)	28.86	33.73		32.62	28.44	
Weight of Tare (g)	19.71	22.78		20.01	19.60	
Weight of water (g)	1.71	2.03		3.65	2.56	
Weight of Dry Soil (g)	9.15	10.95		12.61	8.84	
Water Content (% of dry wt.)	18.7%	18.5%		28.9%	28.9%	
Number of Blows				25	25	

Plastic Limit : 19 **Liquid Limit : 29**

Plasticity Index : 10
Unified Soil Classification : CL
Requirement:
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

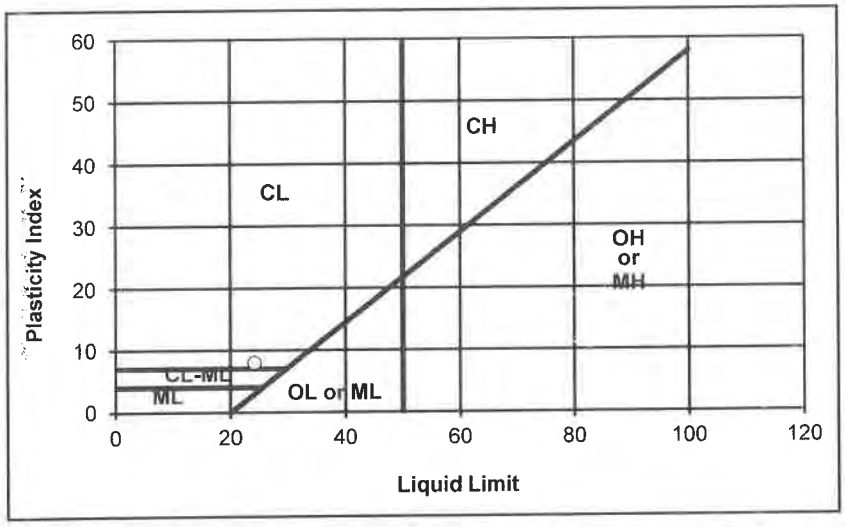
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B19 @ 20-21'
Sample Description: SC/CL

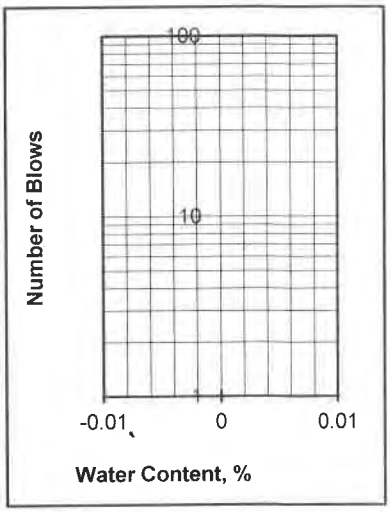
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	35.49	35.72		43.53	38.14	
Weight of Dry Soil & Tare (g)	32.88	33.96		39.62	34.89	
Weight of Tare (g)	16.46	23.01		23.29	21.47	
Weight of water (g)	2.61	1.76		3.91	3.25	
Weight of Dry Soil (g)	16.42	10.95		16.33	13.42	
Water Content (% of dry wt.)	15.9%	16.1%		23.9%	24.2%	
Number of Blows				25	25	

Plastic Limit : 16 **Liquid Limit : 24**

Plasticity Index : 8
Unified Soil Classification : CL
Requirement:
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

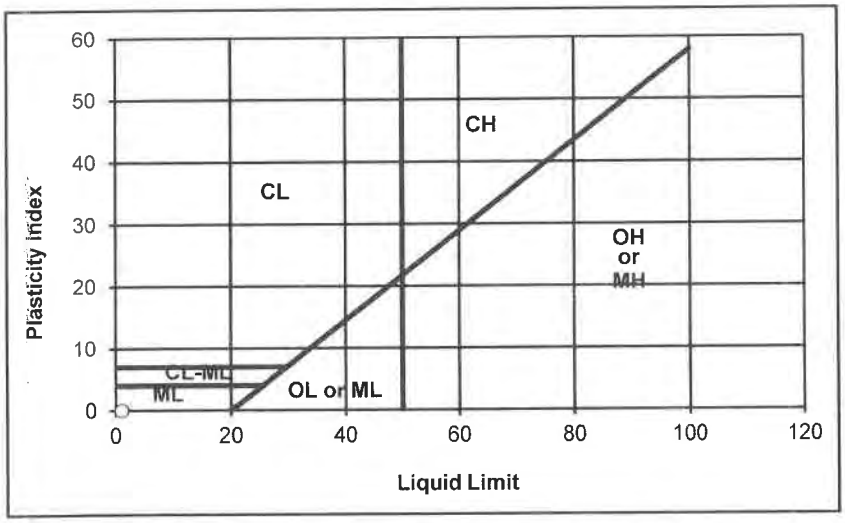
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B19 @ 25-26'
Sample Description: SM w/ trace of clay

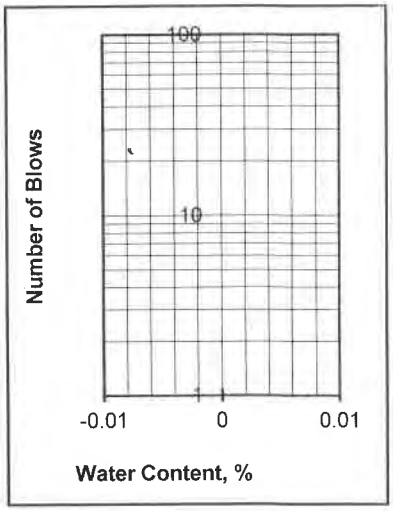
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

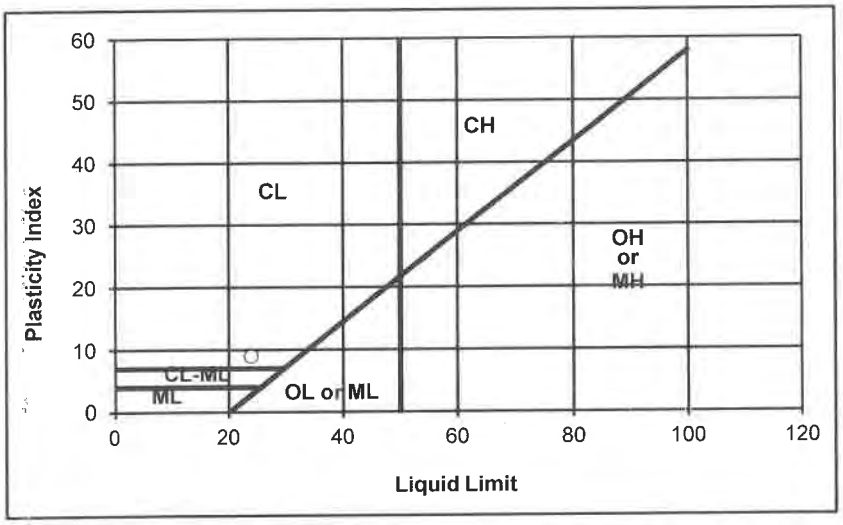
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B19 @ 30-31'
Sample Description: SC

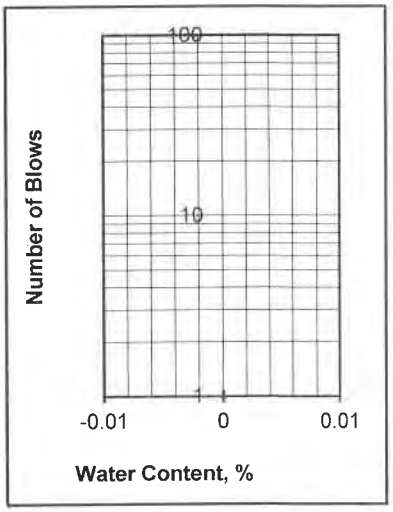
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	30.86	37.09		33.32	37.10	
Weight of Dry Soil & Tare (g)	28.99	35.19		31.04	34.44	
Weight of Tare (g)	16.46	23.02		21.47	23.29	
Weight of water (g)	1.87	1.90		2.28	2.66	
Weight of Dry Soil (g)	12.53	12.17		9.57	11.15	
Water Content (% of dry wt.)	14.9%	15.6%		23.8%	23.9%	
Number of Blows				25	25	

Plastic Limit : 15 **Liquid Limit : 24**

Plasticity Index : 9
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

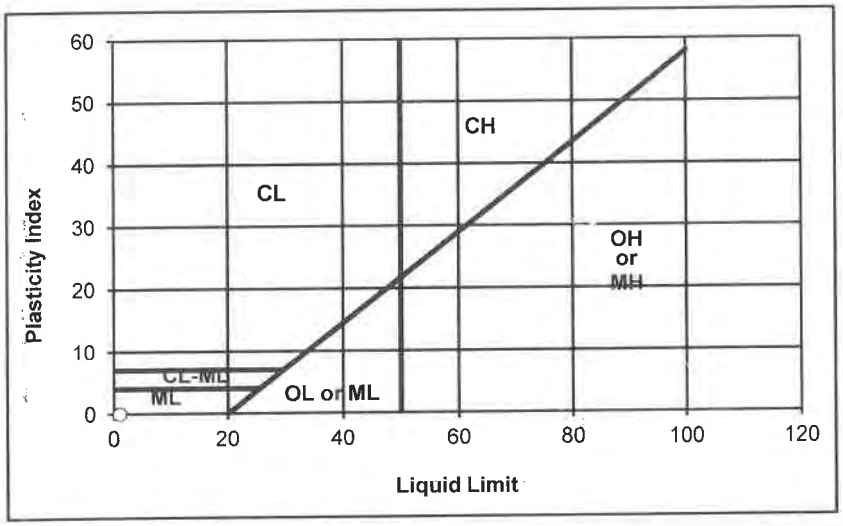
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B19 @ 35-36'
Sample Description: SM/ML

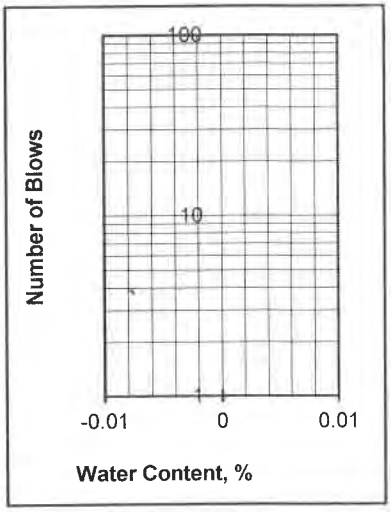
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

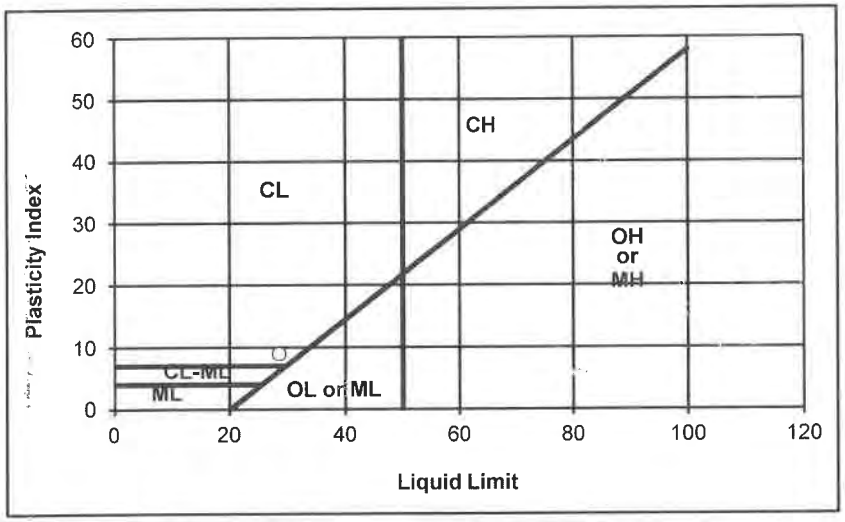
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B20 @ 15-16'
Sample Description: CL

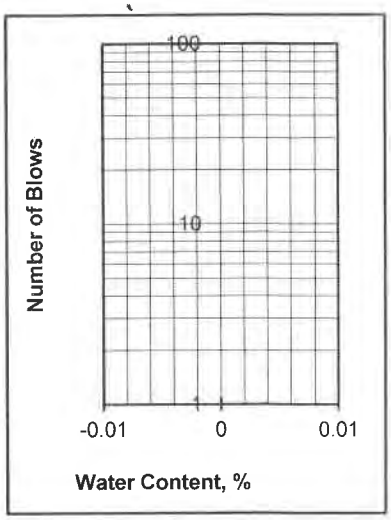
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	40.20	36.80		38.22	40.39	
Weight of Dry Soil & Tare (g)	37.60	34.76		34.65	36.14	
Weight of Tare (g)	24.03	24.06		22.13	21.22	
Weight of water (g)	2.60	2.04		3.57	4.25	
Weight of Dry Soil (g)	13.57	10.70		12.52	14.92	
Water Content (% of dry wt.)	19.2%	19.1%		28.5%	28.5%	
Number of Blows				25	25	

Plastic Limit : 19 **Liquid Limit : 28**

Plasticity Index : 9
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

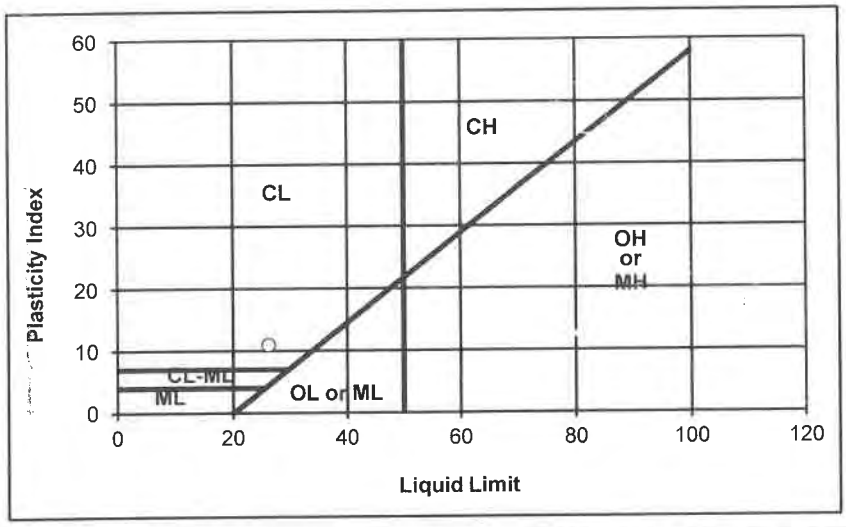
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B20 @ 20-21'
Sample Description: CL

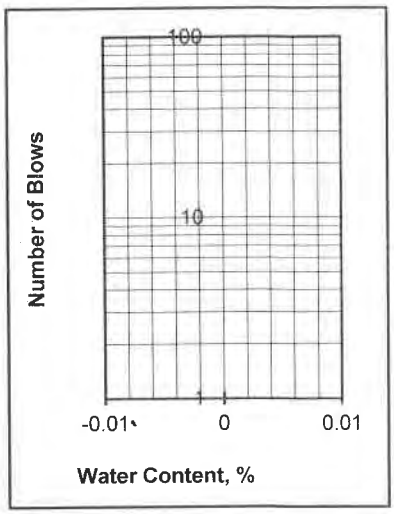
Date Tested: 4/28/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	40.05	43.85		38.81	36.58	
Weight of Dry Soil & Tare (g)	37.97	41.30		35.69	33.12	
Weight of Tare (g)	24.29	24.29		23.75	19.94	
Weight of water (g)	2.08	2.55		3.12	3.46	
Weight of Dry Soil (g)	13.68	17.01		11.94	13.18	
Water Content (% of dry wt.)	15.2%	15.0%		26.1%	26.3%	
Number of Blows				25	25	

Plastic Limit : 15 **Liquid Limit : 26**

Plasticity Index : 11
Unified Soil Classification : CL
Requirement:
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

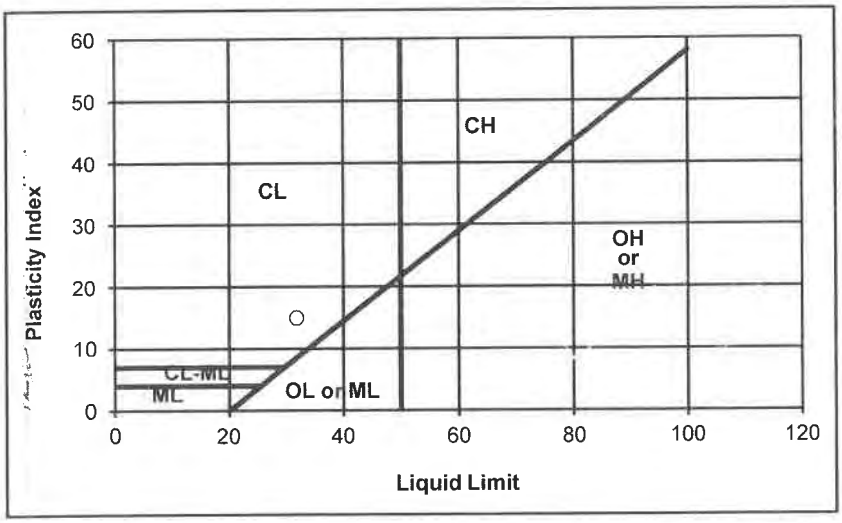
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B21 @ 12.5-13.5'
Sample Description: CL

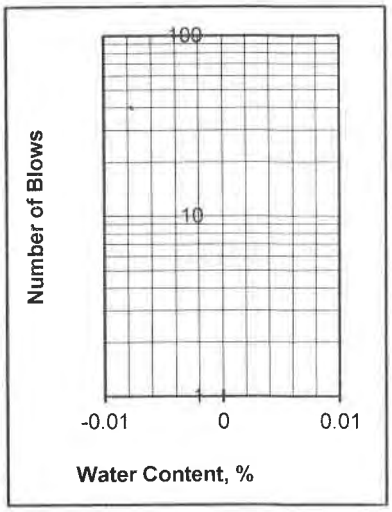
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	32.34	37.57		38.83	40.28	
Weight of Dry Soil & Tare (g)	30.14	35.43		35.03	35.76	
Weight of Tare (g)	16.87	22.74		23.27	21.37	
Weight of water (g)	2.20	2.14		3.80	4.52	
Weight of Dry Soil (g)	13.27	12.69		11.76	14.39	
Water Content (% of dry wt.)	16.6%	16.9%		32.3%	31.4%	
Number of Blows				25	25	

Plastic Limit : 17 **Liquid Limit : 32**

Plasticity Index : 15
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

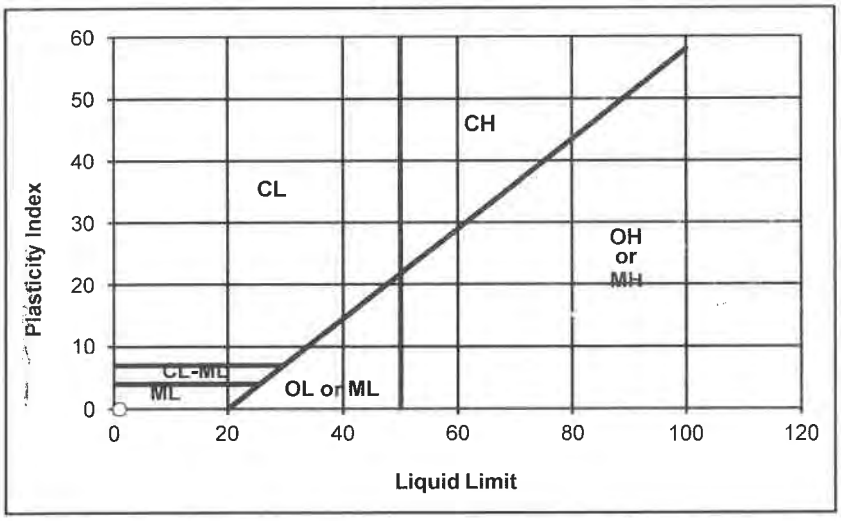
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B21 @ 25-26'
Sample Description: SM w/ clay

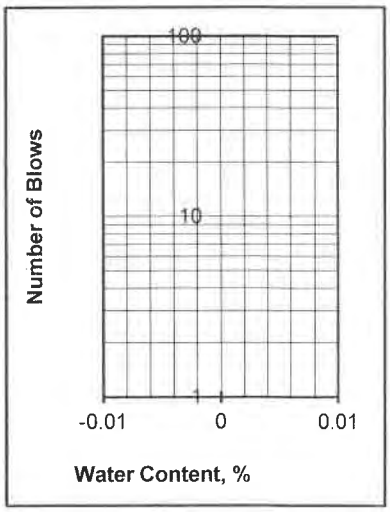
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

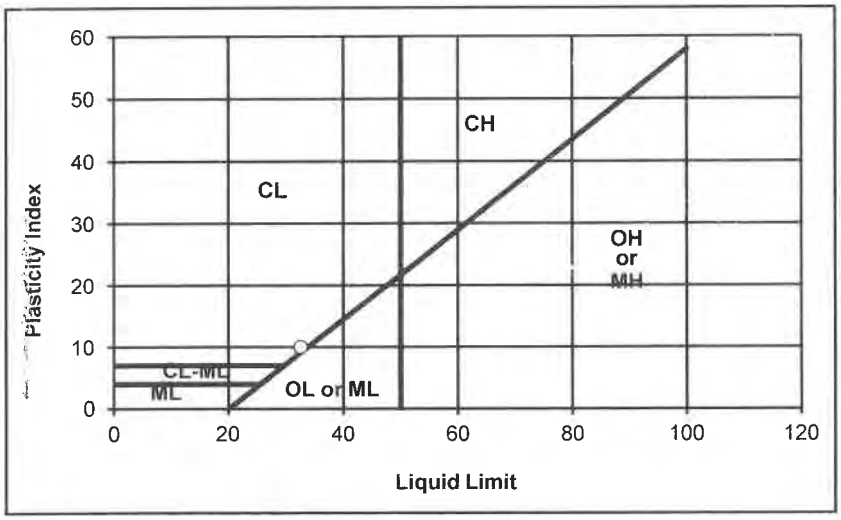
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B21 @ 30-31'
Sample Description: CL

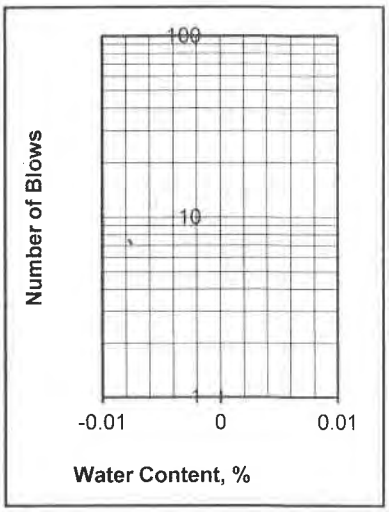
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	40.99	39.90		29.89	39.12	
Weight of Dry Soil & Tare (g)	37.40	36.89		26.17	35.20	
Weight of Tare (g)	21.97	23.29		14.72	23.21	
Weight of water (g)	3.59	3.01		3.72	3.92	
Weight of Dry Soil (g)	15.43	13.60		11.45	11.99	
Water Content (% of dry wt.)	23.3%	22.1%		32.5%	32.7%	
Number of Blows				25	25	

Plastic Limit : 23 **Liquid Limit : 33**

Plasticity Index : 10
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

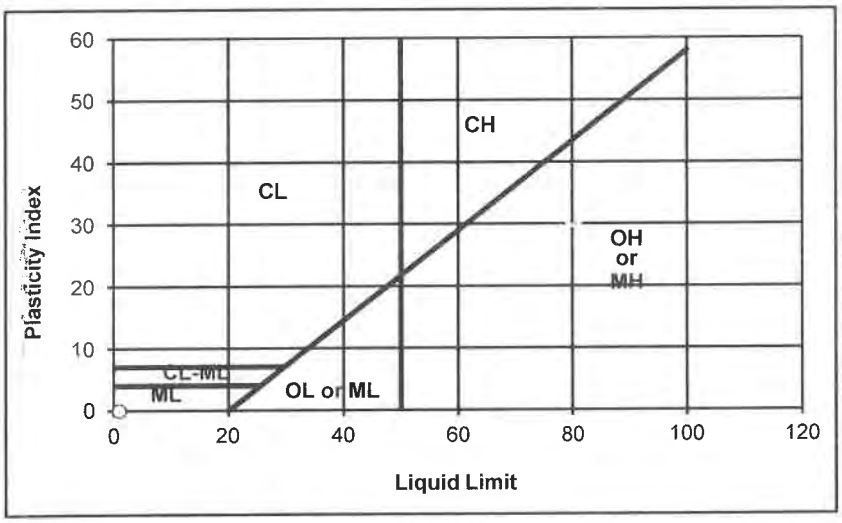
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B22 @ 2-3'
Sample Description: SM

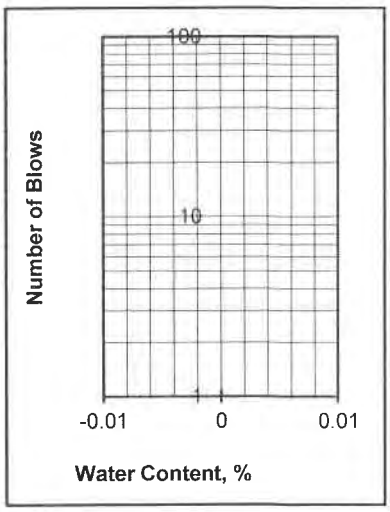
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

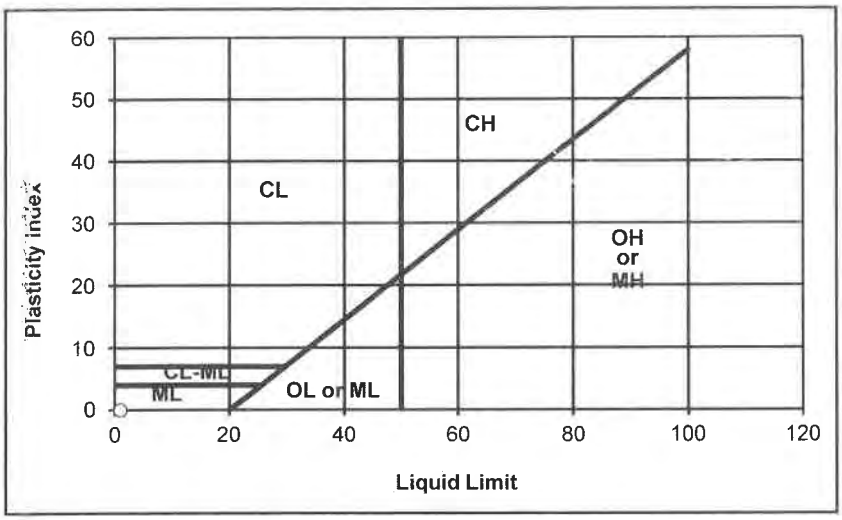
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B22 @ 5-6'
Sample Description: SM

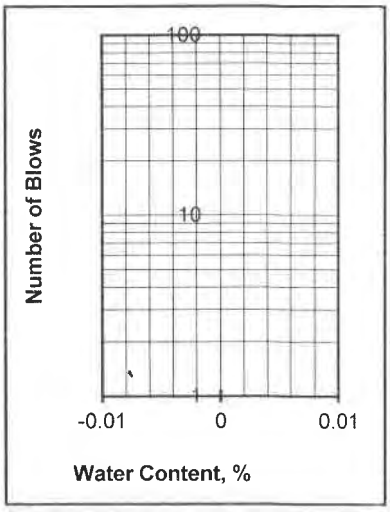
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

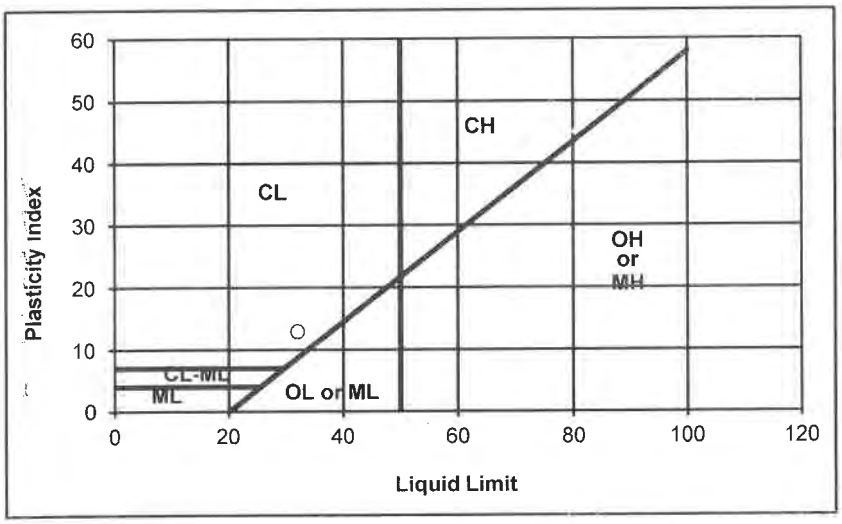
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B22 @ 10-11'
Sample Description: SC

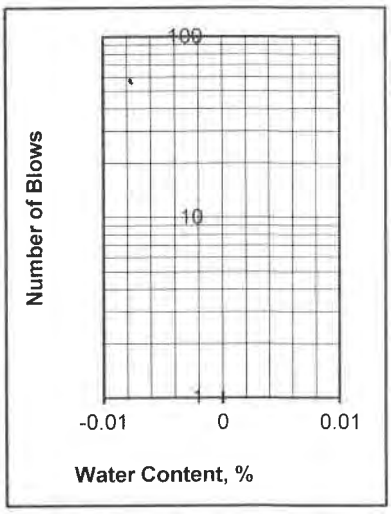
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	25.83	28.37		39.03	36.05	
Weight of Dry Soil & Tare (g)	24.87	27.49		34.65	32.07	
Weight of Tare (g)	19.83	22.79		20.99	19.68	
Weight of water (g)	0.96	0.88		4.38	3.98	
Weight of Dry Soil (g)	5.04	4.70		13.66	12.39	
Water Content (% of dry wt.)	19.0%	18.7%		32.1%	32.1%	
Number of Blows				25	25	

Plastic Limit : 19 **Liquid Limit : 32**

Plasticity Index : 13
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

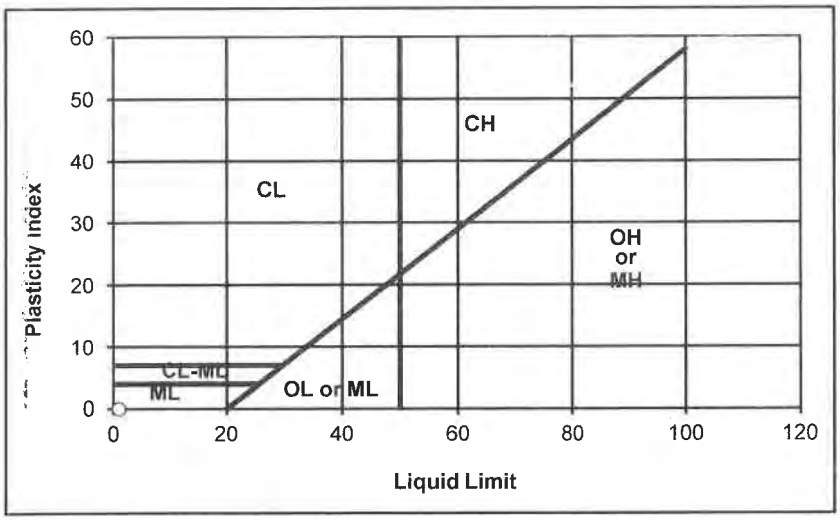
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B22 @ 15-16'
Sample Description: SM

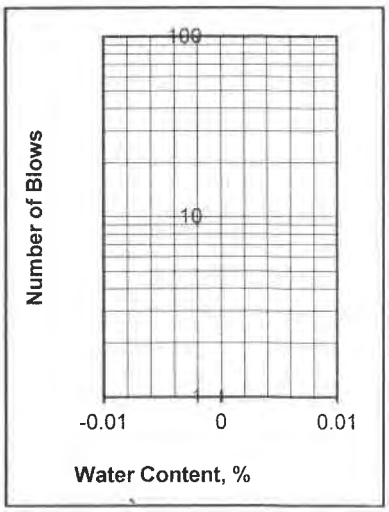
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

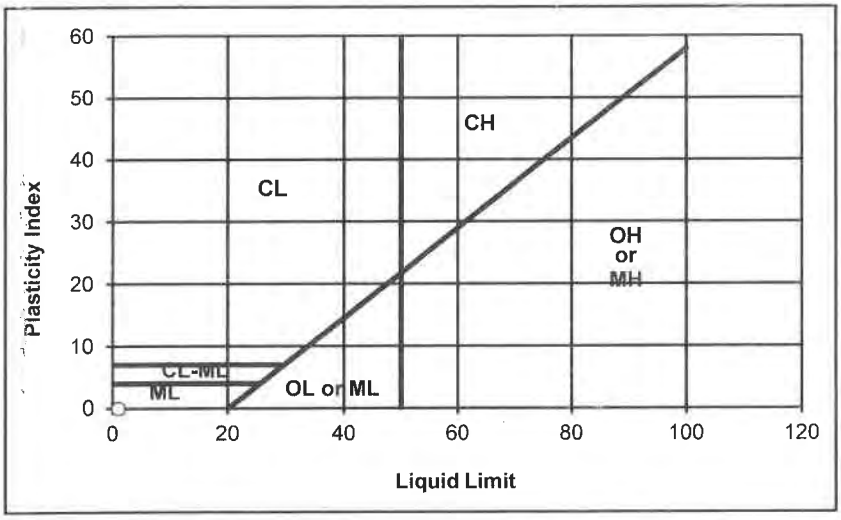
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B23 @ 5-6'
Sample Description: SM

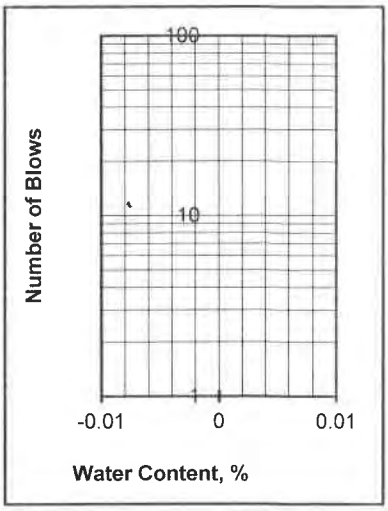
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

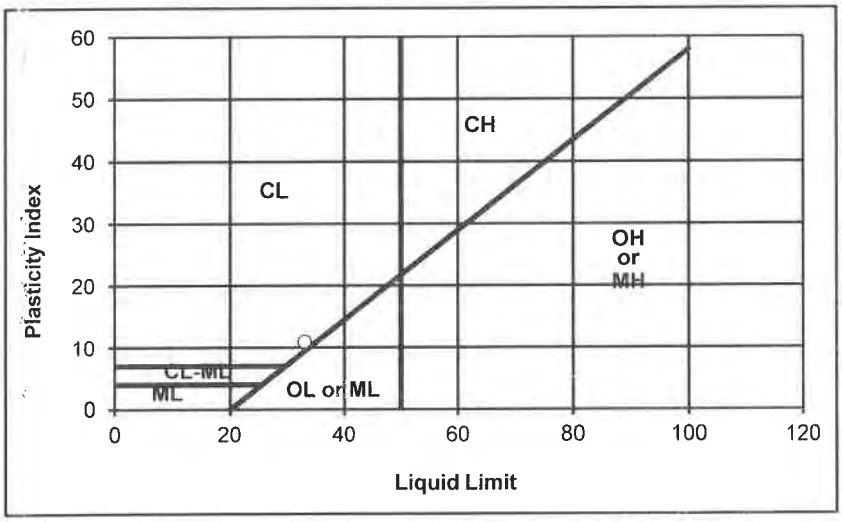
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B23 @ 7.5-8.5'
Sample Description: CL

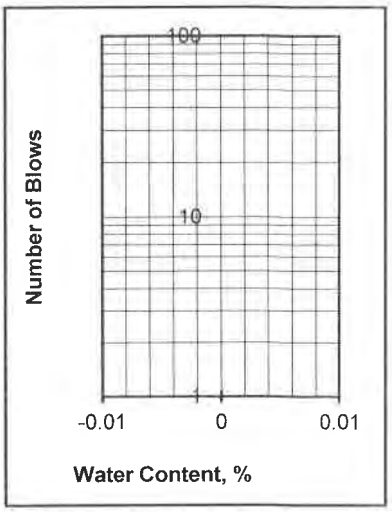
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	35.41	39.90		37.35	45.00	
Weight of Dry Soil & Tare (g)	32.56	36.79		33.14	38.69	
Weight of Tare (g)	19.83	22.81		20.34	19.66	
Weight of water (g)	2.85	3.11		4.21	6.31	
Weight of Dry Soil (g)	12.73	13.98		12.80	19.03	
Water Content (% of dry wt.)	22.4%	22.2%		32.9%	33.2%	
Number of Blows				25	25	

Plastic Limit : 22 **Liquid Limit : 33**

Plasticity Index : 11
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

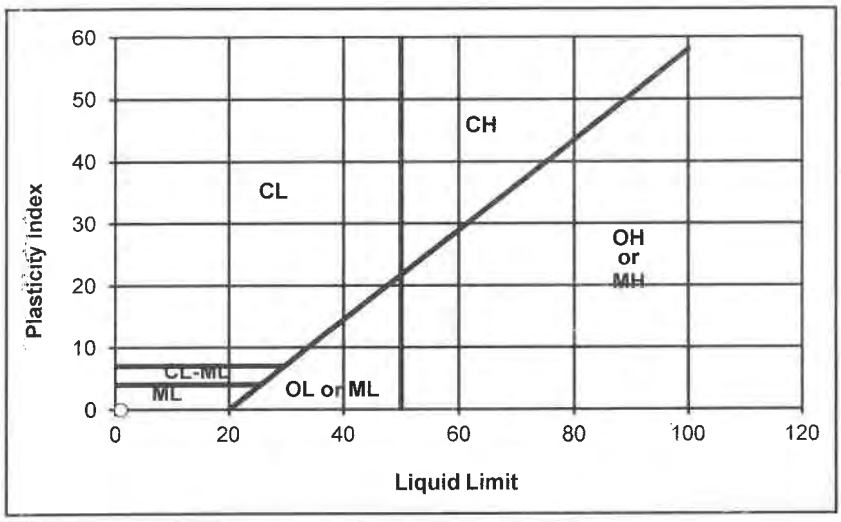
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B23 @ 15-16'
Sample Description: ML

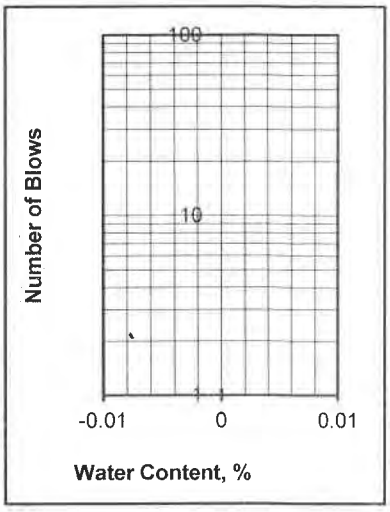
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

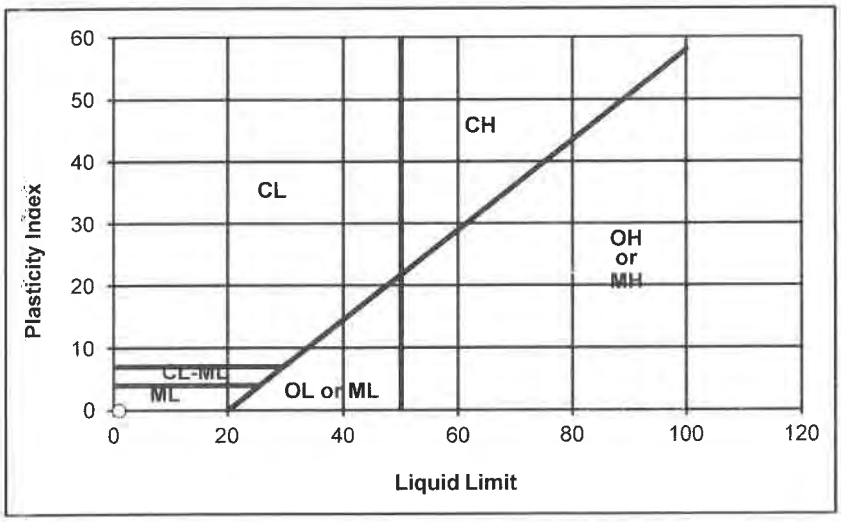
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B23 @ 20-21'
Sample Description: SM/ML

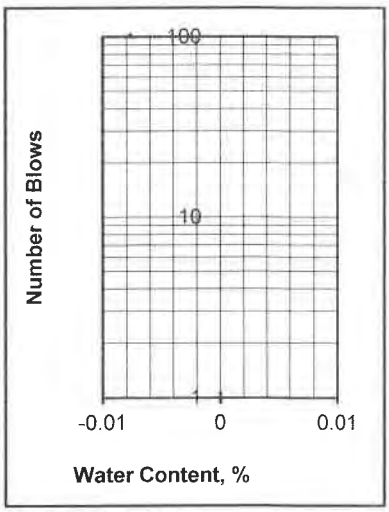
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

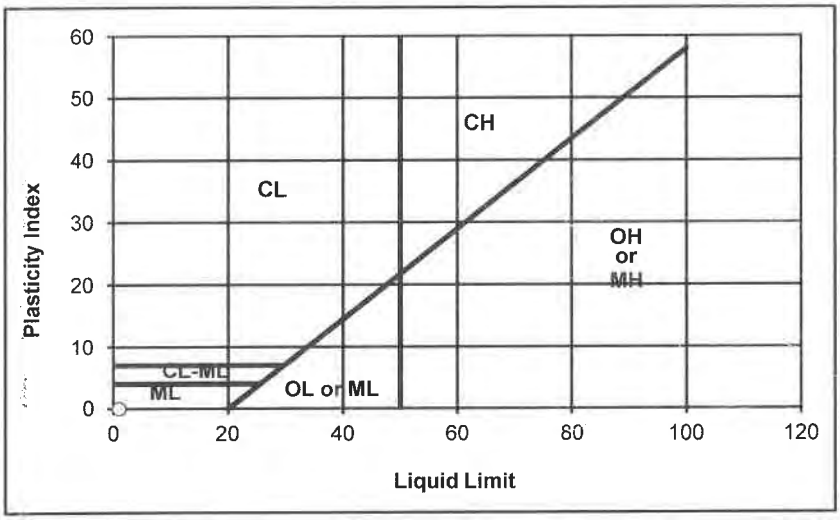
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B24 @ 5-6'
Sample Description: SM w/ clay

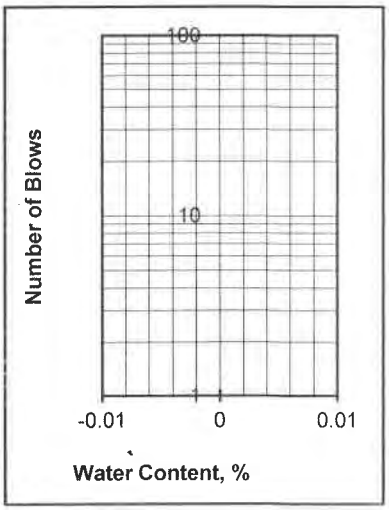
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

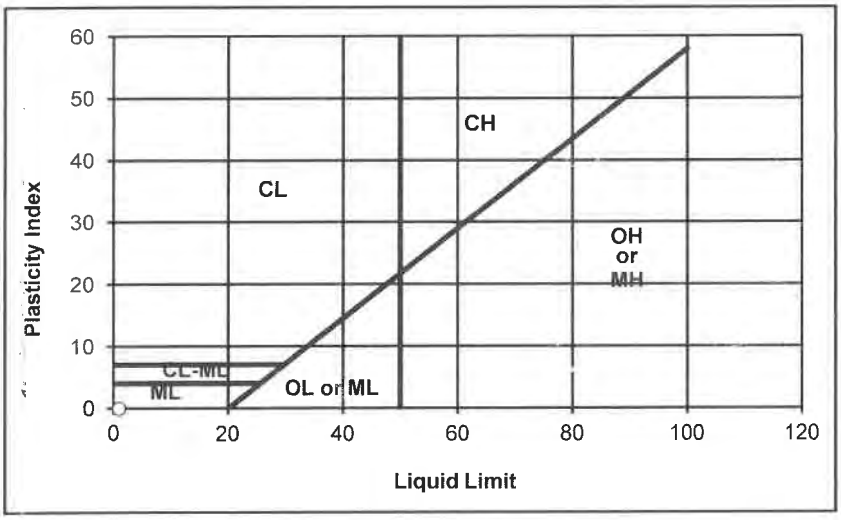
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B24 @ 10-11'
Sample Description: SM

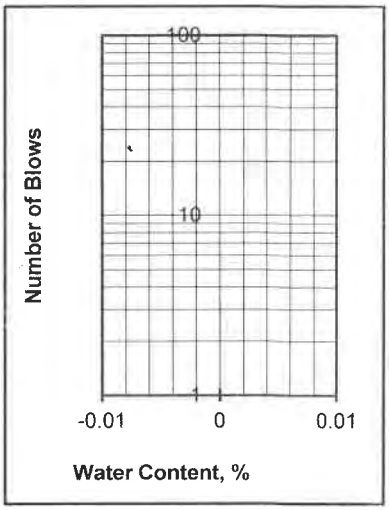
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

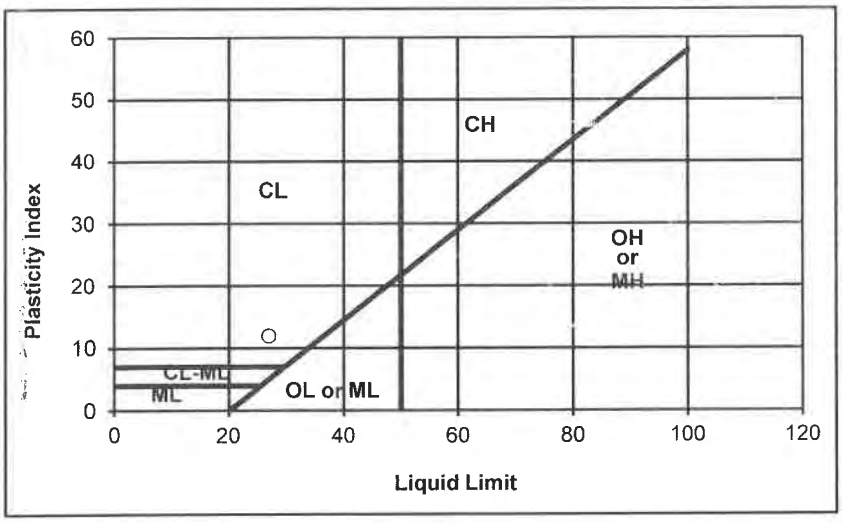
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B24 @ 15-16'
Sample Description: CL

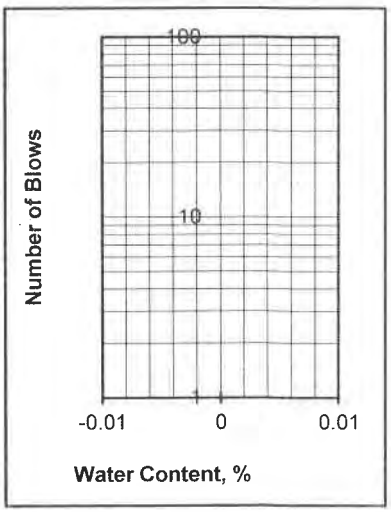
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	36.77	29.00		31.63	41.90	
Weight of Dry Soil & Tare (g)	34.81	28.25		28.05	37.95	
Weight of Tare (g)	21.96	23.24		14.75	23.30	
Weight of water (g)	1.96	0.75		3.58	3.95	
Weight of Dry Soil (g)	12.85	5.01		13.30	14.65	
Water Content (% of dry wt.)	15.3%	15.0%		26.9%	27.0%	
Number of Blows				25	25	

Plastic Limit : 15 **Liquid Limit : 27**

Plasticity Index : 12
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

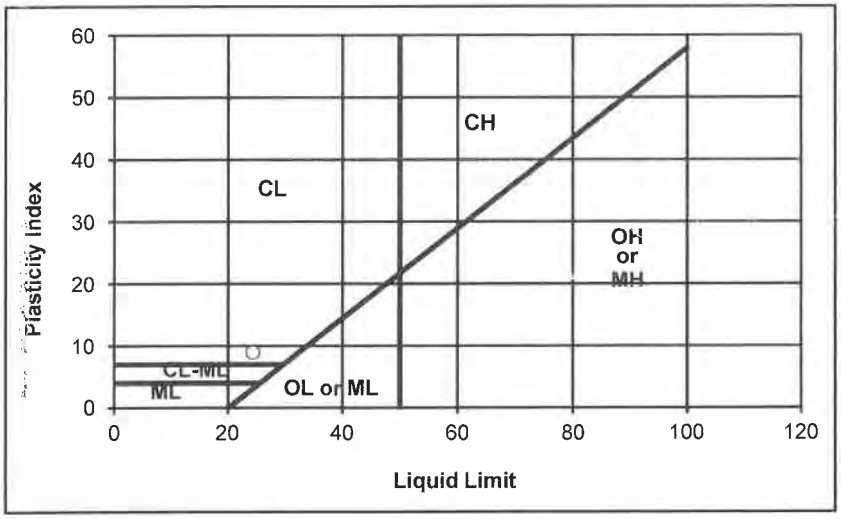
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B24 @ 20-21'
Sample Description: SC/CL

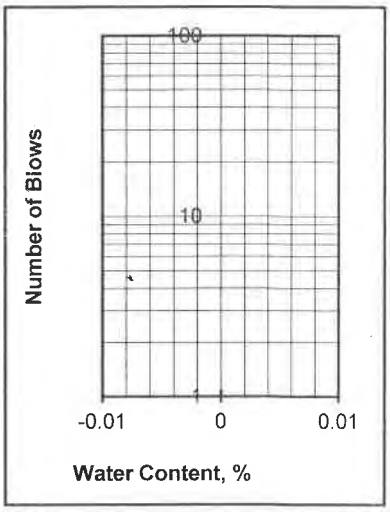
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	35.08	39.11		35.90	39.24	
Weight of Dry Soil & Tare (g)	33.68	37.21		32.21	35.55	
Weight of Tare (g)	24.37	24.31		17.19	20.20	
Weight of water (g)	1.40	1.90		3.69	3.69	
Weight of Dry Soil (g)	9.31	12.90		15.02	15.35	
Water Content (% of dry wt.)	15.0%	14.7%		24.6%	24.0%	
Number of Blows				25	25	

Plastic Limit : 15 **Liquid Limit : 24**

Plasticity Index : 9
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

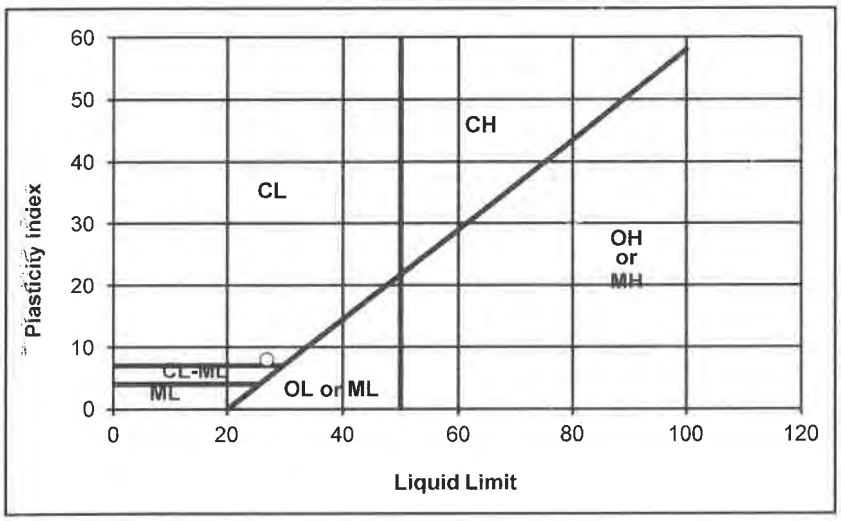
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B24 @ 25-26'
Sample Description: SC

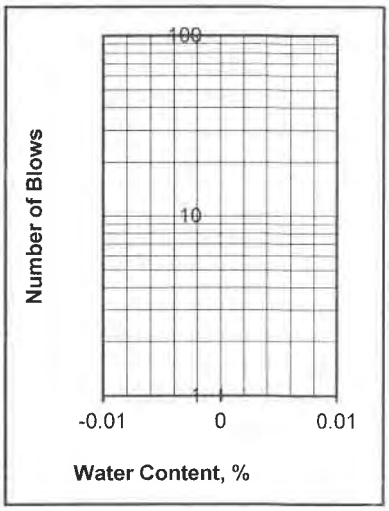
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	40.60	45.86		34.48	36.26	
Weight of Dry Soil & Tare (g)	37.94	42.41		31.95	33.14	
Weight of Tare (g)	24.07	24.07		22.56	21.46	
Weight of water (g)	2.66	3.45		2.53	3.12	
Weight of Dry Soil (g)	13.87	18.34		9.39	11.68	
Water Content (% of dry wt.)	19.2%	18.8%		26.9%	26.7%	
Number of Blows				25	25	

Plastic Limit : 19 **Liquid Limit : 27**

Plasticity Index : 8
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

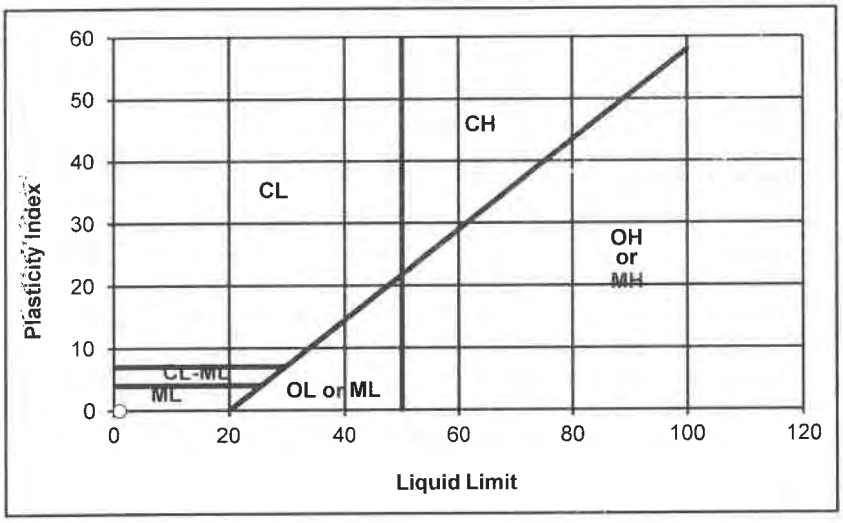
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B24 @ 30-31'
Sample Description: SM

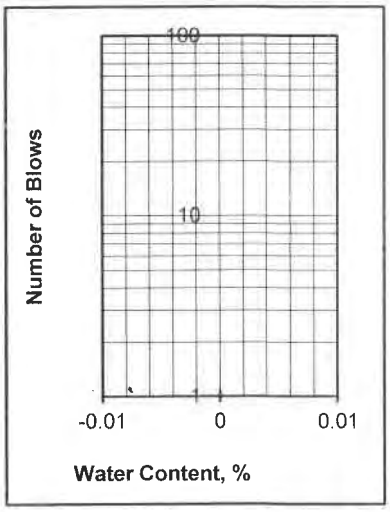
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

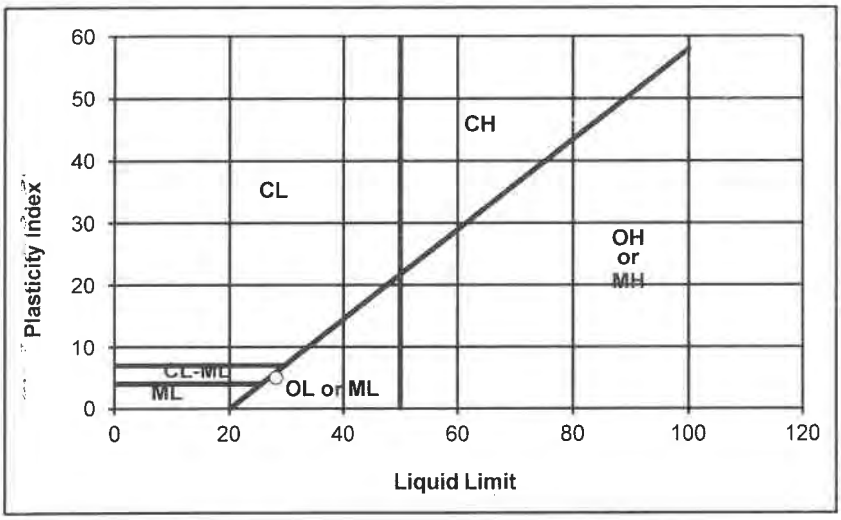
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B24 @ 35-36'
Sample Description: ML

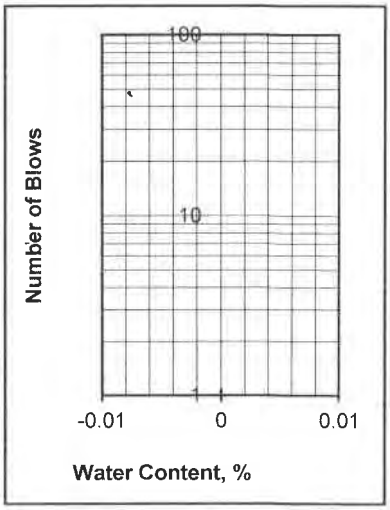
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	35.85	40.88		37.30	36.71	
Weight of Dry Soil & Tare (g)	33.70	37.83		33.54	32.45	
Weight of Tare (g)	24.35	24.31		20.19	17.35	
Weight of water (g)	2.15	3.05		3.76	4.26	
Weight of Dry Soil (g)	9.35	13.52		13.35	15.10	
Water Content (% of dry wt.)	23.0%	22.6%		28.2%	28.2%	
Number of Blows				25	25	

Plastic Limit : 23 **Liquid Limit : 28**

Plasticity Index : 5
Unified Soil Classification : ML or OL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

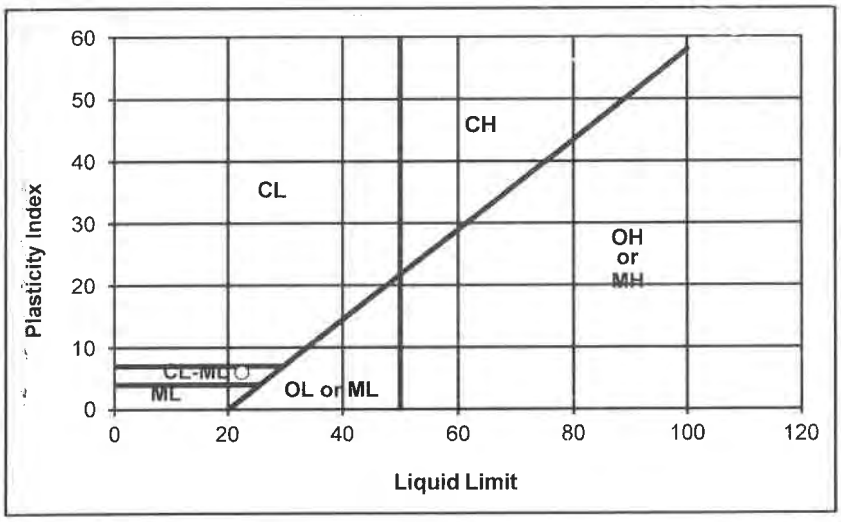
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B25 @ 2-3'
Sample Description: SC/SM

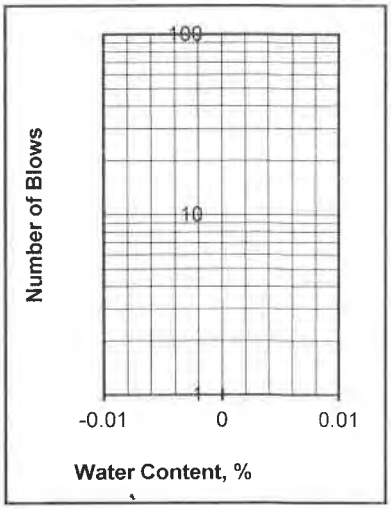
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	39.30	37.70		39.16	39.32	
Weight of Dry Soil & Tare (g)	36.72	35.65		35.64	35.82	
Weight of Tare (g)	19.80	22.80		20.27	19.73	
Weight of water (g)	2.58	2.05		3.52	3.50	
Weight of Dry Soil (g)	16.92	12.85		15.37	16.09	
Water Content (% of dry wt.)	15.2%	16.0%		22.9%	21.8%	
Number of Blows				25	25	

Plastic Limit : 16 **Liquid Limit : 22**

Plasticity Index : 6
Unified Soil Classification : CL-ML **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

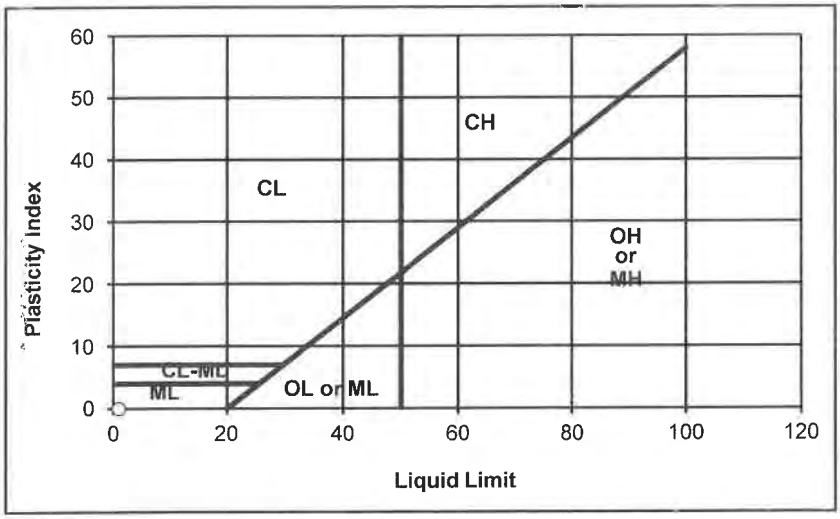
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B25 @ 12.5-13.5'
Sample Description: SM

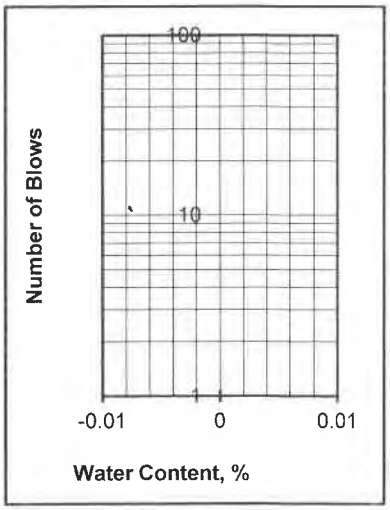
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

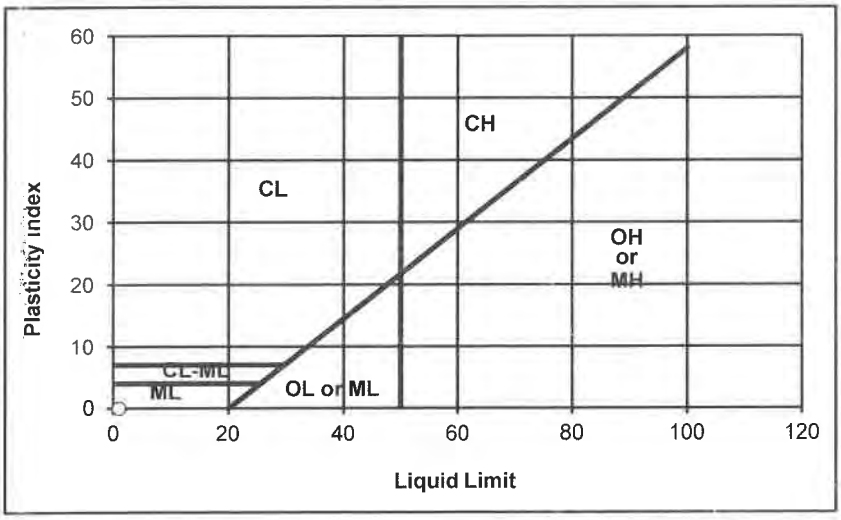
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B25 @ 20-21'
Sample Description: SM w/ trace of clay

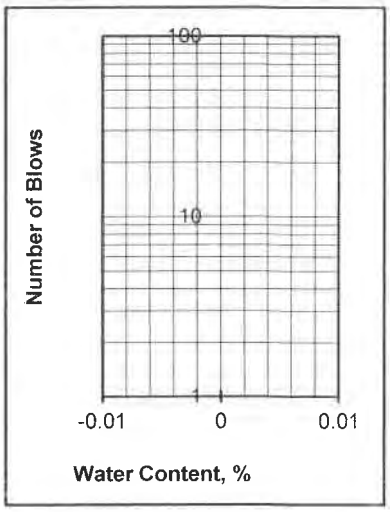
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

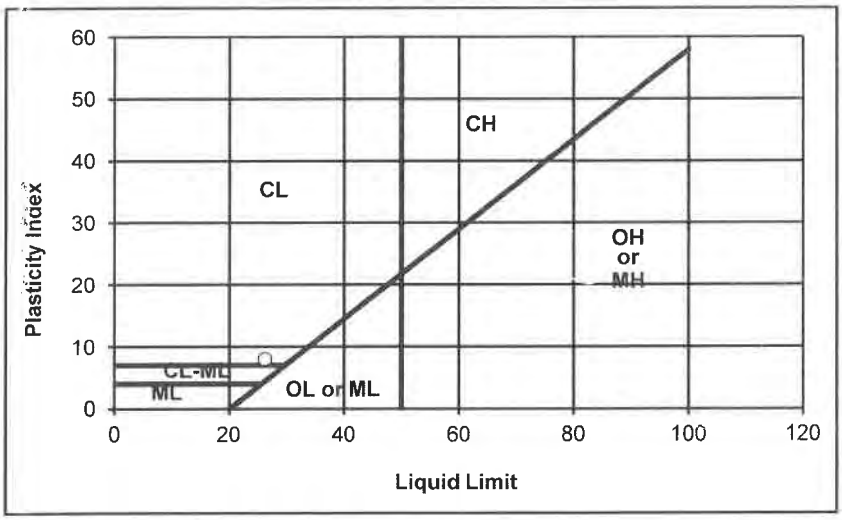
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B25 @ 30-31'
Sample Description: SC/CL

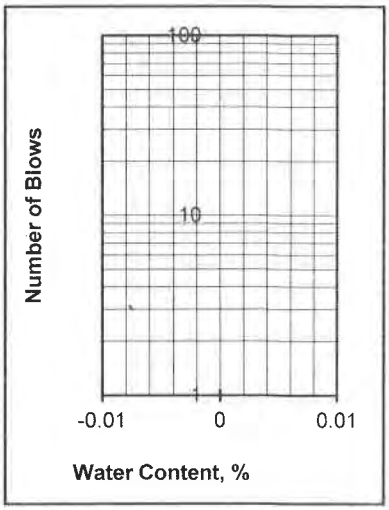
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	44.47	46.28		38.70	39.26	
Weight of Dry Soil & Tare (g)	41.40	42.82		34.34	35.27	
Weight of Tare (g)	24.36	24.32		17.40	20.22	
Weight of water (g)	3.08	3.45		4.36	3.99	
Weight of Dry Soil (g)	17.04	18.50		16.95	15.05	
Water Content (% of dry wt.)	18.1%	18.7%		25.7%	26.5%	
Number of Blows				25	25	

Plastic Limit : 18 **Liquid Limit : 26**

Plasticity Index : 8
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

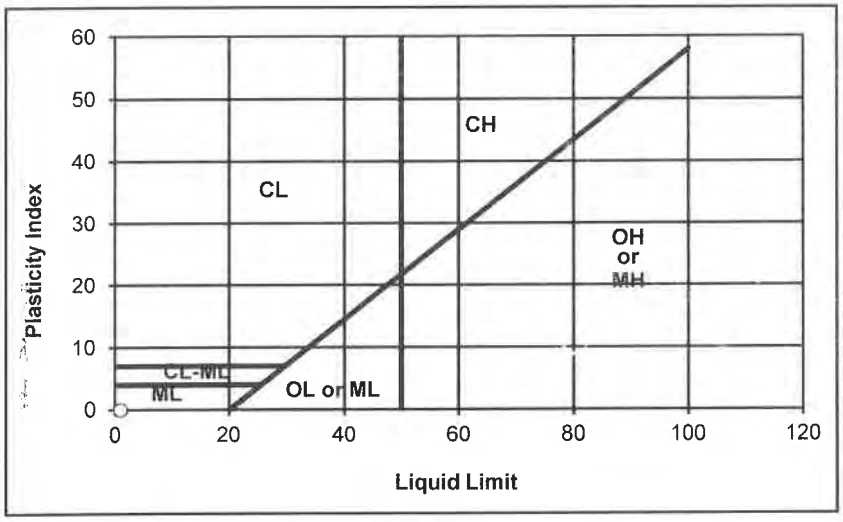
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B26 @ 5-6'
Sample Description: SM w/ trace of clay

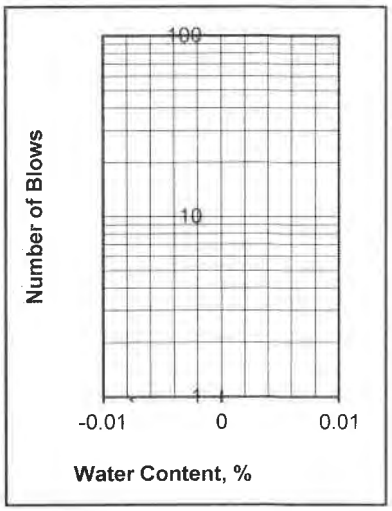
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

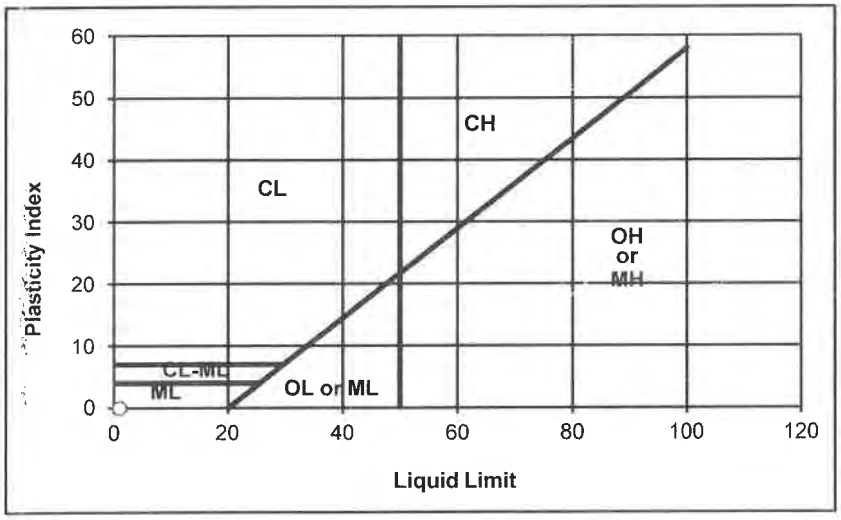
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B26 @ 12.5-13.5'
Sample Description: SM

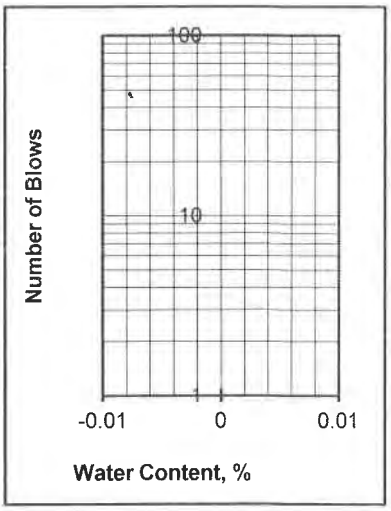
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

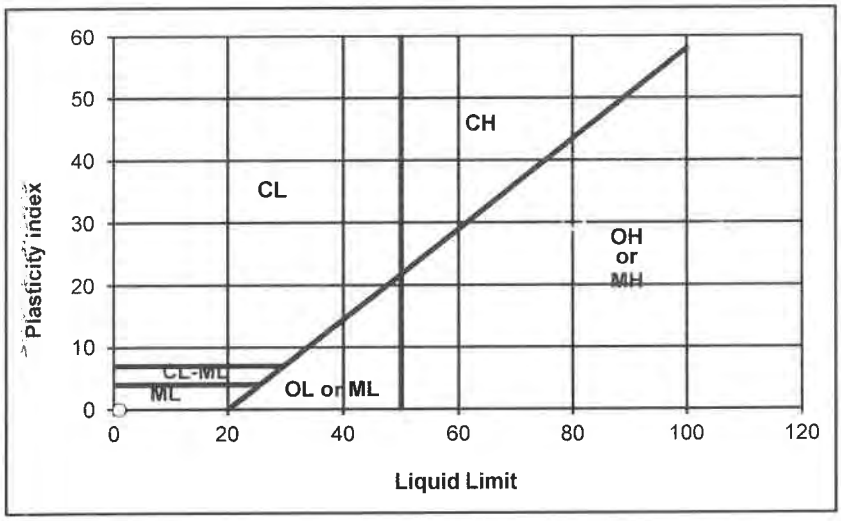
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B26 @ 20-21'
Sample Description: SM/ML w/ trace of clay

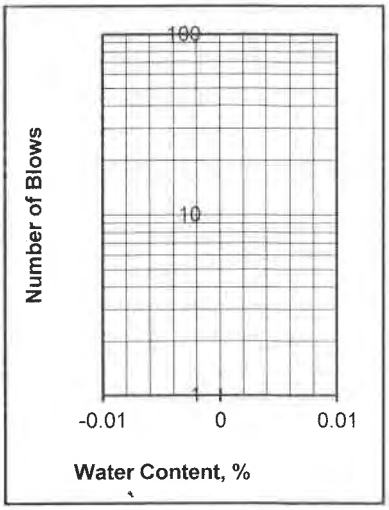
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

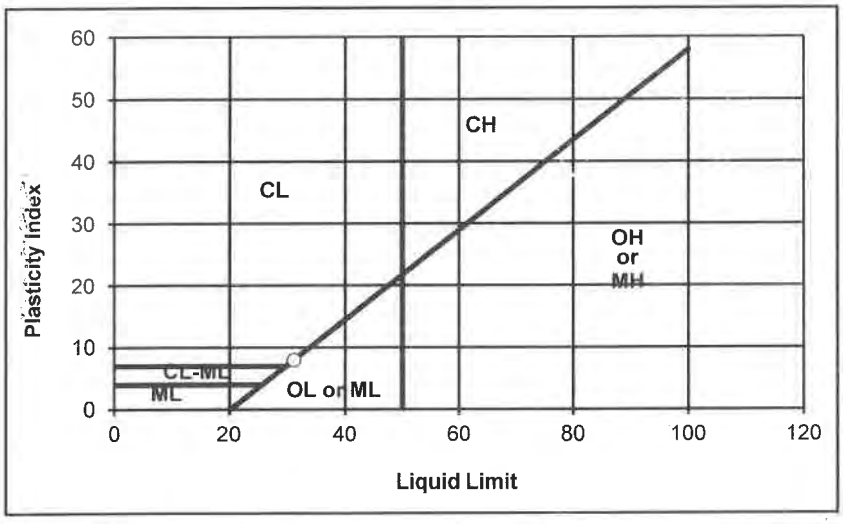
Project: **Triangle Development**
Project Number: **012-22165**
Date Sampled: 4/11/2023
Sampled By: SR
Sample Number: -
Sample Location: B26 @ 30-31'
Sample Description: SC/CL

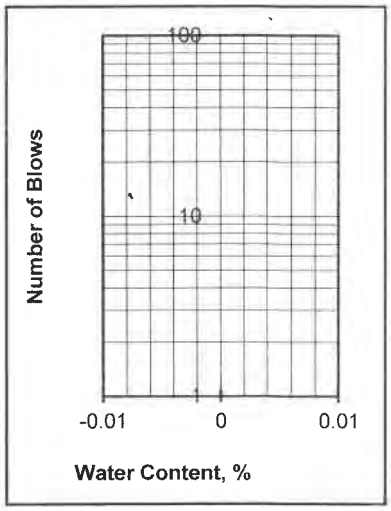
Date Tested: 5/18/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	40.69	40.85		43.81	35.12	
Weight of Dry Soil & Tare (g)	37.64	37.76		38.78	31.87	
Weight of Tare (g)	24.08	24.08		22.54	21.45	
Weight of water (g)	3.05	3.09		5.03	3.25	
Weight of Dry Soil (g)	13.56	13.68		16.23	10.42	
Water Content (% of dry wt.)	22.5%	22.6%		31.0%	31.2%	
Number of Blows				25	25	

Plastic Limit : 23 **Liquid Limit : 31**

Plasticity Index : 8
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

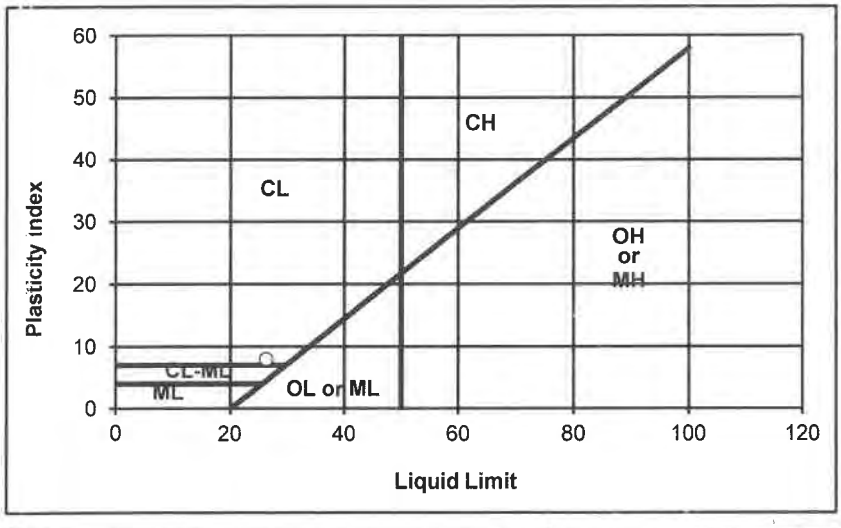
Project: **Triangle Development**
Project Number: **012-22233**
Date Sampled: 7/7/2023
Sampled By: SR / MR
Sample Number: -
Sample Location: B30 @ 5-6'
Sample Description: SC

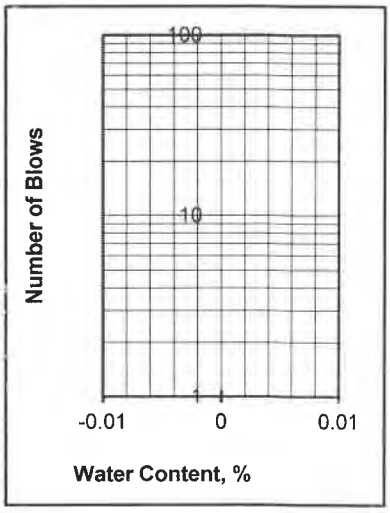
Date Tested: 7/17/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	41.22	39.42		31.42	39.40	
Weight of Dry Soil & Tare (g)	38.70	37.15		28.13	35.39	
Weight of Tare (g)	24.35	24.37		15.57	20.09	
Weight of water (g)	2.52	2.27		3.29	4.01	
Weight of Dry Soil (g)	14.35	12.78		12.56	15.30	
Water Content (% of dry wt.)	17.6%	17.8%		26.2%	26.2%	
Number of Blows				25	25	

Plastic Limit : 18 **Liquid Limit : 26**

Plasticity Index : 8
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

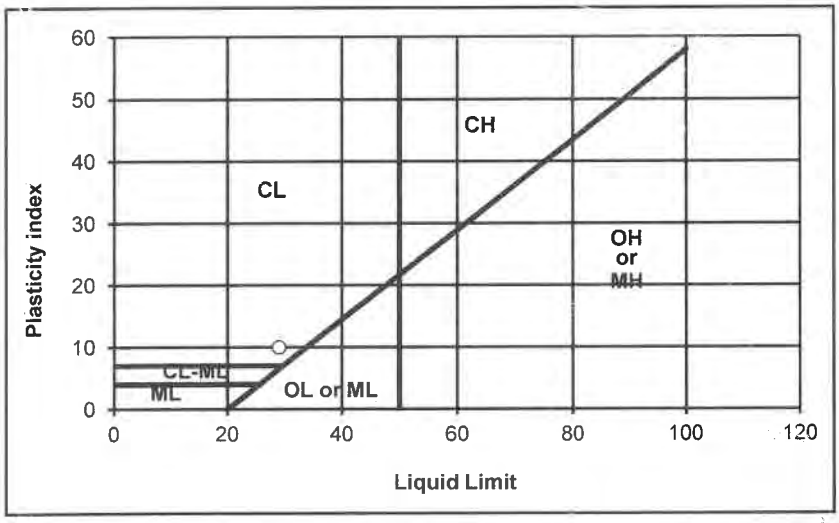
Project: **Triangle Development**
Project Number: **012-22233**
Date Sampled: 7/7/2023
Sampled By: SR / MR
Sample Number: -
Sample Location: B30 @ 7.5-8.5'
Sample Description: SC/CL

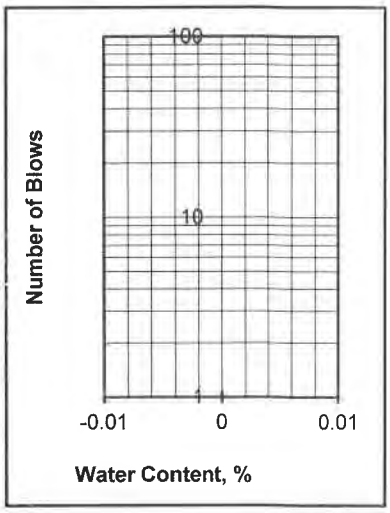
Date Tested: 7/17/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	45.05	46.36		35.09	29.88	
Weight of Dry Soil & Tare (g)	41.67	42.74		32.25	27.90	
Weight of Tare (g)	24.20	24.17		22.27	21.19	
Weight of water (g)	3.38	3.62		2.84	1.98	
Weight of Dry Soil (g)	17.47	18.57		9.98	6.71	
Water Content (% of dry wt.)	19.3%	19.5%		28.5%	29.5%	
Number of Blows				25	25	

Plastic Limit : 19 **Liquid Limit : 29**

Plasticity Index : 10
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number : 012-22165
Project Name : Triangle Development
Date : 9/16/2022
Sample Number : -
Sample Location : B1 @ 12-13'
Soil Classification : SM/ML

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	105.5	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	19.0	Initial Length,cm	7.11	% Passing # 200	52.9
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (**B** Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	4:45	5:08	0.34	1.82	9.78	8.30	23.4	21.2	24.4
2	5:08	5:20	1.82	2.54	8.30	7.56	23.4	21.2	24.4
3	5:20	5:45	2.54	3.94	7.56	6.18	23.4	21.2	24.4
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	1380	0.89319	7.7E-06	7.691E-06
2	720	0.94055	8.0E-06	8E-06
3	1500	0.88109	7.9E-06	7.93E-06
4				
5				
6				

Permeability
7.87E-06 cm/sec
7.87E-08 m/sec

Krazan Testing Laboratory

Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number	012-22165
Project Name	Triangle Development
Date	9/19/2022
Sample Number	-
Sample Location	B1 @ 25-26'
Soil Classification	SM

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	110.0	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	16.5	Initial Length,cm	7.11	% Passing # 200	44.2
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (**B** Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	4:25	5:12	0.52	5.20	9.44	4.76	20.1	18.6	21.1
2	5:15	6:45	0.42	7.46	9.58	2.54	20.1	18.6	21.1
3									
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	2820	0.51879	2.2E-05	2.187E-05
2	5400	0.28580	2.2E-05	2.179E-05
3				
4				
5				
6				

Permeability
2.18E-05 cm/sec
2.18E-07 m/sec

Krazan Testing Laboratory

Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 9/19/2022
Sample Number	: -
Sample Location	: B1 @ 35-36'
Soil Classification	: SC/CL

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	80.4	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	36.0	Initial Length,cm	7.11	% Passing # 200	52.3
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (**B** Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	4:02	6:15	0.32	1.54	9.82	8.60	33.0	30.3	34.0
2	6:15	7:33	1.54	2.20	8.60	7.92	33.0	30.3	34.0
3									
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	7980	0.92661	9.0E-07	8.975E-07
2	4680	0.95613	9.0E-07	9.008E-07
3				
4				
5				
6				

Permeability
8.99E-07 cm/sec
8.99E-09 m/sec

Krazan Testing Laboratory

Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number : 012-22165
Project Name : Triangle Development
Date : 9/16/2022
Sample Number : -
Sample Location : B2 @ 20-21'
Soil Classification : SM

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	109.0	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	14.0	Initial Length,cm	7.11	% Passing # 200	34.5
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (**B** Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	4:50	5:19	0.32	5.84	9.78	4.24	18.2	16.6	19.2
2	5:22	6:02	0.36	7.12	9.84	3.08	18.2	16.6	19.2
3	6:05	6:36	0.24	5.96	9.66	3.94	18.2	16.6	19.2
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	1740	0.47689	4.0E-05	3.999E-05
2	2400	0.36357	4.0E-05	3.961E-05
3	1860	0.45546	4.0E-05	3.973E-05
4				
5				
6				

Permeability
3.98E-05 cm/sec
3.98E-07 m/sec

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Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number : 012-22165
Project Name : Triangle Development
Date : 9/21/2022
Sample Number : -
Sample Location : B3 @ 10-11'
Soil Classification : SM

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	114.0	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	12.0	Initial Length,cm	7.11	% Passing # 200	38.6
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (**B** Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	4:30	4:58	0.20	3.84	9.86	6.24	17.5	15.9	18.5
2	5:01	5:40	0.54	5.12	9.72	5.14	17.5	15.9	18.5
3	5:43	6:20	0.18	4.66	9.74	5.26	17.5	15.9	18.5
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	1680	0.66037	2.3E-05	2.321E-05
2	2340	0.56336	2.3E-05	2.304E-05
3	2220	0.57656	2.3E-05	2.331E-05
4				
5				
6				

Permeability
2.32E-05 cm/sec
2.32E-07 m/sec

Krazan Testing Laboratory

Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 9/21/2022
Sample Number	: -
Sample Location	: B3 @ 17-18'
Soil Classification	: SM/SP

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	110.0	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	11.0	Initial Length,cm	7.11	% Passing # 200	13.5
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (**B** Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	4:20	4:36	0.24	7.12	9.86	2.98	16.0	14.5	17.0
2	4:39	5:05	0.18	8.46	9.84	1.56	16.0	14.5	17.0
3							16.0	14.5	17.0
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	960	0.31991	1.1E-04	0.0001116
2	1560	0.18125	1.0E-04	0.0001029
3				
4				
5				
6				

Permeability
1.07E-04 cm/sec
1.07E-06 m/sec

Krazan Testing Laboratory

Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number	012-22165
Project Name	Triangle Development
Date	9/23/2022
Sample Number	-
Sample Location	B3 @ 20-21'
Soil Classification	SC

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	118.0	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	11.0	Initial Length,cm	7.11	% Passing # 200	31.6
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (**B** Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	5:07	5:29	0.22	3.12	9.86	6.94	24.3	22.1	25.3
2	5:29	6:06	3.12	6.84	6.94	3.32	24.3	22.1	25.3
3	6:08	6:43	1.16	5.44	9.64	5.36	24.3	22.1	25.3
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	1320	0.79090	1.7E-05	1.67E-05
2	2220	0.66988	1.7E-05	1.696E-05
3	2100	0.68471	1.7E-05	1.695E-05
4				
5				
6				

Permeability
1.69E-05 cm/sec
1.69E-07 m/sec

Krazan Testing Laboratory

Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 9/23/2022
Sample Number	: -
Sample Location	: B3 @ 25-26'
Soil Classification	: SM

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	120.1	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	11.0	Initial Length,cm	7.11	% Passing # 200	20.7
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (**B** Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	4:45	5:06	0.20	6.92	9.76	3.04	18.0	16.5	19.0
2	5:09	5:28	0.24	6.64	9.84	3.44	18.0	16.5	19.0
3	5:30	5:52	0.16	7.12	9.82	2.86	18.0	16.5	19.0
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	1260	0.33104	8.2E-05	8.245E-05
2	1140	0.36637	8.3E-05	8.277E-05
3	1320	0.31098	8.3E-05	8.315E-05
4				
5				
6				

Permeability
8.28E-05 cm/sec
8.28E-07 m/sec

Krazan Testing Laboratory

Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 9/30/2022
Sample Number	: -
Sample Location	: B3 @ 35-36'
Soil Classification	: SM

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	100.2	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	18.0	Initial Length,cm	7.11	% Passing # 200	36.7
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (**B** Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	5:15	5:38	0.26	5.14	9.78	4.90	17.9	16.4	18.9
2	5:41	6:13	0.40	6.38	9.56	3.58	17.9	16.4	18.9
3									
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	1380	0.51437	4.5E-05	4.527E-05
2	1920	0.39261	4.6E-05	4.576E-05
3				
4				
5				
6				

Permeability
4.55E-05 cm/sec
4.55E-07 m/sec

Krazan Testing Laboratory

Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 9/26/2022
Sample Number	: -
Sample Location	: B4 @ 5-6'
Soil Classification	: SM/SC

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	123.9	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	6.1	Initial Length,cm	7.11	% Passing # 200	--
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (**B** Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	6:10	6:50	0.24	3.78	9.68	6.14	22.5	19.7	23.5
2	6:50	7:23	3.78	6.12	6.14	3.80	22.5	19.7	23.5
3									
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	2400	0.79269	9.1E-06	9.096E-06
2	1980	0.82713	9.0E-06	9.007E-06
3				
4				
5				
6				

Permeability
9.05E-06 cm/sec
9.05E-08 m/sec

Krazan Testing Laboratory

Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 9/28/2022
Sample Number	: -
Sample Location	: B4 @ 10-11
Soil Classification	: SC/CL

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	119.0	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	14.0	Initial Length,cm	7.11	% Passing # 200	46.2
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (**B** Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	5:30	6:54	0.20	1.62	9.84	8.44	31.5	26.4	32.5
2	6:54	7:29	1.62	2.18	8.44	7.88	31.5	26.4	32.5
3									
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	5040	0.95284	9.0E-07	9.006E-07
2	2100	0.98026	8.9E-07	8.92E-07
3				
4				
5				
6				

Permeability
8.96E-07 cm/sec
8.96E-09 m/sec

Krazan Testing Laboratory

Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 9/30/2022
Sample Number	: -
Sample Location	: B4 @ 15-16'
Soil Classification	: SM

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	116.5	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	12.5	Initial Length,cm	7.11	% Passing # 200	29.4
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (B Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	5:15	5:32	0.18	2.94	9.86	7.10	21.5	19.8	22.5
2	5:32	5:55	2.94	5.68	7.10	4.36	21.5	19.8	22.5
3	5:58	6:31	0.34	5.12	9.80	5.02	21.5	19.8	22.5
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	1020	0.75404	2.6E-05	2.601E-05
2	1380	0.67618	2.7E-05	2.664E-05
3	1980	0.57094	2.7E-05	2.66E-05
4				
5				
6				

Permeability
2.64E-05 cm/sec
2.64E-07 m/sec

Krazan Testing Laboratory

Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 9/26/2022
Sample Number	: -
Sample Location	: B4 @ 25-26'
Soil Classification	: SC

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	--	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	--	Initial Length,cm	7.11	% Passing # 200	--
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (B Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	5:35	6:02	0.24	2.12	9.72	7.84	24.2	21.2	25.2
2	6:02	6:58	2.12	5.44	7.84	4.52	24.2	21.2	25.2
3									
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	1620	0.89670	6.3E-06	6.324E-06
2	3360	0.79657	6.4E-06	6.361E-06
3				
4				
5				
6				

Permeability
6.34E-06 cm/sec
6.34E-08 m/sec

Krazan Testing Laboratory

Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 9/28/2022
Sample Number	: -
Sample Location	: B4 @ 40-41'
Soil Classification	: SM

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	98.0	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	24.0	Initial Length,cm	7.11	% Passing # 200	44.4
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (**B** Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	4:45	5:03	0.46	4.12	9.78	6.12	23.7	21.9	24.7
2	5:04	5:28	0.54	5.24	9.84	5.14	23.7	21.9	24.7
3	5:30	6:05	0.36	6.50	9.74	3.60	23.7	21.9	24.7
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	1080	0.68573	3.3E-05	3.282E-05
2	1440	0.59750	3.4E-05	3.361E-05
3	2100	0.47229	3.4E-05	3.357E-05
4				
5				
6				

Permeability
3.33E-05 cm/sec
3.33E-07 m/sec

Krazan Testing Laboratory

Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 10/3/2022
Sample Number	: B5
Sample Location	: 30-31
Soil Classification	: SC

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	115.0	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	16.0	Initial Length,cm	7.11	% Passing # 200	42.7
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (**B** Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	4:30	4:51	0.44	1.88	9.80	8.36	25.6	23.2	26.6
2	4:51	5:29	1.88	4.12	8.36	6.12	25.6	23.2	26.6
3	5:29	6:19	4.12	6.52	6.12	3.72	25.6	23.2	26.6
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	1260	0.90364	7.6E-06	7.556E-06
2	2280	0.83412	7.5E-06	7.475E-06
3	3000	0.78693	7.5E-06	7.505E-06
4				
5				
6				

Permeability
7.51E-06 cm/sec
7.51E-08 m/sec

Krazan Testing Laboratory

Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 10/3/2022
Sample Number	: -
Sample Location	: B6 @ 30-31'
Soil Classification	: SM

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	110.0	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	14.0	Initial Length,cm	7.11	% Passing # 200	33.1
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (B Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	4:25	4:56	0.24	7.44	9.78	2.58	19.0	17.5	20.0
2	4:59	5:38	0.18	8.12	9.70	1.76	19.0	17.5	20.0
3									
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	1860	0.28379	6.4E-05	6.363E-05
2	2340	0.20617	6.3E-05	6.341E-05
3				
4				
5				
6				

Permeability
6.35E-05 cm/sec
6.35E-07 m/sec

Krazan Testing Laboratory

Soil Permeability

Flexible Wall, Falling Head (Rising Tail)

ASTM D - 5084 / CAL 220

Project Number	: 012-22165
Project Name	: Triangle Development
Date	: 10/5/2022
Sample Number	: -
Sample Location	: B6 @ 40-41'
Soil Classification	: SM

Max Dry Density, lbs/cu.ft	--	Degree of Sat. %		Max. Particle Size	0.0
Optimum Moisture, %	--	%Over Optimum		% Passing 3/8"	--
Initial Dry Density, lbs/cu.ft	114.0	Initial Diameter, cm	3.56	% Passing # 10	--
Initial Moisture, %	12.0	Initial Length,cm	7.11	% Passing # 200	39.2
Sample Compaction, %	--	Initial Area sq.cm	9.95	Temperature	20.0
Final Dry Density, lbs/cu.ft	--	Final Diameter, cm	3.56	Type of Permeant	Tap Water
Final Moisture, %	--	Final Length, cm	7.11	$\Delta\mu$ (Pore Pressure)	5.0
Specific Gravity (Assumed)	2.7	Final Area, sq.cm	9.95	$\Delta\sigma$ (Cell Pressure)	5.0
Comp. Procedure	Undisturbed			$\Delta\mu/\Delta\sigma$ (**B** Value)	1.00

Test	Start Time	Finish Time	H in Start	H in Final	H out Start	H out Final	Back Press	Tail Press.	Cell Press
1	5:10	5:38	0.14	5.70	9.82	4.26	17.8	16.0	18.8
2	5:41	6:15	0.18	6.42	9.84	3.60	17.8	16.0	18.8
3	6:18	6:56	0.14	6.86	9.74	3.02	17.8	16.0	18.8
4									
5									
6									

Test	Time sec	h1/h2	K cm/sec	k20 cm/sec
1	1680	0.52658	3.6E-05	3.587E-05
2	2040	0.46902	3.5E-05	3.487E-05
3	2280	0.42471	3.5E-05	3.529E-05
4				
5				
6				

Permeability
3.53E-05 cm/sec
3.53E-07 m/sec

Krazan Testing Laboratory

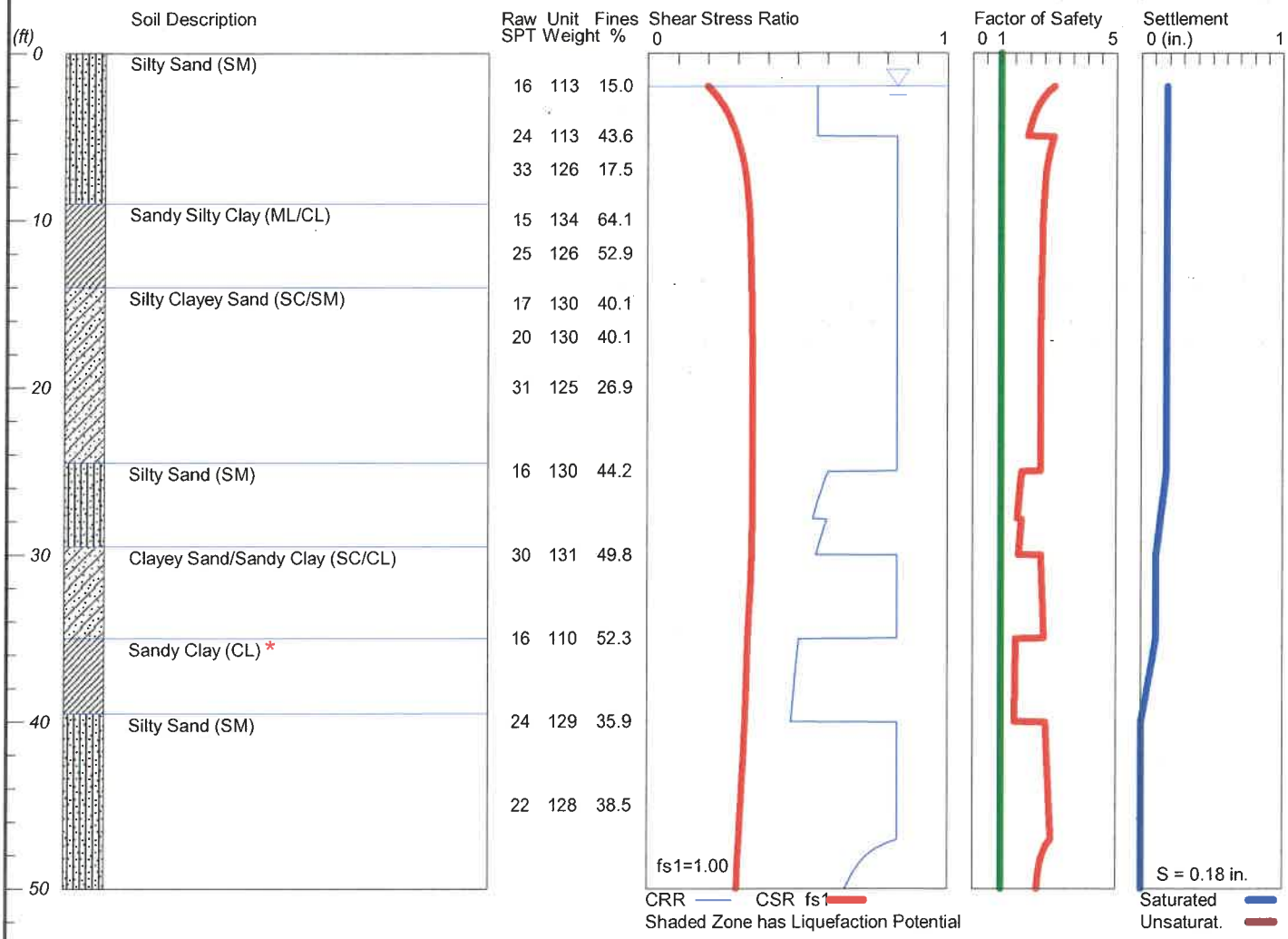
LIQUEFACTION ANALYSES

LIQUEFACTION ANALYSIS

Triangle Development

Hole No.=B1 Water Depth=2 ft

Magnitude=6.15
Acceleration=0.307g



*Note: Sandy Clay layer at 35 feet is potentially liquefiable.

LiquefyPro CivilTech Software USA www.civiltech.com

Krazan

012-22165

Plate A-1

```
*****************************************************************************************************
                                        LIQUEFACTION ANALYSIS SUMMARY
                                       Copyright by CivilTech Software
                                              www.civiltech.com
*****************************************************************************************************
    Font: Courier New, Regular, Size 8 is recommended for this report.
    Licensed to ,   10/10/2022      2:04:37 PM

    Input File Name: C:\Users\mweber\Documents\Krazan\Projects\012\22\165 Triangle Development\B1\01222165 B1
Liquefaction.liq
    Title:  Triangle Development
    Subtitle:  012-22165

    Surface Elev.=
    Hole No.=B1
    Depth of Hole= 50.00 ft
    Water Table during Earthquake= 2.00 ft
    Water Table during In-Situ Testing= 2.00 ft
    Max. Acceleration= 0.31 g
    Earthquake Magnitude= 6.15

 Input Data:
    Surface Elev.=
    Hole No.=B1
    Depth of Hole=50.00 ft
    Water Table during Earthquake= 2.00 ft
    Water Table during In-Situ Testing= 2.00 ft
    Max. Acceleration=0.31 g
    Earthquake Magnitude=6.15
    No-Liquefiable Soils:   Based on Analysis

    1. SPT or BPT Calculation.
    2. Settlement Analysis Method: Ishihara / Yoshimine
    3. Fines Correction for Liquefaction: Stark/Olson et al.*
    4. Fine Correction for Settlement: During Liquefaction*
    5. Settlement Calculation in: All zones*
    6. Hammer Energy Ratio,                                   Ce = 1.25
    7. Borehole Diameter,                                         Cb= 1
    8. Sampling Method,                                          Cs= 1
    9. User request factor of safety (apply to CSR) ,   User= 1
       Plot one CSR curve (fs1=User)
    10. Use Curve Smoothing: No
    * Recommended Options

    In-Situ Test Data:
    Depth   SPT     gamma   Fines
    ft              pcf     %
    ____________________________________
    2.00    16.00   113.00  15.00
    5.00    24.00   113.00  43.60
    7.00    33.00   126.00  17.50
    10.00   15.00   134.00  64.10
    12.00   25.00   126.00  52.90
    15.00   17.00   130.00  40.10
    17.00   20.00   130.00  40.10
    20.00   31.00   125.00  26.90
    25.00   16.00   130.00  44.20
    30.00   30.00   131.00  49.80
    35.00   16.00   110.00  52.30
    40.00   24.00   129.00  35.90
    45.00   22.00   128.00  38.50
    ____________________________________

Output Results:
    Settlement of Saturated Sands=0.18 in.
    Settlement of Unsaturated Sands=0.00 in.
    Total Settlement of Saturated and Unsaturated Sands=0.18 in.
    Differential Settlement=0.088 to 0.116 in.

    Depth   CRRm    CSRfs   F.S.    S_sat.  S_dry   S_all
    ft                              in.     in.     in.
```

2.00	0.57	0.20	2.85	0.18	0.00	0.18
2.05	0.57	0.20	2.81	0.18	0.00	0.18
2.10	0.57	0.20	2.77	0.18	0.00	0.18
2.15	0.57	0.21	2.74	0.18	0.00	0.18
2.20	0.57	0.21	2.71	0.18	0.00	0.18
2.25	0.57	0.21	2.67	0.18	0.00	0.18
2.30	0.57	0.21	2.64	0.18	0.00	0.18
2.35	0.57	0.22	2.62	0.18	0.00	0.18
2.40	0.57	0.22	2.59	0.18	0.00	0.18
2.45	0.57	0.22	2.56	0.18	0.00	0.18
2.50	0.57	0.22	2.54	0.18	0.00	0.18
2.55	0.57	0.23	2.51	0.18	0.00	0.18
2.60	0.57	0.23	2.49	0.18	0.00	0.18
2.65	0.57	0.23	2.47	0.18	0.00	0.18
2.70	0.57	0.23	2.44	0.18	0.00	0.18
2.75	0.57	0.23	2.42	0.18	0.00	0.18
2.80	0.57	0.24	2.40	0.18	0.00	0.18
2.85	0.57	0.24	2.38	0.18	0.00	0.18
2.90	0.57	0.24	2.36	0.18	0.00	0.18
2.95	0.57	0.24	2.35	0.18	0.00	0.18
3.00	0.57	0.24	2.33	0.18	0.00	0.18
3.05	0.57	0.24	2.31	0.18	0.00	0.18
3.10	0.57	0.25	2.30	0.18	0.00	0.18
3.15	0.57	0.25	2.28	0.18	0.00	0.18
3.20	0.57	0.25	2.26	0.18	0.00	0.18
3.25	0.57	0.25	2.25	0.18	0.00	0.18
3.30	0.57	0.25	2.23	0.18	0.00	0.18
3.35	0.57	0.25	2.22	0.18	0.00	0.18
3.40	0.57	0.26	2.21	0.18	0.00	0.18
3.45	0.57	0.26	2.19	0.18	0.00	0.18
3.50	0.57	0.26	2.18	0.18	0.00	0.18
3.55	0.57	0.26	2.17	0.18	0.00	0.18
3.60	0.57	0.26	2.16	0.18	0.00	0.18
3.65	0.57	0.26	2.14	0.18	0.00	0.18
3.70	0.57	0.27	2.13	0.18	0.00	0.18
3.75	0.57	0.27	2.12	0.18	0.00	0.18
3.80	0.57	0.27	2.11	0.18	0.00	0.18
3.85	0.57	0.27	2.10	0.18	0.00	0.18
3.90	0.57	0.27	2.09	0.18	0.00	0.18
3.95	0.57	0.27	2.08	0.18	0.00	0.18
4.00	0.57	0.27	2.07	0.18	0.00	0.18
4.05	0.57	0.27	2.06	0.18	0.00	0.18
4.10	0.57	0.28	2.05	0.18	0.00	0.18
4.15	0.57	0.28	2.04	0.18	0.00	0.18
4.20	0.57	0.28	2.03	0.18	0.00	0.18
4.25	0.57	0.28	2.03	0.18	0.00	0.18
4.30	0.57	0.28	2.02	0.18	0.00	0.18
4.35	0.57	0.28	2.01	0.18	0.00	0.18
4.40	0.57	0.28	2.00	0.18	0.00	0.18
4.45	0.57	0.28	1.99	0.18	0.00	0.18
4.50	0.57	0.28	1.99	0.18	0.00	0.18
4.55	0.57	0.29	1.98	0.18	0.00	0.18
4.60	0.57	0.29	1.97	0.18	0.00	0.18
4.65	0.57	0.29	1.96	0.18	0.00	0.18
4.70	0.57	0.29	1.96	0.18	0.00	0.18
4.75	0.57	0.29	1.95	0.18	0.00	0.18
4.80	0.57	0.29	1.94	0.18	0.00	0.18
4.85	0.57	0.29	1.94	0.18	0.00	0.18
4.90	0.57	0.29	1.93	0.18	0.00	0.18
4.95	0.57	0.29	1.92	0.18	0.00	0.18
5.00	0.83	0.29	2.82	0.18	0.00	0.18
5.05	0.83	0.30	2.81	0.18	0.00	0.18
5.10	0.83	0.30	2.80	0.18	0.00	0.18
5.15	0.83	0.30	2.79	0.18	0.00	0.18
5.20	0.83	0.30	2.78	0.18	0.00	0.18
5.25	0.83	0.30	2.77	0.18	0.00	0.18
5.30	0.83	0.30	2.77	0.18	0.00	0.18
5.35	0.83	0.30	2.76	0.18	0.00	0.18
5.40	0.83	0.30	2.75	0.18	0.00	0.18
5.45	0.83	0.30	2.74	0.18	0.00	0.18

5.50	0.83	0.30	2.74	0.18	0.00	0.18
5.55	0.83	0.30	2.73	0.18	0.00	0.18
5.60	0.83	0.31	2.72	0.18	0.00	0.18
5.65	0.83	0.31	2.71	0.18	0.00	0.18
5.70	0.83	0.31	2.71	0.18	0.00	0.18
5.75	0.83	0.31	2.70	0.18	0.00	0.18
5.80	0.83	0.31	2.69	0.18	0.00	0.18
5.85	0.83	0.31	2.69	0.18	0.00	0.18
5.90	0.83	0.31	2.68	0.18	0.00	0.18
5.95	0.83	0.31	2.67	0.18	0.00	0.18
6.00	0.83	0.31	2.67	0.18	0.00	0.18
6.05	0.83	0.31	2.66	0.18	0.00	0.18
6.10	0.83	0.31	2.66	0.18	0.00	0.18
6.15	0.83	0.31	2.65	0.18	0.00	0.18
6.20	0.83	0.31	2.64	0.18	0.00	0.18
6.25	0.83	0.31	2.64	0.18	0.00	0.18
6.30	0.83	0.32	2.63	0.18	0.00	0.18
6.35	0.83	0.32	2.63	0.18	0.00	0.18
6.40	0.83	0.32	2.62	0.18	0.00	0.18
6.45	0.83	0.32	2.62	0.18	0.00	0.18
6.50	0.83	0.32	2.61	0.18	0.00	0.18
6.55	0.83	0.32	2.61	0.18	0.00	0.18
6.60	0.83	0.32	2.60	0.18	0.00	0.18
6.65	0.83	0.32	2.60	0.18	0.00	0.18
6.70	0.83	0.32	2.59	0.18	0.00	0.18
6.75	0.83	0.32	2.59	0.18	0.00	0.18
6.80	0.83	0.32	2.58	0.18	0.00	0.18
6.85	0.83	0.32	2.58	0.18	0.00	0.18
6.90	0.83	0.32	2.57	0.18	0.00	0.18
6.95	0.83	0.32	2.57	0.18	0.00	0.18
7.00	0.83	0.32	2.56	0.18	0.00	0.18
7.05	0.83	0.32	2.56	0.18	0.00	0.18
7.10	0.83	0.32	2.56	0.18	0.00	0.18
7.15	0.83	0.33	2.55	0.18	0.00	0.18
7.20	0.83	0.33	2.55	0.18	0.00	0.18
7.25	0.83	0.33	2.55	0.18	0.00	0.18
7.30	0.83	0.33	2.55	0.18	0.00	0.18
7.35	0.83	0.33	2.54	0.18	0.00	0.18
7.40	0.83	0.33	2.54	0.18	0.00	0.18
7.45	0.83	0.33	2.54	0.18	0.00	0.18
7.50	0.83	0.33	2.53	0.18	0.00	0.18
7.55	0.83	0.33	2.53	0.18	0.00	0.18
7.60	0.83	0.33	2.53	0.18	0.00	0.18
7.65	0.83	0.33	2.53	0.18	0.00	0.18
7.70	0.83	0.33	2.52	0.18	0.00	0.18
7.75	0.83	0.33	2.52	0.18	0.00	0.18
7.80	0.83	0.33	2.52	0.18	0.00	0.18
7.85	0.83	0.33	2.52	0.18	0.00	0.18
7.90	0.83	0.33	2.51	0.18	0.00	0.18
7.95	0.83	0.33	2.51	0.18	0.00	0.18
8.00	0.83	0.33	2.51	0.18	0.00	0.18
8.05	0.83	0.33	2.51	0.18	0.00	0.18
8.10	0.83	0.33	2.51	0.18	0.00	0.18
8.15	0.83	0.33	2.50	0.18	0.00	0.18
8.20	0.83	0.33	2.50	0.18	0.00	0.18
8.25	0.83	0.33	2.50	0.18	0.00	0.18
8.30	0.83	0.33	2.50	0.18	0.00	0.18
8.35	0.83	0.33	2.50	0.18	0.00	0.18
8.40	0.83	0.33	2.49	0.18	0.00	0.18
8.45	0.83	0.33	2.49	0.18	0.00	0.18
8.50	0.83	0.33	2.49	0.18	0.00	0.18
8.55	0.83	0.33	2.49	0.18	0.00	0.18
8.60	0.83	0.33	2.49	0.18	0.00	0.18
8.65	0.83	0.33	2.48	0.18	0.00	0.18
8.70	0.83	0.33	2.48	0.18	0.00	0.18
8.75	0.83	0.33	2.48	0.18	0.00	0.18
8.80	0.83	0.34	2.48	0.18	0.00	0.18
8.85	0.83	0.34	2.48	0.18	0.00	0.18
8.90	0.83	0.34	2.47	0.18	0.00	0.18
8.95	0.83	0.34	2.47	0.18	0.00	0.18
9.00	0.83	0.34	2.47	0.18	0.00	0.18

9.05	0.83	0.34	2.47	0.18	0.00	0.18
9.10	0.83	0.34	2.47	0.18	0.00	0.18
9.15	0.83	0.34	2.47	0.18	0.00	0.18
9.20	0.83	0.34	2.46	0.18	0.00	0.18
9.25	0.83	0.34	2.46	0.18	0.00	0.18
9.30	0.83	0.34	2.46	0.18	0.00	0.18
9.35	0.83	0.34	2.46	0.18	0.00	0.18
9.40	0.83	0.34	2.46	0.18	0.00	0.18
9.45	0.83	0.34	2.46	0.18	0.00	0.18
9.50	0.83	0.34	2.46	0.18	0.00	0.18
9.55	0.83	0.34	2.45	0.18	0.00	0.18
9.60	0.83	0.34	2.45	0.18	0.00	0.18
9.65	0.83	0.34	2.45	0.18	0.00	0.18
9.70	0.83	0.34	2.45	0.18	0.00	0.18
9.75	0.83	0.34	2.45	0.18	0.00	0.18
9.80	0.83	0.34	2.45	0.18	0.00	0.18
9.85	0.83	0.34	2.45	0.18	0.00	0.18
9.90	0.83	0.34	2.44	0.18	0.00	0.18
9.95	0.83	0.34	2.44	0.18	0.00	0.18
10.00	0.83	0.34	2.44	0.18	0.00	0.18
10.05	0.83	0.34	2.44	0.18	0.00	0.18
10.10	0.83	0.34	2.44	0.18	0.00	0.18
10.15	0.83	0.34	2.44	0.18	0.00	0.18
10.20	0.83	0.34	2.44	0.18	0.00	0.18
10.25	0.83	0.34	2.44	0.18	0.00	0.18
10.30	0.83	0.34	2.44	0.18	0.00	0.18
10.35	0.83	0.34	2.44	0.18	0.00	0.18
10.40	0.83	0.34	2.44	0.18	0.00	0.18
10.45	0.83	0.34	2.44	0.18	0.00	0.18
10.50	0.83	0.34	2.44	0.18	0.00	0.18
10.55	0.83	0.34	2.44	0.18	0.00	0.18
10.60	0.83	0.34	2.44	0.18	0.00	0.18
10.65	0.83	0.34	2.43	0.18	0.00	0.18
10.70	0.83	0.34	2.43	0.18	0.00	0.18
10.75	0.83	0.34	2.43	0.18	0.00	0.18
10.80	0.83	0.34	2.43	0.18	0.00	0.18
10.85	0.83	0.34	2.43	0.18	0.00	0.18
10.90	0.83	0.34	2.43	0.18	0.00	0.18
10.95	0.83	0.34	2.43	0.18	0.00	0.18
11.00	0.83	0.34	2.43	0.18	0.00	0.18
11.05	0.83	0.34	2.43	0.18	0.00	0.18
11.10	0.83	0.34	2.43	0.18	0.00	0.18
11.15	0.83	0.34	2.43	0.18	0.00	0.18
11.20	0.83	0.34	2.43	0.18	0.00	0.18
11.25	0.83	0.34	2.43	0.18	0.00	0.18
11.30	0.83	0.34	2.43	0.18	0.00	0.18
11.35	0.83	0.34	2.43	0.18	0.00	0.18
11.40	0.83	0.34	2.43	0.18	0.00	0.18
11.45	0.83	0.34	2.43	0.18	0.00	0.18
11.50	0.83	0.34	2.43	0.18	0.00	0.18
11.55	0.83	0.34	2.43	0.18	0.00	0.18
11.60	0.83	0.34	2.43	0.18	0.00	0.18
11.65	0.83	0.34	2.43	0.18	0.00	0.18
11.70	0.83	0.34	2.43	0.18	0.00	0.18
11.75	0.83	0.34	2.42	0.18	0.00	0.18
11.80	0.83	0.34	2.42	0.18	0.00	0.18
11.85	0.83	0.34	2.42	0.18	0.00	0.18
11.90	0.83	0.34	2.42	0.18	0.00	0.18
11.95	0.83	0.34	2.42	0.18	0.00	0.18
12.00	0.83	0.34	2.42	0.18	0.00	0.18
12.05	0.83	0.34	2.42	0.18	0.00	0.18
12.10	0.83	0.34	2.42	0.18	0.00	0.18
12.15	0.83	0.34	2.42	0.18	0.00	0.18
12.20	0.83	0.34	2.42	0.18	0.00	0.18
12.25	0.83	0.34	2.42	0.18	0.00	0.18
12.30	0.83	0.34	2.42	0.18	0.00	0.18
12.35	0.83	0.34	2.42	0.18	0.00	0.18
12.40	0.83	0.34	2.42	0.18	0.00	0.18
12.45	0.83	0.34	2.42	0.18	0.00	0.18
12.50	0.83	0.34	2.41	0.18	0.00	0.18
12.55	0.83	0.34	2.41	0.18	0.00	0.18

12.60	0.83	0.34	2.41	0.18	0.00	0.18
12.65	0.83	0.34	2.41	0.18	0.00	0.18
12.70	0.83	0.34	2.41	0.18	0.00	0.18
12.75	0.83	0.34	2.41	0.18	0.00	0.18
12.80	0.83	0.34	2.41	0.18	0.00	0.18
12.85	0.83	0.34	2.41	0.18	0.00	0.18
12.90	0.83	0.34	2.41	0.18	0.00	0.18
12.95	0.83	0.34	2.41	0.18	0.00	0.18
13.00	0.83	0.35	2.41	0.18	0.00	0.18
13.05	0.83	0.35	2.41	0.18	0.00	0.18
13.10	0.83	0.35	2.41	0.18	0.00	0.18
13.15	0.83	0.35	2.41	0.18	0.00	0.18
13.20	0.83	0.35	2.41	0.18	0.00	0.18
13.25	0.83	0.35	2.40	0.18	0.00	0.18
13.30	0.83	0.35	2.40	0.18	0.00	0.18
13.35	0.83	0.35	2.40	0.18	0.00	0.18
13.40	0.83	0.35	2.40	0.18	0.00	0.18
13.45	0.83	0.35	2.40	0.18	0.00	0.18
13.50	0.83	0.35	2.40	0.18	0.00	0.18
13.55	0.83	0.35	2.40	0.18	0.00	0.18
13.60	0.83	0.35	2.40	0.18	0.00	0.18
13.65	0.83	0.35	2.40	0.18	0.00	0.18
13.70	0.83	0.35	2.40	0.18	0.00	0.18
13.75	0.83	0.35	2.40	0.18	0.00	0.18
13.80	0.83	0.35	2.40	0.18	0.00	0.18
13.85	0.83	0.35	2.40	0.18	0.00	0.18
13.90	0.83	0.35	2.40	0.18	0.00	0.18
13.95	0.83	0.35	2.40	0.18	0.00	0.18
14.00	0.83	0.35	2.40	0.18	0.00	0.18
14.05	0.83	0.35	2.39	0.18	0.00	0.18
14.10	0.83	0.35	2.39	0.18	0.00	0.18
14.15	0.83	0.35	2.39	0.18	0.00	0.18
14.20	0.83	0.35	2.39	0.18	0.00	0.18
14.25	0.83	0.35	2.39	0.18	0.00	0.18
14.30	0.83	0.35	2.39	0.18	0.00	0.18
14.35	0.83	0.35	2.39	0.18	0.00	0.18
14.40	0.83	0.35	2.39	0.18	0.00	0.18
14.45	0.83	0.35	2.39	0.18	0.00	0.18
14.50	0.83	0.35	2.39	0.18	0.00	0.18
14.55	0.83	0.35	2.39	0.18	0.00	0.18
14.60	0.83	0.35	2.39	0.18	0.00	0.18
14.65	0.83	0.35	2.39	0.18	0.00	0.18
14.70	0.83	0.35	2.39	0.18	0.00	0.18
14.75	0.83	0.35	2.39	0.18	0.00	0.18
14.80	0.83	0.35	2.39	0.18	0.00	0.18
14.85	0.83	0.35	2.39	0.18	0.00	0.18
14.90	0.83	0.35	2.39	0.18	0.00	0.18
14.95	0.83	0.35	2.39	0.18	0.00	0.18
15.00	0.83	0.35	2.39	0.18	0.00	0.18
15.05	0.83	0.35	2.39	0.18	0.00	0.18
15.10	0.83	0.35	2.39	0.18	0.00	0.18
15.15	0.83	0.35	2.39	0.18	0.00	0.18
15.20	0.83	0.35	2.38	0.18	0.00	0.18
15.25	0.83	0.35	2.38	0.18	0.00	0.18
15.30	0.83	0.35	2.38	0.18	0.00	0.18
15.35	0.83	0.35	2.38	0.18	0.00	0.18
15.40	0.83	0.35	2.38	0.18	0.00	0.18
15.45	0.83	0.35	2.38	0.18	0.00	0.18
15.50	0.83	0.35	2.38	0.18	0.00	0.18
15.55	0.83	0.35	2.38	0.18	0.00	0.18
15.60	0.83	0.35	2.38	0.18	0.00	0.18
15.65	0.83	0.35	2.38	0.18	0.00	0.18
15.70	0.83	0.35	2.38	0.18	0.00	0.18
15.75	0.83	0.35	2.38	0.18	0.00	0.18
15.80	0.83	0.35	2.38	0.18	0.00	0.18
15.85	0.83	0.35	2.38	0.18	0.00	0.18
15.90	0.83	0.35	2.38	0.18	0.00	0.18
15.95	0.83	0.35	2.38	0.18	0.00	0.18
16.00	0.83	0.35	2.38	0.18	0.00	0.18
16.05	0.83	0.35	2.38	0.18	0.00	0.18
16.10	0.83	0.35	2.38	0.18	0.00	0.18

16.15	0.83	0.35	2.38	0.18	0.00	0.18
16.20	0.83	0.35	2.38	0.18	0.00	0.18
16.25	0.83	0.35	2.38	0.18	0.00	0.18
16.30	0.83	0.35	2.38	0.18	0.00	0.18
16.35	0.83	0.35	2.38	0.18	0.00	0.18
16.40	0.83	0.35	2.38	0.18	0.00	0.18
16.45	0.83	0.35	2.38	0.18	0.00	0.18
16.50	0.83	0.35	2.38	0.18	0.00	0.18
16.55	0.83	0.35	2.38	0.18	0.00	0.18
16.60	0.83	0.35	2.38	0.18	0.00	0.18
16.65	0.83	0.35	2.38	0.18	0.00	0.18
16.70	0.83	0.35	2.38	0.18	0.00	0.18
16.75	0.83	0.35	2.38	0.18	0.00	0.18
16.80	0.83	0.35	2.38	0.18	0.00	0.18
16.85	0.83	0.35	2.38	0.18	0.00	0.18
16.90	0.83	0.35	2.38	0.18	0.00	0.18
16.95	0.83	0.35	2.38	0.18	0.00	0.18
17.00	0.83	0.35	2.38	0.18	0.00	0.18
17.05	0.83	0.35	2.38	0.18	0.00	0.18
17.10	0.83	0.35	2.38	0.18	0.00	0.18
17.15	0.83	0.35	2.38	0.18	0.00	0.18
17.20	0.83	0.35	2.38	0.18	0.00	0.18
17.25	0.83	0.35	2.38	0.18	0.00	0.18
17.30	0.83	0.35	2.38	0.18	0.00	0.18
17.35	0.83	0.35	2.38	0.18	0.00	0.18
17.40	0.83	0.35	2.38	0.18	0.00	0.18
17.45	0.83	0.35	2.38	0.18	0.00	0.18
17.50	0.83	0.35	2.38	0.18	0.00	0.18
17.55	0.83	0.35	2.38	0.18	0.00	0.18
17.60	0.83	0.35	2.38	0.18	0.00	0.18
17.65	0.83	0.35	2.38	0.18	0.00	0.18
17.70	0.83	0.35	2.38	0.18	0.00	0.18
17.75	0.83	0.35	2.38	0.18	0.00	0.18
17.80	0.83	0.35	2.38	0.18	0.00	0.18
17.85	0.83	0.35	2.38	0.18	0.00	0.18
17.90	0.83	0.35	2.38	0.18	0.00	0.18
17.95	0.83	0.35	2.38	0.18	0.00	0.18
18.00	0.83	0.35	2.38	0.18	0.00	0.18
18.05	0.83	0.35	2.38	0.18	0.00	0.18
18.10	0.83	0.35	2.38	0.18	0.00	0.18
18.15	0.83	0.35	2.38	0.18	0.00	0.18
18.20	0.83	0.35	2.38	0.18	0.00	0.18
18.25	0.83	0.35	2.38	0.18	0.00	0.18
18.30	0.83	0.35	2.38	0.18	0.00	0.18
18.35	0.83	0.35	2.38	0.18	0.00	0.18
18.40	0.83	0.35	2.38	0.18	0.00	0.18
18.45	0.83	0.35	2.38	0.18	0.00	0.18
18.50	0.83	0.35	2.38	0.18	0.00	0.18
18.55	0.83	0.35	2.38	0.18	0.00	0.18
18.60	0.83	0.35	2.38	0.18	0.00	0.18
18.65	0.83	0.35	2.38	0.18	0.00	0.18
18.70	0.83	0.35	2.38	0.18	0.00	0.18
18.75	0.83	0.35	2.38	0.18	0.00	0.18
18.80	0.83	0.35	2.38	0.18	0.00	0.18
18.85	0.83	0.35	2.38	0.18	0.00	0.18
18.90	0.83	0.35	2.38	0.18	0.00	0.18
18.95	0.83	0.35	2.38	0.18	0.00	0.18
19.00	0.83	0.35	2.38	0.18	0.00	0.18
19.05	0.83	0.35	2.38	0.18	0.00	0.18
19.10	0.83	0.35	2.38	0.18	0.00	0.18
19.15	0.83	0.35	2.38	0.18	0.00	0.18
19.20	0.83	0.35	2.38	0.18	0.00	0.18
19.25	0.83	0.35	2.38	0.18	0.00	0.18
19.30	0.83	0.35	2.38	0.18	0.00	0.18
19.35	0.83	0.35	2.38	0.18	0.00	0.18
19.40	0.83	0.35	2.38	0.18	0.00	0.18
19.45	0.83	0.35	2.38	0.18	0.00	0.18
19.50	0.83	0.35	2.38	0.18	0.00	0.18
19.55	0.83	0.35	2.38	0.18	0.00	0.18
19.60	0.83	0.35	2.38	0.18	0.00	0.18
19.65	0.83	0.35	2.38	0.18	0.00	0.18

19.70	0.83	0.35	2.38	0.18	0.00	0.18
19.75	0.83	0.35	2.38	0.18	0.00	0.18
19.80	0.83	0.35	2.38	0.18	0.00	0.18
19.85	0.83	0.35	2.38	0.18	0.00	0.18
19.90	0.83	0.35	2.38	0.18	0.00	0.18
19.95	0.83	0.35	2.38	0.18	0.00	0.18
20.00	0.83	0.35	2.38	0.18	0.00	0.18
20.05	0.83	0.35	2.38	0.18	0.00	0.18
20.10	0.83	0.35	2.38	0.18	0.00	0.18
20.15	0.83	0.35	2.38	0.18	0.00	0.18
20.20	0.83	0.35	2.38	0.18	0.00	0.18
20.25	0.83	0.35	2.38	0.18	0.00	0.18
20.30	0.83	0.35	2.38	0.18	0.00	0.18
20.35	0.83	0.35	2.38	0.18	0.00	0.18
20.40	0.83	0.35	2.38	0.18	0.00	0.18
20.45	0.83	0.35	2.38	0.18	0.00	0.18
20.50	0.83	0.35	2.38	0.18	0.00	0.18
20.55	0.83	0.35	2.38	0.18	0.00	0.18
20.60	0.83	0.35	2.37	0.18	0.00	0.18
20.65	0.83	0.35	2.37	0.18	0.00	0.18
20.70	0.83	0.35	2.37	0.18	0.00	0.18
20.75	0.83	0.35	2.37	0.18	0.00	0.18
20.80	0.83	0.35	2.37	0.18	0.00	0.18
20.85	0.83	0.35	2.37	0.18	0.00	0.18
20.90	0.83	0.35	2.37	0.18	0.00	0.18
20.95	0.83	0.35	2.37	0.18	0.00	0.18
21.00	0.83	0.35	2.37	0.18	0.00	0.18
21.05	0.83	0.35	2.37	0.18	0.00	0.18
21.10	0.83	0.35	2.37	0.18	0.00	0.18
21.15	0.83	0.35	2.37	0.18	0.00	0.18
21.20	0.83	0.35	2.37	0.18	0.00	0.18
21.25	0.83	0.35	2.37	0.18	0.00	0.18
21.30	0.83	0.35	2.37	0.18	0.00	0.18
21.35	0.83	0.35	2.37	0.18	0.00	0.18
21.40	0.83	0.35	2.37	0.18	0.00	0.18
21.45	0.83	0.35	2.37	0.18	0.00	0.18
21.50	0.83	0.35	2.37	0.18	0.00	0.18
21.55	0.83	0.35	2.37	0.18	0.00	0.18
21.60	0.83	0.35	2.37	0.18	0.00	0.18
21.65	0.83	0.35	2.37	0.18	0.00	0.18
21.70	0.83	0.35	2.37	0.18	0.00	0.18
21.75	0.83	0.35	2.37	0.18	0.00	0.18
21.80	0.83	0.35	2.37	0.18	0.00	0.18
21.85	0.83	0.35	2.37	0.18	0.00	0.18
21.90	0.83	0.35	2.37	0.18	0.00	0.18
21.95	0.83	0.35	2.37	0.18	0.00	0.18
22.00	0.83	0.35	2.37	0.18	0.00	0.18
22.05	0.83	0.35	2.37	0.18	0.00	0.18
22.10	0.83	0.35	2.37	0.18	0.00	0.18
22.15	0.83	0.35	2.37	0.18	0.00	0.18
22.20	0.83	0.35	2.37	0.18	0.00	0.18
22.25	0.83	0.35	2.37	0.18	0.00	0.18
22.30	0.83	0.35	2.37	0.18	0.00	0.18
22.35	0.83	0.35	2.37	0.18	0.00	0.18
22.40	0.83	0.35	2.37	0.18	0.00	0.18
22.45	0.83	0.35	2.37	0.18	0.00	0.18
22.50	0.83	0.35	2.37	0.18	0.00	0.18
22.55	0.83	0.35	2.37	0.18	0.00	0.18
22.60	0.83	0.35	2.37	0.18	0.00	0.18
22.65	0.83	0.35	2.37	0.18	0.00	0.18
22.70	0.83	0.35	2.37	0.18	0.00	0.18
22.75	0.83	0.35	2.37	0.18	0.00	0.18
22.80	0.83	0.35	2.37	0.18	0.00	0.18
22.85	0.83	0.35	2.37	0.18	0.00	0.18
22.90	0.83	0.35	2.37	0.18	0.00	0.18
22.95	0.83	0.35	2.37	0.18	0.00	0.18
23.00	0.83	0.35	2.37	0.18	0.00	0.18
23.05	0.83	0.35	2.37	0.18	0.00	0.18
23.10	0.83	0.35	2.37	0.18	0.00	0.18
23.15	0.83	0.35	2.37	0.18	0.00	0.18
23.20	0.83	0.35	2.37	0.18	0.00	0.18

23.25	0.83	0.35	2.37	0.18	0.00	0.18
23.30	0.83	0.35	2.37	0.18	0.00	0.18
23.35	0.83	0.35	2.37	0.18	0.00	0.18
23.40	0.83	0.35	2.37	0.18	0.00	0.18
23.45	0.83	0.35	2.37	0.18	0.00	0.18
23.50	0.83	0.35	2.37	0.18	0.00	0.18
23.55	0.83	0.35	2.37	0.18	0.00	0.18
23.60	0.83	0.35	2.37	0.18	0.00	0.18
23.65	0.83	0.35	2.37	0.18	0.00	0.18
23.70	0.83	0.35	2.37	0.18	0.00	0.18
23.75	0.83	0.35	2.37	0.18	0.00	0.18
23.80	0.83	0.35	2.37	0.18	0.00	0.18
23.85	0.83	0.35	2.37	0.18	0.00	0.18
23.90	0.83	0.35	2.37	0.18	0.00	0.18
23.95	0.83	0.35	2.37	0.18	0.00	0.18
24.00	0.83	0.35	2.37	0.18	0.00	0.18
24.05	0.83	0.35	2.37	0.18	0.00	0.18
24.10	0.83	0.35	2.37	0.18	0.00	0.18
24.15	0.83	0.35	2.37	0.18	0.00	0.18
24.20	0.83	0.35	2.37	0.18	0.00	0.18
24.25	0.83	0.35	2.37	0.18	0.00	0.18
24.30	0.83	0.35	2.37	0.18	0.00	0.18
24.35	0.83	0.35	2.37	0.18	0.00	0.18
24.40	0.83	0.35	2.37	0.18	0.00	0.18
24.45	0.83	0.35	2.37	0.18	0.00	0.18
24.50	0.83	0.35	2.37	0.18	0.00	0.18
24.55	0.83	0.35	2.37	0.18	0.00	0.18
24.60	0.83	0.35	2.37	0.18	0.00	0.18
24.65	0.83	0.35	2.37	0.18	0.00	0.18
24.70	0.83	0.35	2.37	0.18	0.00	0.18
24.75	0.83	0.35	2.37	0.18	0.00	0.18
24.80	0.83	0.35	2.37	0.18	0.00	0.18
24.85	0.83	0.35	2.37	0.18	0.00	0.18
24.90	0.83	0.35	2.37	0.18	0.00	0.18
24.95	0.83	0.35	2.37	0.18	0.00	0.18
25.00	0.83	0.35	2.37	0.18	0.00	0.18
25.05	0.60	0.35	1.72	0.18	0.00	0.18
25.10	0.60	0.35	1.71	0.17	0.00	0.17
25.15	0.60	0.35	1.71	0.17	0.00	0.17
25.20	0.60	0.35	1.71	0.17	0.00	0.17
25.25	0.60	0.35	1.70	0.17	0.00	0.17
25.30	0.60	0.35	1.70	0.17	0.00	0.17
25.35	0.60	0.35	1.70	0.17	0.00	0.17
25.40	0.59	0.35	1.69	0.17	0.00	0.17
25.45	0.59	0.35	1.69	0.17	0.00	0.17
25.50	0.59	0.35	1.69	0.17	0.00	0.17
25.55	0.59	0.35	1.69	0.17	0.00	0.17
25.60	0.59	0.35	1.68	0.17	0.00	0.17
25.65	0.59	0.35	1.68	0.17	0.00	0.17
25.70	0.59	0.35	1.68	0.17	0.00	0.17
25.75	0.59	0.35	1.67	0.17	0.00	0.17
25.80	0.59	0.35	1.67	0.17	0.00	0.17
25.85	0.58	0.35	1.67	0.17	0.00	0.17
25.90	0.58	0.35	1.67	0.17	0.00	0.17
25.95	0.58	0.35	1.66	0.16	0.00	0.16
26.00	0.58	0.35	1.66	0.16	0.00	0.16
26.05	0.58	0.35	1.66	0.16	0.00	0.16
26.10	0.58	0.35	1.65	0.16	0.00	0.16
26.15	0.58	0.35	1.65	0.16	0.00	0.16
26.20	0.58	0.35	1.65	0.16	0.00	0.16
26.25	0.58	0.35	1.65	0.16	0.00	0.16
26.30	0.58	0.35	1.64	0.16	0.00	0.16
26.35	0.58	0.35	1.64	0.16	0.00	0.16
26.40	0.57	0.35	1.64	0.16	0.00	0.16
26.45	0.57	0.35	1.64	0.16	0.00	0.16
26.50	0.57	0.35	1.63	0.16	0.00	0.16
26.55	0.57	0.35	1.63	0.16	0.00	0.16
26.60	0.57	0.35	1.63	0.16	0.00	0.16
26.65	0.57	0.35	1.63	0.15	0.00	0.15
26.70	0.57	0.35	1.62	0.15	0.00	0.15
26.75	0.57	0.35	1.62	0.15	0.00	0.15

26.80	0.57	0.35	1.62	0.15	0.00	0.15
26.85	0.57	0.35	1.62	0.15	0.00	0.15
26.90	0.57	0.35	1.62	0.15	0.00	0.15
26.95	0.56	0.35	1.61	0.15	0.00	0.15
27.00	0.56	0.35	1.61	0.15	0.00	0.15
27.05	0.56	0.35	1.61	0.15	0.00	0.15
27.10	0.56	0.35	1.61	0.15	0.00	0.15
27.15	0.56	0.35	1.60	0.15	0.00	0.15
27.20	0.56	0.35	1.60	0.15	0.00	0.15
27.25	0.56	0.35	1.60	0.15	0.00	0.15
27.30	0.56	0.35	1.60	0.14	0.00	0.14
27.35	0.56	0.35	1.60	0.14	0.00	0.14
27.40	0.56	0.35	1.59	0.14	0.00	0.14
27.45	0.56	0.35	1.59	0.14	0.00	0.14
27.50	0.56	0.35	1.59	0.14	0.00	0.14
27.55	0.56	0.35	1.59	0.14	0.00	0.14
27.60	0.55	0.35	1.59	0.14	0.00	0.14
27.65	0.55	0.35	1.58	0.14	0.00	0.14
27.70	0.55	0.35	1.58	0.14	0.00	0.14
27.75	0.55	0.35	1.58	0.14	0.00	0.14
27.80	0.55	0.35	1.58	0.14	0.00	0.14
27.85	0.55	0.35	1.58	0.14	0.00	0.14
27.90	0.60	0.35	1.71	0.13	0.00	0.13
27.95	0.60	0.35	1.71	0.13	0.00	0.13
28.00	0.60	0.35	1.71	0.13	0.00	0.13
28.05	0.59	0.35	1.70	0.13	0.00	0.13
28.10	0.59	0.35	1.70	0.13	0.00	0.13
28.15	0.59	0.35	1.70	0.13	0.00	0.13
28.20	0.59	0.35	1.69	0.13	0.00	0.13
28.25	0.59	0.35	1.69	0.13	0.00	0.13
28.30	0.59	0.35	1.69	0.13	0.00	0.13
28.35	0.59	0.35	1.69	0.13	0.00	0.13
28.40	0.59	0.35	1.68	0.13	0.00	0.13
28.45	0.59	0.35	1.68	0.13	0.00	0.13
28.50	0.59	0.35	1.68	0.13	0.00	0.13
28.55	0.59	0.35	1.68	0.13	0.00	0.13
28.60	0.58	0.35	1.67	0.13	0.00	0.13
28.65	0.58	0.35	1.67	0.13	0.00	0.13
28.70	0.58	0.35	1.67	0.13	0.00	0.13
28.75	0.58	0.35	1.67	0.12	0.00	0.12
28.80	0.58	0.35	1.66	0.12	0.00	0.12
28.85	0.58	0.35	1.66	0.12	0.00	0.12
28.90	0.58	0.35	1.66	0.12	0.00	0.12
28.95	0.58	0.35	1.66	0.12	0.00	0.12
29.00	0.58	0.35	1.66	0.12	0.00	0.12
29.05	0.58	0.35	1.65	0.12	0.00	0.12
29.10	0.58	0.35	1.65	0.12	0.00	0.12
29.15	0.57	0.35	1.65	0.12	0.00	0.12
29.20	0.57	0.35	1.65	0.12	0.00	0.12
29.25	0.57	0.35	1.64	0.12	0.00	0.12
29.30	0.57	0.35	1.64	0.12	0.00	0.12
29.35	0.57	0.35	1.64	0.12	0.00	0.12
29.40	0.57	0.35	1.64	0.12	0.00	0.12
29.45	0.57	0.35	1.64	0.12	0.00	0.12
29.50	0.57	0.35	1.63	0.11	0.00	0.11
29.55	0.57	0.35	1.63	0.11	0.00	0.11
29.60	0.57	0.35	1.63	0.11	0.00	0.11
29.65	0.57	0.35	1.63	0.11	0.00	0.11
29.70	0.57	0.35	1.62	0.11	0.00	0.11
29.75	0.57	0.35	1.62	0.11	0.00	0.11
29.80	0.56	0.35	1.62	0.11	0.00	0.11
29.85	0.56	0.35	1.62	0.11	0.00	0.11
29.90	0.56	0.35	1.62	0.11	0.00	0.11
29.95	0.56	0.35	1.61	0.11	0.00	0.11
30.00	0.56	0.35	1.61	0.11	0.00	0.11
30.05	0.83	0.35	2.39	0.11	0.00	0.11
30.10	0.83	0.35	2.39	0.11	0.00	0.11
30.15	0.83	0.35	2.39	0.11	0.00	0.11
30.20	0.83	0.35	2.39	0.11	0.00	0.11
30.25	0.83	0.35	2.39	0.11	0.00	0.11
30.30	0.83	0.35	2.39	0.11	0.00	0.11

30.35	0.83	0.35	2.39	0.11	0.00	0.11
30.40	0.83	0.35	2.39	0.11	0.00	0.11
30.45	0.83	0.35	2.39	0.11	0.00	0.11
30.50	0.83	0.35	2.40	0.11	0.00	0.11
30.55	0.83	0.35	2.40	0.11	0.00	0.11
30.60	0.83	0.35	2.40	0.11	0.00	0.11
30.65	0.83	0.35	2.40	0.11	0.00	0.11
30.70	0.83	0.35	2.40	0.11	0.00	0.11
30.75	0.83	0.35	2.40	0.11	0.00	0.11
30.80	0.83	0.35	2.40	0.11	0.00	0.11
30.85	0.83	0.35	2.40	0.11	0.00	0.11
30.90	0.83	0.35	2.40	0.11	0.00	0.11
30.95	0.83	0.35	2.40	0.11	0.00	0.11
31.00	0.83	0.35	2.41	0.11	0.00	0.11
31.05	0.83	0.35	2.41	0.11	0.00	0.11
31.10	0.83	0.35	2.41	0.11	0.00	0.11
31.15	0.83	0.34	2.41	0.11	0.00	0.11
31.20	0.83	0.34	2.41	0.11	0.00	0.11
31.25	0.83	0.34	2.41	0.11	0.00	0.11
31.30	0.83	0.34	2.41	0.11	0.00	0.11
31.35	0.83	0.34	2.41	0.11	0.00	0.11
31.40	0.83	0.34	2.41	0.11	0.00	0.11
31.45	0.83	0.34	2.41	0.11	0.00	0.11
31.50	0.83	0.34	2.42	0.11	0.00	0.11
31.55	0.83	0.34	2.42	0.11	0.00	0.11
31.60	0.83	0.34	2.42	0.11	0.00	0.11
31.65	0.83	0.34	2.42	0.11	0.00	0.11
31.70	0.83	0.34	2.42	0.11	0.00	0.11
31.75	0.83	0.34	2.42	0.11	0.00	0.11
31.80	0.83	0.34	2.42	0.11	0.00	0.11
31.85	0.83	0.34	2.42	0.11	0.00	0.11
31.90	0.83	0.34	2.42	0.11	0.00	0.11
31.95	0.83	0.34	2.42	0.11	0.00	0.11
32.00	0.83	0.34	2.43	0.11	0.00	0.11
32.05	0.83	0.34	2.43	0.11	0.00	0.11
32.10	0.83	0.34	2.43	0.11	0.00	0.11
32.15	0.83	0.34	2.43	0.11	0.00	0.11
32.20	0.83	0.34	2.43	0.11	0.00	0.11
32.25	0.83	0.34	2.43	0.11	0.00	0.11
32.30	0.83	0.34	2.43	0.11	0.00	0.11
32.35	0.83	0.34	2.43	0.11	0.00	0.11
32.40	0.83	0.34	2.43	0.11	0.00	0.11
32.45	0.83	0.34	2.43	0.11	0.00	0.11
32.50	0.83	0.34	2.44	0.11	0.00	0.11
32.55	0.83	0.34	2.44	0.11	0.00	0.11
32.60	0.83	0.34	2.44	0.11	0.00	0.11
32.65	0.83	0.34	2.44	0.11	0.00	0.11
32.70	0.83	0.34	2.44	0.11	0.00	0.11
32.75	0.83	0.34	2.44	0.11	0.00	0.11
32.80	0.83	0.34	2.44	0.11	0.00	0.11
32.85	0.83	0.34	2.44	0.11	0.00	0.11
32.90	0.83	0.34	2.44	0.11	0.00	0.11
32.95	0.83	0.34	2.44	0.11	0.00	0.11
33.00	0.83	0.34	2.45	0.11	0.00	0.11
33.05	0.83	0.34	2.45	0.11	0.00	0.11
33.10	0.83	0.34	2.45	0.11	0.00	0.11
33.15	0.83	0.34	2.45	0.11	0.00	0.11
33.20	0.83	0.34	2.45	0.11	0.00	0.11
33.25	0.83	0.34	2.45	0.11	0.00	0.11
33.30	0.83	0.34	2.45	0.11	0.00	0.11
33.35	0.83	0.34	2.45	0.11	0.00	0.11
33.40	0.83	0.34	2.45	0.11	0.00	0.11
33.45	0.83	0.34	2.46	0.11	0.00	0.11
33.50	0.83	0.34	2.46	0.11	0.00	0.11
33.55	0.83	0.34	2.46	0.11	0.00	0.11
33.60	0.83	0.34	2.46	0.11	0.00	0.11
33.65	0.83	0.34	2.46	0.11	0.00	0.11
33.70	0.83	0.34	2.46	0.11	0.00	0.11
33.75	0.83	0.34	2.46	0.11	0.00	0.11
33.80	0.83	0.34	2.46	0.11	0.00	0.11
33.85	0.83	0.34	2.46	0.11	0.00	0.11

33.90	0.83	0.34	2.46	0.11	0.00	0.11
33.95	0.83	0.34	2.47	0.11	0.00	0.11
34.00	0.83	0.34	2.47	0.11	0.00	0.11
34.05	0.83	0.34	2.47	0.11	0.00	0.11
34.10	0.83	0.34	2.47	0.11	0.00	0.11
34.15	0.83	0.34	2.47	0.11	0.00	0.11
34.20	0.83	0.34	2.47	0.11	0.00	0.11
34.25	0.83	0.34	2.47	0.11	0.00	0.11
34.30	0.83	0.34	2.47	0.11	0.00	0.11
34.35	0.83	0.34	2.47	0.11	0.00	0.11
34.40	0.83	0.34	2.48	0.11	0.00	0.11
34.45	0.83	0.34	2.48	0.11	0.00	0.11
34.50	0.83	0.34	2.48	0.11	0.00	0.11
34.55	0.83	0.34	2.48	0.11	0.00	0.11
34.60	0.83	0.34	2.48	0.11	0.00	0.11
34.65	0.83	0.33	2.48	0.11	0.00	0.11
34.70	0.83	0.33	2.48	0.11	0.00	0.11
34.75	0.83	0.33	2.48	0.11	0.00	0.11
34.80	0.83	0.33	2.48	0.11	0.00	0.11
34.85	0.83	0.33	2.48	0.11	0.00	0.11
34.90	0.83	0.33	2.49	0.11	0.00	0.11
34.95	0.83	0.33	2.49	0.11	0.00	0.11
35.00	0.83	0.33	2.49	0.11	0.00	0.11
35.05	0.51	0.33	1.51	0.11	0.00	0.11
35.10	0.50	0.33	1.51	0.11	0.00	0.11
35.15	0.50	0.33	1.51	0.10	0.00	0.10
35.20	0.50	0.33	1.51	0.10	0.00	0.10
35.25	0.50	0.33	1.51	0.10	0.00	0.10
35.30	0.50	0.33	1.51	0.10	0.00	0.10
35.35	0.50	0.33	1.51	0.10	0.00	0.10
35.40	0.50	0.33	1.51	0.10	0.00	0.10
35.45	0.50	0.33	1.51	0.10	0.00	0.10
35.50	0.50	0.33	1.51	0.10	0.00	0.10
35.55	0.50	0.33	1.51	0.10	0.00	0.10
35.60	0.50	0.33	1.51	0.10	0.00	0.10
35.65	0.50	0.33	1.51	0.09	0.00	0.09
35.70	0.50	0.33	1.51	0.09	0.00	0.09
35.75	0.50	0.33	1.51	0.09	0.00	0.09
35.80	0.50	0.33	1.51	0.09	0.00	0.09
35.85	0.50	0.33	1.50	0.09	0.00	0.09
35.90	0.50	0.33	1.50	0.09	0.00	0.09
35.95	0.50	0.33	1.50	0.09	0.00	0.09
36.00	0.50	0.33	1.50	0.09	0.00	0.09
36.05	0.50	0.33	1.50	0.09	0.00	0.09
36.10	0.50	0.33	1.50	0.08	0.00	0.08
36.15	0.50	0.33	1.50	0.08	0.00	0.08
36.20	0.50	0.33	1.50	0.08	0.00	0.08
36.25	0.50	0.33	1.50	0.08	0.00	0.08
36.30	0.50	0.33	1.50	0.08	0.00	0.08
36.35	0.50	0.33	1.50	0.08	0.00	0.08
36.40	0.50	0.33	1.50	0.08	0.00	0.08
36.45	0.50	0.33	1.50	0.08	0.00	0.08
36.50	0.50	0.33	1.50	0.08	0.00	0.08
36.55	0.50	0.33	1.50	0.08	0.00	0.08
36.60	0.50	0.33	1.50	0.07	0.00	0.07
36.65	0.50	0.33	1.50	0.07	0.00	0.07
36.70	0.50	0.33	1.50	0.07	0.00	0.07
36.75	0.50	0.33	1.50	0.07	0.00	0.07
36.80	0.49	0.33	1.50	0.07	0.00	0.07
36.85	0.49	0.33	1.50	0.07	0.00	0.07
36.90	0.49	0.33	1.49	0.07	0.00	0.07
36.95	0.49	0.33	1.49	0.07	0.00	0.07
37.00	0.49	0.33	1.49	0.07	0.00	0.07
37.05	0.49	0.33	1.49	0.07	0.00	0.07
37.10	0.49	0.33	1.49	0.06	0.00	0.06
37.15	0.49	0.33	1.49	0.06	0.00	0.06
37.20	0.49	0.33	1.49	0.06	0.00	0.06
37.25	0.49	0.33	1.49	0.06	0.00	0.06
37.30	0.49	0.33	1.49	0.06	0.00	0.06
37.35	0.49	0.33	1.49	0.06	0.00	0.06
37.40	0.49	0.33	1.49	0.06	0.00	0.06

37.45	0.49	0.33	1.49	0.06	0.00	0.06
37.50	0.49	0.33	1.49	0.06	0.00	0.06
37.55	0.49	0.33	1.49	0.05	0.00	0.05
37.60	0.49	0.33	1.49	0.05	0.00	0.05
37.65	0.49	0.33	1.49	0.05	0.00	0.05
37.70	0.49	0.33	1.49	0.05	0.00	0.05
37.75	0.49	0.33	1.49	0.05	0.00	0.05
37.80	0.49	0.33	1.49	0.05	0.00	0.05
37.85	0.49	0.33	1.49	0.05	0.00	0.05
37.90	0.49	0.33	1.49	0.05	0.00	0.05
37.95	0.49	0.33	1.49	0.05	0.00	0.05
38.00	0.49	0.33	1.49	0.04	0.00	0.04
38.05	0.49	0.33	1.48	0.04	0.00	0.04
38.10	0.49	0.33	1.48	0.04	0.00	0.04
38.15	0.49	0.33	1.48	0.04	0.00	0.04
38.20	0.49	0.33	1.48	0.04	0.00	0.04
38.25	0.49	0.33	1.48	0.04	0.00	0.04
38.30	0.49	0.33	1.48	0.04	0.00	0.04
38.35	0.49	0.33	1.48	0.04	0.00	0.04
38.40	0.49	0.33	1.48	0.04	0.00	0.04
38.45	0.49	0.33	1.48	0.04	0.00	0.04
38.50	0.49	0.33	1.48	0.03	0.00	0.03
38.55	0.49	0.33	1.48	0.03	0.00	0.03
38.60	0.49	0.33	1.48	0.03	0.00	0.03
38.65	0.49	0.33	1.48	0.03	0.00	0.03
38.70	0.48	0.33	1.48	0.03	0.00	0.03
38.75	0.48	0.33	1.48	0.03	0.00	0.03
38.80	0.48	0.33	1.48	0.03	0.00	0.03
38.85	0.48	0.33	1.48	0.03	0.00	0.03
38.90	0.48	0.33	1.48	0.03	0.00	0.03
38.95	0.48	0.33	1.48	0.02	0.00	0.02
39.00	0.48	0.33	1.48	0.02	0.00	0.02
39.05	0.48	0.33	1.48	0.02	0.00	0.02
39.10	0.48	0.33	1.48	0.02	0.00	0.02
39.15	0.48	0.33	1.48	0.02	0.00	0.02
39.20	0.48	0.33	1.48	0.02	0.00	0.02
39.25	0.48	0.33	1.48	0.02	0.00	0.02
39.30	0.48	0.33	1.48	0.02	0.00	0.02
39.35	0.48	0.33	1.48	0.02	0.00	0.02
39.40	0.48	0.33	1.48	0.01	0.00	0.01
39.45	0.48	0.33	1.48	0.01	0.00	0.01
39.50	0.48	0.33	1.47	0.01	0.00	0.01
39.55	0.48	0.33	1.47	0.01	0.00	0.01
39.60	0.48	0.33	1.47	0.01	0.00	0.01
39.65	0.48	0.33	1.47	0.01	0.00	0.01
39.70	0.48	0.33	1.47	0.01	0.00	0.01
39.75	0.48	0.33	1.47	0.01	0.00	0.01
39.80	0.48	0.33	1.47	0.01	0.00	0.01
39.85	0.48	0.33	1.47	0.00	0.00	0.00
39.90	0.48	0.33	1.47	0.00	0.00	0.00
39.95	0.48	0.33	1.47	0.00	0.00	0.00
40.00	0.48	0.33	1.47	0.00	0.00	0.00
40.05	0.83	0.33	2.55	0.00	0.00	0.00
40.10	0.83	0.32	2.56	0.00	0.00	0.00
40.15	0.83	0.32	2.56	0.00	0.00	0.00
40.20	0.83	0.32	2.56	0.00	0.00	0.00
40.25	0.83	0.32	2.56	0.00	0.00	0.00
40.30	0.83	0.32	2.56	0.00	0.00	0.00
40.35	0.83	0.32	2.56	0.00	0.00	0.00
40.40	0.83	0.32	2.56	0.00	0.00	0.00
40.45	0.83	0.32	2.56	0.00	0.00	0.00
40.50	0.83	0.32	2.57	0.00	0.00	0.00
40.55	0.83	0.32	2.57	0.00	0.00	0.00
40.60	0.83	0.32	2.57	0.00	0.00	0.00
40.65	0.83	0.32	2.57	0.00	0.00	0.00
40.70	0.83	0.32	2.57	0.00	0.00	0.00
40.75	0.83	0.32	2.57	0.00	0.00	0.00
40.80	0.83	0.32	2.57	0.00	0.00	0.00
40.85	0.83	0.32	2.57	0.00	0.00	0.00
40.90	0.83	0.32	2.58	0.00	0.00	0.00
40.95	0.83	0.32	2.58	0.00	0.00	0.00

41.00	0.83	0.32	2.58	0.00	0.00	0.00
41.05	0.83	0.32	2.58	0.00	0.00	0.00
41.10	0.83	0.32	2.58	0.00	0.00	0.00
41.15	0.83	0.32	2.58	0.00	0.00	0.00
41.20	0.83	0.32	2.58	0.00	0.00	0.00
41.25	0.83	0.32	2.58	0.00	0.00	0.00
41.30	0.83	0.32	2.59	0.00	0.00	0.00
41.35	0.83	0.32	2.59	0.00	0.00	0.00
41.40	0.83	0.32	2.59	0.00	0.00	0.00
41.45	0.83	0.32	2.59	0.00	0.00	0.00
41.50	0.83	0.32	2.59	0.00	0.00	0.00
41.55	0.83	0.32	2.59	0.00	0.00	0.00
41.60	0.83	0.32	2.59	0.00	0.00	0.00
41.65	0.83	0.32	2.59	0.00	0.00	0.00
41.70	0.83	0.32	2.60	0.00	0.00	0.00
41.75	0.83	0.32	2.60	0.00	0.00	0.00
41.80	0.83	0.32	2.60	0.00	0.00	0.00
41.85	0.83	0.32	2.60	0.00	0.00	0.00
41.90	0.83	0.32	2.60	0.00	0.00	0.00
41.95	0.83	0.32	2.60	0.00	0.00	0.00
42.00	0.83	0.32	2.60	0.00	0.00	0.00
42.05	0.83	0.32	2.60	0.00	0.00	0.00
42.10	0.83	0.32	2.61	0.00	0.00	0.00
42.15	0.83	0.32	2.61	0.00	0.00	0.00
42.20	0.83	0.32	2.61	0.00	0.00	0.00
42.25	0.83	0.32	2.61	0.00	0.00	0.00
42.30	0.83	0.32	2.61	0.00	0.00	0.00
42.35	0.83	0.32	2.61	0.00	0.00	0.00
42.40	0.83	0.32	2.61	0.00	0.00	0.00
42.45	0.83	0.32	2.61	0.00	0.00	0.00
42.50	0.83	0.32	2.62	0.00	0.00	0.00
42.55	0.83	0.32	2.62	0.00	0.00	0.00
42.60	0.83	0.32	2.62	0.00	0.00	0.00
42.65	0.83	0.32	2.62	0.00	0.00	0.00
42.70	0.83	0.32	2.62	0.00	0.00	0.00
42.75	0.83	0.32	2.62	0.00	0.00	0.00
42.80	0.83	0.32	2.62	0.00	0.00	0.00
42.85	0.83	0.32	2.62	0.00	0.00	0.00
42.90	0.83	0.32	2.63	0.00	0.00	0.00
42.95	0.83	0.32	2.63	0.00	0.00	0.00
43.00	0.83	0.32	2.63	0.00	0.00	0.00
43.05	0.83	0.32	2.63	0.00	0.00	0.00
43.10	0.83	0.32	2.63	0.00	0.00	0.00
43.15	0.83	0.32	2.63	0.00	0.00	0.00
43.20	0.83	0.32	2.63	0.00	0.00	0.00
43.25	0.83	0.32	2.63	0.00	0.00	0.00
43.30	0.83	0.32	2.64	0.00	0.00	0.00
43.35	0.83	0.32	2.64	0.00	0.00	0.00
43.40	0.83	0.31	2.64	0.00	0.00	0.00
43.45	0.83	0.31	2.64	0.00	0.00	0.00
43.50	0.83	0.31	2.64	0.00	0.00	0.00
43.55	0.83	0.31	2.64	0.00	0.00	0.00
43.60	0.83	0.31	2.64	0.00	0.00	0.00
43.65	0.83	0.31	2.64	0.00	0.00	0.00
43.70	0.83	0.31	2.65	0.00	0.00	0.00
43.75	0.83	0.31	2.65	0.00	0.00	0.00
43.80	0.83	0.31	2.65	0.00	0.00	0.00
43.85	0.83	0.31	2.65	0.00	0.00	0.00
43.90	0.83	0.31	2.65	0.00	0.00	0.00
43.95	0.83	0.31	2.65	0.00	0.00	0.00
44.00	0.83	0.31	2.65	0.00	0.00	0.00
44.05	0.83	0.31	2.65	0.00	0.00	0.00
44.10	0.83	0.31	2.66	0.00	0.00	0.00
44.15	0.83	0.31	2.66	0.00	0.00	0.00
44.20	0.83	0.31	2.66	0.00	0.00	0.00
44.25	0.83	0.31	2.66	0.00	0.00	0.00
44.30	0.83	0.31	2.66	0.00	0.00	0.00
44.35	0.83	0.31	2.66	0.00	0.00	0.00
44.40	0.83	0.31	2.66	0.00	0.00	0.00
44.45	0.83	0.31	2.67	0.00	0.00	0.00
44.50	0.83	0.31	2.67	0.00	0.00	0.00

44.55	0.83	0.31	2.67	0.00	0.00	0.00
44.60	0.83	0.31	2.67	0.00	0.00	0.00
44.65	0.83	0.31	2.67	0.00	0.00	0.00
44.70	0.83	0.31	2.67	0.00	0.00	0.00
44.75	0.83	0.31	2.67	0.00	0.00	0.00
44.80	0.83	0.31	2.67	0.00	0.00	0.00
44.85	0.83	0.31	2.68	0.00	0.00	0.00
44.90	0.83	0.31	2.68	0.00	0.00	0.00
44.95	0.83	0.31	2.68	0.00	0.00	0.00
45.00	0.83	0.31	2.68	0.00	0.00	0.00
45.05	0.83	0.31	2.68	0.00	0.00	0.00
45.10	0.83	0.31	2.68	0.00	0.00	0.00
45.15	0.83	0.31	2.68	0.00	0.00	0.00
45.20	0.83	0.31	2.69	0.00	0.00	0.00
45.25	0.83	0.31	2.69	0.00	0.00	0.00
45.30	0.83	0.31	2.69	0.00	0.00	0.00
45.35	0.83	0.31	2.69	0.00	0.00	0.00
45.40	0.83	0.31	2.69	0.00	0.00	0.00
45.45	0.83	0.31	2.69	0.00	0.00	0.00
45.50	0.83	0.31	2.69	0.00	0.00	0.00
45.55	0.83	0.31	2.69	0.00	0.00	0.00
45.60	0.83	0.31	2.70	0.00	0.00	0.00
45.65	0.83	0.31	2.70	0.00	0.00	0.00
45.70	0.83	0.31	2.70	0.00	0.00	0.00
45.75	0.83	0.31	2.70	0.00	0.00	0.00
45.80	0.83	0.31	2.70	0.00	0.00	0.00
45.85	0.83	0.31	2.70	0.00	0.00	0.00
45.90	0.83	0.31	2.70	0.00	0.00	0.00
45.95	0.83	0.31	2.70	0.00	0.00	0.00
46.00	0.83	0.31	2.71	0.00	0.00	0.00
46.05	0.83	0.31	2.71	0.00	0.00	0.00
46.10	0.83	0.31	2.71	0.00	0.00	0.00
46.15	0.83	0.31	2.71	0.00	0.00	0.00
46.20	0.83	0.31	2.71	0.00	0.00	0.00
46.25	0.83	0.31	2.71	0.00	0.00	0.00
46.30	0.83	0.31	2.71	0.00	0.00	0.00
46.35	0.83	0.31	2.72	0.00	0.00	0.00
46.40	0.83	0.31	2.72	0.00	0.00	0.00
46.45	0.83	0.31	2.72	0.00	0.00	0.00
46.50	0.83	0.31	2.72	0.00	0.00	0.00
46.55	0.83	0.31	2.72	0.00	0.00	0.00
46.60	0.83	0.31	2.72	0.00	0.00	0.00
46.65	0.83	0.30	2.72	0.00	0.00	0.00
46.70	0.83	0.30	2.73	0.00	0.00	0.00
46.75	0.83	0.30	2.73	0.00	0.00	0.00
46.80	0.83	0.30	2.73	0.00	0.00	0.00
46.85	0.83	0.30	2.73	0.00	0.00	0.00
46.90	0.83	0.30	2.73	0.00	0.00	0.00
46.95	0.83	0.30	2.73	0.00	0.00	0.00
47.00	0.83	0.30	2.73	0.00	0.00	0.00
47.05	0.83	0.30	2.73	0.00	0.00	0.00
47.10	0.83	0.30	2.73	0.00	0.00	0.00
47.15	0.82	0.30	2.70	0.00	0.00	0.00
47.20	0.81	0.30	2.68	0.00	0.00	0.00
47.25	0.80	0.30	2.65	0.00	0.00	0.00
47.30	0.80	0.30	2.63	0.00	0.00	0.00
47.35	0.79	0.30	2.61	0.00	0.00	0.00
47.40	0.78	0.30	2.59	0.00	0.00	0.00
47.45	0.78	0.30	2.57	0.00	0.00	0.00
47.50	0.77	0.30	2.56	0.00	0.00	0.00
47.55	0.77	0.30	2.54	0.00	0.00	0.00
47.60	0.76	0.30	2.53	0.00	0.00	0.00
47.65	0.76	0.30	2.51	0.00	0.00	0.00
47.70	0.75	0.30	2.50	0.00	0.00	0.00
47.75	0.75	0.30	2.49	0.00	0.00	0.00
47.80	0.75	0.30	2.48	0.00	0.00	0.00
47.85	0.74	0.30	2.47	0.00	0.00	0.00
47.90	0.74	0.30	2.46	0.00	0.00	0.00
47.95	0.74	0.30	2.45	0.00	0.00	0.00
48.00	0.73	0.30	2.44	0.00	0.00	0.00
48.05	0.73	0.30	2.43	0.00	0.00	0.00

48.10	0.73	0.30	2.42	0.00	0.00	0.00
48.15	0.72	0.30	2.41	0.00	0.00	0.00
48.20	0.72	0.30	2.40	0.00	0.00	0.00
48.25	0.72	0.30	2.39	0.00	0.00	0.00
48.30	0.72	0.30	2.39	0.00	0.00	0.00
48.35	0.71	0.30	2.38	0.00	0.00	0.00
48.40	0.71	0.30	2.37	0.00	0.00	0.00
48.45	0.71	0.30	2.37	0.00	0.00	0.00
48.50	0.71	0.30	2.36	0.00	0.00	0.00
48.55	0.70	0.30	2.35	0.00	0.00	0.00
48.60	0.70	0.30	2.35	0.00	0.00	0.00
48.65	0.70	0.30	2.34	0.00	0.00	0.00
48.70	0.70	0.30	2.34	0.00	0.00	0.00
48.75	0.70	0.30	2.33	0.00	0.00	0.00
48.80	0.69	0.30	2.32	0.00	0.00	0.00
48.85	0.69	0.30	2.32	0.00	0.00	0.00
48.90	0.69	0.30	2.31	0.00	0.00	0.00
48.95	0.69	0.30	2.31	0.00	0.00	0.00
49.00	0.69	0.30	2.31	0.00	0.00	0.00
49.05	0.68	0.30	2.30	0.00	0.00	0.00
49.10	0.68	0.30	2.30	0.00	0.00	0.00
49.15	0.68	0.30	2.29	0.00	0.00	0.00
49.20	0.68	0.30	2.29	0.00	0.00	0.00
49.25	0.68	0.30	2.28	0.00	0.00	0.00
49.30	0.68	0.30	2.28	0.00	0.00	0.00
49.35	0.68	0.30	2.28	0.00	0.00	0.00
49.40	0.67	0.30	2.27	0.00	0.00	0.00
49.45	0.67	0.30	2.27	0.00	0.00	0.00
49.50	0.67	0.30	2.27	0.00	0.00	0.00
49.55	0.67	0.30	2.26	0.00	0.00	0.00
49.60	0.67	0.30	2.26	0.00	0.00	0.00
49.65	0.67	0.30	2.26	0.00	0.00	0.00
49.70	0.67	0.30	2.25	0.00	0.00	0.00
49.75	0.66	0.30	2.25	0.00	0.00	0.00
49.80	0.66	0.30	2.25	0.00	0.00	0.00
49.85	0.66	0.30	2.24	0.00	0.00	0.00
49.90	0.66	0.30	2.24	0.00	0.00	0.00
49.95	0.66	0.29	2.24	0.00	0.00	0.00
50.00	0.66	0.29	2.23	0.00	0.00	0.00

---

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

---

1 atm (atmosphere) = 1 tsf (ton/ft2)

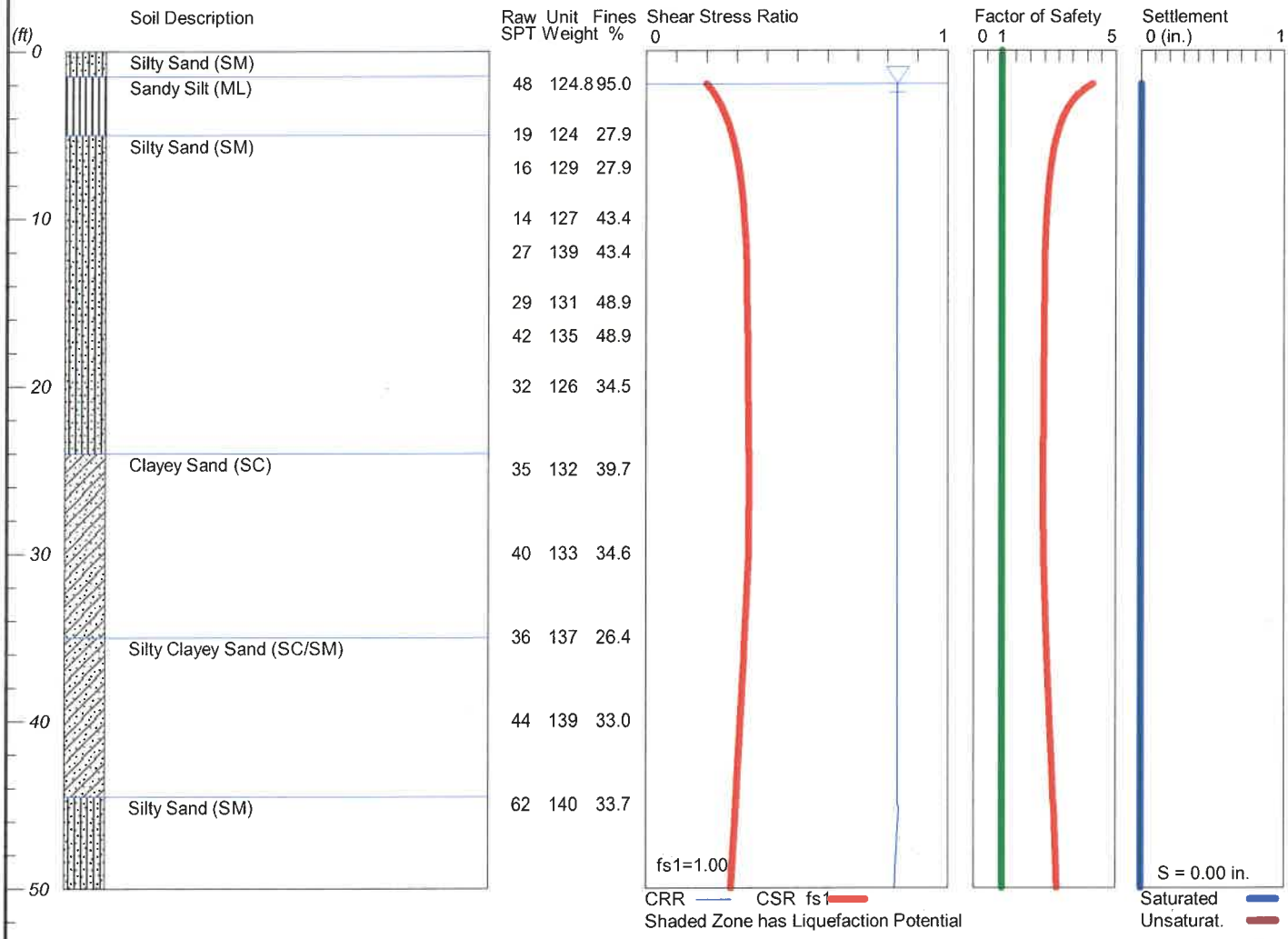
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Triangle Development

Hole No.=B2 Water Depth=2 ft

Magnitude=6.15
Acceleration=0.307g



LiquefyPro CivilTech Software USA www.civiltech.com

Krazan

012-22165

Plate A-1

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*****************************************************************************************************
                                        LIQUEFACTION ANALYSIS SUMMARY
                                       Copyright by CivilTech Software
                                              www.civiltech.com
*****************************************************************************************************
    Font: Courier New, Regular, Size 8 is recommended for this report.
    Licensed to ,   10/10/2022      2:03:34 PM

    Input File Name: C:\Users\mweber\Documents\Krazan\Projects\012\22\165 Triangle Development\B2\01222165 B2
Liquefaction.liq
    Title:  Triangle Development
    Subtitle:  012-22165

    Surface Elev.=
    Hole No.=B2
    Depth of Hole= 50.00 ft
    Water Table during Earthquake= 2.00 ft
    Water Table during In-Situ Testing= 2.00 ft
    Max. Acceleration= 0.31 g
    Earthquake Magnitude= 6.15

 Input Data:
    Surface Elev.=
    Hole No.=B2
    Depth of Hole=50.00 ft
    Water Table during Earthquake= 2.00 ft
    Water Table during In-Situ Testing= 2.00 ft
    Max. Acceleration=0.31 g
    Earthquake Magnitude=6.15
    No-Liquefiable Soils:   CL, OL are Non-Liq. Soil

    1. SPT or BPT Calculation.
    2. Settlement Analysis Method: Ishihara / Yoshimine
    3. Fines Correction for Liquefaction: Stark/Olson et al.*
    4. Fine Correction for Settlement: During Liquefaction*
    5. Settlement Calculation in: All zones*
    6. Hammer Energy Ratio,                                   Ce = 1.25
    7. Borehole Diameter,                                        Cb= 1
    8. Sampling Method,                                         Cs= 1
    9. User request factor of safety (apply to CSR) ,   User= 1
       Plot one CSR curve (fs1=User)
    10. Use Curve Smoothing: No
    * Recommended Options

    In-Situ Test Data:
    Depth   SPT     gamma   Fines
    ft              pcf     %
    ____________________________________
    2.00    48.00   124.80  95.00
    5.00    19.00   124.00  27.90
    7.00    16.00   129.00  27.90
    10.00   14.00   127.00  43.40
    12.00   27.00   139.00  43.40
    15.00   29.00   131.00  48.90
    17.00   42.00   135.00  48.90
    20.00   32.00   126.00  34.50
    25.00   35.00   132.00  39.70
    30.00   40.00   133.00  34.60
    35.00   36.00   137.00  26.40
    40.00   44.00   139.00  33.00
    45.00   62.00   140.00  33.70
    ____________________________________

Output Results:
    Settlement of Saturated Sands=0.00 in.
    Settlement of Unsaturated Sands=0.00 in.
    Total Settlement of Saturated and Unsaturated Sands=0.00 in.
    Differential Settlement=0.000 to 0.000 in.

    Depth   CRRm    CSRfs   F.S.    S_sat.  S_dry   S_all
    ft                              in.     in.     in.
```

2.00	0.83	0.20	4.18	0.00	0.00	0.00
2.05	0.83	0.20	4.13	0.00	0.00	0.00
2.10	0.83	0.20	4.08	0.00	0.00	0.00
2.15	0.83	0.21	4.04	0.00	0.00	0.00
2.20	0.83	0.21	3.99	0.00	0.00	0.00
2.25	0.83	0.21	3.95	0.00	0.00	0.00
2.30	0.83	0.21	3.91	0.00	0.00	0.00
2.35	0.83	0.21	3.87	0.00	0.00	0.00
2.40	0.83	0.22	3.84	0.00	0.00	0.00
2.45	0.83	0.22	3.80	0.00	0.00	0.00
2.50	0.83	0.22	3.77	0.00	0.00	0.00
2.55	0.83	0.22	3.74	0.00	0.00	0.00
2.60	0.83	0.22	3.71	0.00	0.00	0.00
2.65	0.83	0.23	3.68	0.00	0.00	0.00
2.70	0.83	0.23	3.65	0.00	0.00	0.00
2.75	0.83	0.23	3.62	0.00	0.00	0.00
2.80	0.83	0.23	3.59	0.00	0.00	0.00
2.85	0.83	0.23	3.57	0.00	0.00	0.00
2.90	0.83	0.23	3.54	0.00	0.00	0.00
2.95	0.83	0.24	3.52	0.00	0.00	0.00
3.00	0.83	0.24	3.49	0.00	0.00	0.00
3.05	0.83	0.24	3.47	0.00	0.00	0.00
3.10	0.83	0.24	3.45	0.00	0.00	0.00
3.15	0.83	0.24	3.43	0.00	0.00	0.00
3.20	0.83	0.24	3.41	0.00	0.00	0.00
3.25	0.83	0.25	3.39	0.00	0.00	0.00
3.30	0.83	0.25	3.37	0.00	0.00	0.00
3.35	0.83	0.25	3.35	0.00	0.00	0.00
3.40	0.83	0.25	3.33	0.00	0.00	0.00
3.45	0.83	0.25	3.31	0.00	0.00	0.00
3.50	0.83	0.25	3.30	0.00	0.00	0.00
3.55	0.83	0.25	3.28	0.00	0.00	0.00
3.60	0.83	0.25	3.27	0.00	0.00	0.00
3.65	0.83	0.26	3.25	0.00	0.00	0.00
3.70	0.83	0.26	3.23	0.00	0.00	0.00
3.75	0.83	0.26	3.22	0.00	0.00	0.00
3.80	0.83	0.26	3.21	0.00	0.00	0.00
3.85	0.83	0.26	3.19	0.00	0.00	0.00
3.90	0.83	0.26	3.18	0.00	0.00	0.00
3.95	0.83	0.26	3.16	0.00	0.00	0.00
4.00	0.83	0.26	3.15	0.00	0.00	0.00
4.05	0.83	0.26	3.14	0.00	0.00	0.00
4.10	0.83	0.27	3.13	0.00	0.00	0.00
4.15	0.83	0.27	3.11	0.00	0.00	0.00
4.20	0.83	0.27	3.10	0.00	0.00	0.00
4.25	0.83	0.27	3.09	0.00	0.00	0.00
4.30	0.83	0.27	3.08	0.00	0.00	0.00
4.35	0.83	0.27	3.07	0.00	0.00	0.00
4.40	0.83	0.27	3.06	0.00	0.00	0.00
4.45	0.83	0.27	3.05	0.00	0.00	0.00
4.50	0.83	0.27	3.04	0.00	0.00	0.00
4.55	0.83	0.27	3.03	0.00	0.00	0.00
4.60	0.83	0.28	3.02	0.00	0.00	0.00
4.65	0.83	0.28	3.01	0.00	0.00	0.00
4.70	0.83	0.28	3.00	0.00	0.00	0.00
4.75	0.83	0.28	2.99	0.00	0.00	0.00
4.80	0.83	0.28	2.98	0.00	0.00	0.00
4.85	0.83	0.28	2.97	0.00	0.00	0.00
4.90	0.83	0.28	2.96	0.00	0.00	0.00
4.95	0.83	0.28	2.96	0.00	0.00	0.00
5.00	0.83	0.28	2.95	0.00	0.00	0.00
5.05	0.83	0.28	2.94	0.00	0.00	0.00
5.10	0.83	0.28	2.93	0.00	0.00	0.00
5.15	0.83	0.28	2.92	0.00	0.00	0.00
5.20	0.83	0.28	2.92	0.00	0.00	0.00
5.25	0.83	0.29	2.91	0.00	0.00	0.00
5.30	0.83	0.29	2.90	0.00	0.00	0.00
5.35	0.83	0.29	2.90	0.00	0.00	0.00
5.40	0.83	0.29	2.89	0.00	0.00	0.00
5.45	0.83	0.29	2.88	0.00	0.00	0.00

5.50	0.83	0.29	2.87	0.00	0.00	0.00
5.55	0.83	0.29	2.87	0.00	0.00	0.00
5.60	0.83	0.29	2.86	0.00	0.00	0.00
5.65	0.83	0.29	2.85	0.00	0.00	0.00
5.70	0.83	0.29	2.85	0.00	0.00	0.00
5.75	0.83	0.29	2.84	0.00	0.00	0.00
5.80	0.83	0.29	2.84	0.00	0.00	0.00
5.85	0.83	0.29	2.83	0.00	0.00	0.00
5.90	0.83	0.29	2.82	0.00	0.00	0.00
5.95	0.83	0.29	2.82	0.00	0.00	0.00
6.00	0.83	0.30	2.81	0.00	0.00	0.00
6.05	0.83	0.30	2.81	0.00	0.00	0.00
6.10	0.83	0.30	2.80	0.00	0.00	0.00
6.15	0.83	0.30	2.80	0.00	0.00	0.00
6.20	0.83	0.30	2.79	0.00	0.00	0.00
6.25	0.83	0.30	2.79	0.00	0.00	0.00
6.30	0.83	0.30	2.78	0.00	0.00	0.00
6.35	0.83	0.30	2.78	0.00	0.00	0.00
6.40	0.83	0.30	2.77	0.00	0.00	0.00
6.45	0.83	0.30	2.77	0.00	0.00	0.00
6.50	0.83	0.30	2.76	0.00	0.00	0.00
6.55	0.83	0.30	2.76	0.00	0.00	0.00
6.60	0.83	0.30	2.75	0.00	0.00	0.00
6.65	0.83	0.30	2.75	0.00	0.00	0.00
6.70	0.83	0.30	2.74	0.00	0.00	0.00
6.75	0.83	0.30	2.74	0.00	0.00	0.00
6.80	0.83	0.30	2.73	0.00	0.00	0.00
6.85	0.83	0.30	2.73	0.00	0.00	0.00
6.90	0.83	0.30	2.73	0.00	0.00	0.00
6.95	0.83	0.31	2.72	0.00	0.00	0.00
7.00	0.83	0.31	2.72	0.00	0.00	0.00
7.05	0.83	0.31	2.71	0.00	0.00	0.00
7.10	0.83	0.31	2.71	0.00	0.00	0.00
7.15	0.83	0.31	2.71	0.00	0.00	0.00
7.20	0.83	0.31	2.70	0.00	0.00	0.00
7.25	0.83	0.31	2.70	0.00	0.00	0.00
7.30	0.83	0.31	2.70	0.00	0.00	0.00
7.35	0.83	0.31	2.69	0.00	0.00	0.00
7.40	0.83	0.31	2.69	0.00	0.00	0.00
7.45	0.83	0.31	2.69	0.00	0.00	0.00
7.50	0.83	0.31	2.68	0.00	0.00	0.00
7.55	0.83	0.31	2.68	0.00	0.00	0.00
7.60	0.83	0.31	2.68	0.00	0.00	0.00
7.65	0.83	0.31	2.68	0.00	0.00	0.00
7.70	0.83	0.31	2.67	0.00	0.00	0.00
7.75	0.83	0.31	2.67	0.00	0.00	0.00
7.80	0.83	0.31	2.67	0.00	0.00	0.00
7.85	0.83	0.31	2.66	0.00	0.00	0.00
7.90	0.83	0.31	2.66	0.00	0.00	0.00
7.95	0.83	0.31	2.66	0.00	0.00	0.00
8.00	0.83	0.31	2.66	0.00	0.00	0.00
8.05	0.83	0.31	2.65	0.00	0.00	0.00
8.10	0.83	0.31	2.65	0.00	0.00	0.00
8.15	0.83	0.31	2.65	0.00	0.00	0.00
8.20	0.83	0.31	2.64	0.00	0.00	0.00
8.25	0.83	0.31	2.64	0.00	0.00	0.00
8.30	0.83	0.31	2.64	0.00	0.00	0.00
8.35	0.83	0.31	2.64	0.00	0.00	0.00
8.40	0.83	0.32	2.64	0.00	0.00	0.00
8.45	0.83	0.32	2.63	0.00	0.00	0.00
8.50	0.83	0.32	2.63	0.00	0.00	0.00
8.55	0.83	0.32	2.63	0.00	0.00	0.00
8.60	0.83	0.32	2.63	0.00	0.00	0.00
8.65	0.83	0.32	2.62	0.00	0.00	0.00
8.70	0.83	0.32	2.62	0.00	0.00	0.00
8.75	0.83	0.32	2.62	0.00	0.00	0.00
8.80	0.83	0.32	2.62	0.00	0.00	0.00
8.85	0.83	0.32	2.61	0.00	0.00	0.00
8.90	0.83	0.32	2.61	0.00	0.00	0.00
8.95	0.83	0.32	2.61	0.00	0.00	0.00
9.00	0.83	0.32	2.61	0.00	0.00	0.00

9.05	0.83	0.32	2.61	0.00	0.00	0.00
9.10	0.83	0.32	2.60	0.00	0.00	0.00
9.15	0.83	0.32	2.60	0.00	0.00	0.00
9.20	0.83	0.32	2.60	0.00	0.00	0.00
9.25	0.83	0.32	2.60	0.00	0.00	0.00
9.30	0.83	0.32	2.60	0.00	0.00	0.00
9.35	0.83	0.32	2.59	0.00	0.00	0.00
9.40	0.83	0.32	2.59	0.00	0.00	0.00
9.45	0.83	0.32	2.59	0.00	0.00	0.00
9.50	0.83	0.32	2.59	0.00	0.00	0.00
9.55	0.83	0.32	2.59	0.00	0.00	0.00
9.60	0.83	0.32	2.59	0.00	0.00	0.00
9.65	0.83	0.32	2.58	0.00	0.00	0.00
9.70	0.83	0.32	2.58	0.00	0.00	0.00
9.75	0.83	0.32	2.58	0.00	0.00	0.00
9.80	0.83	0.32	2.58	0.00	0.00	0.00
9.85	0.83	0.32	2.58	0.00	0.00	0.00
9.90	0.83	0.32	2.58	0.00	0.00	0.00
9.95	0.83	0.32	2.57	0.00	0.00	0.00
10.00	0.83	0.32	2.57	0.00	0.00	0.00
10.05	0.83	0.32	2.57	0.00	0.00	0.00
10.10	0.83	0.32	2.57	0.00	0.00	0.00
10.15	0.83	0.32	2.57	0.00	0.00	0.00
10.20	0.83	0.32	2.57	0.00	0.00	0.00
10.25	0.83	0.32	2.56	0.00	0.00	0.00
10.30	0.83	0.32	2.56	0.00	0.00	0.00
10.35	0.83	0.32	2.56	0.00	0.00	0.00
10.40	0.83	0.32	2.56	0.00	0.00	0.00
10.45	0.83	0.32	2.56	0.00	0.00	0.00
10.50	0.83	0.33	2.56	0.00	0.00	0.00
10.55	0.83	0.33	2.55	0.00	0.00	0.00
10.60	0.83	0.33	2.55	0.00	0.00	0.00
10.65	0.83	0.33	2.55	0.00	0.00	0.00
10.70	0.83	0.33	2.55	0.00	0.00	0.00
10.75	0.83	0.33	2.55	0.00	0.00	0.00
10.80	0.83	0.33	2.55	0.00	0.00	0.00
10.85	0.83	0.33	2.55	0.00	0.00	0.00
10.90	0.83	0.33	2.54	0.00	0.00	0.00
10.95	0.83	0.33	2.54	0.00	0.00	0.00
11.00	0.83	0.33	2.54	0.00	0.00	0.00
11.05	0.83	0.33	2.54	0.00	0.00	0.00
11.10	0.83	0.33	2.54	0.00	0.00	0.00
11.15	0.83	0.33	2.54	0.00	0.00	0.00
11.20	0.83	0.33	2.54	0.00	0.00	0.00
11.25	0.83	0.33	2.53	0.00	0.00	0.00
11.30	0.83	0.33	2.53	0.00	0.00	0.00
11.35	0.83	0.33	2.53	0.00	0.00	0.00
11.40	0.83	0.33	2.53	0.00	0.00	0.00
11.45	0.83	0.33	2.53	0.00	0.00	0.00
11.50	0.83	0.33	2.53	0.00	0.00	0.00
11.55	0.83	0.33	2.53	0.00	0.00	0.00
11.60	0.83	0.33	2.53	0.00	0.00	0.00
11.65	0.83	0.33	2.52	0.00	0.00	0.00
11.70	0.83	0.33	2.52	0.00	0.00	0.00
11.75	0.83	0.33	2.52	0.00	0.00	0.00
11.80	0.83	0.33	2.52	0.00	0.00	0.00
11.85	0.83	0.33	2.52	0.00	0.00	0.00
11.90	0.83	0.33	2.52	0.00	0.00	0.00
11.95	0.83	0.33	2.52	0.00	0.00	0.00
12.00	0.83	0.33	2.52	0.00	0.00	0.00
12.05	0.83	0.33	2.52	0.00	0.00	0.00
12.10	0.83	0.33	2.52	0.00	0.00	0.00
12.15	0.83	0.33	2.52	0.00	0.00	0.00
12.20	0.83	0.33	2.51	0.00	0.00	0.00
12.25	0.83	0.33	2.51	0.00	0.00	0.00
12.30	0.83	0.33	2.51	0.00	0.00	0.00
12.35	0.83	0.33	2.51	0.00	0.00	0.00
12.40	0.83	0.33	2.51	0.00	0.00	0.00
12.45	0.83	0.33	2.51	0.00	0.00	0.00
12.50	0.83	0.33	2.51	0.00	0.00	0.00
12.55	0.83	0.33	2.51	0.00	0.00	0.00

12.60	0.83	0.33	2.51	0.00	0.00	0.00
12.65	0.83	0.33	2.51	0.00	0.00	0.00
12.70	0.83	0.33	2.51	0.00	0.00	0.00
12.75	0.83	0.33	2.51	0.00	0.00	0.00
12.80	0.83	0.33	2.51	0.00	0.00	0.00
12.85	0.83	0.33	2.51	0.00	0.00	0.00
12.90	0.83	0.33	2.51	0.00	0.00	0.00
12.95	0.83	0.33	2.51	0.00	0.00	0.00
13.00	0.83	0.33	2.51	0.00	0.00	0.00
13.05	0.83	0.33	2.51	0.00	0.00	0.00
13.10	0.83	0.33	2.51	0.00	0.00	0.00
13.15	0.83	0.33	2.51	0.00	0.00	0.00
13.20	0.83	0.33	2.51	0.00	0.00	0.00
13.25	0.83	0.33	2.51	0.00	0.00	0.00
13.30	0.83	0.33	2.51	0.00	0.00	0.00
13.35	0.83	0.33	2.51	0.00	0.00	0.00
13.40	0.83	0.33	2.51	0.00	0.00	0.00
13.45	0.83	0.33	2.51	0.00	0.00	0.00
13.50	0.83	0.33	2.51	0.00	0.00	0.00
13.55	0.83	0.33	2.51	0.00	0.00	0.00
13.60	0.83	0.33	2.51	0.00	0.00	0.00
13.65	0.83	0.33	2.51	0.00	0.00	0.00
13.70	0.83	0.33	2.51	0.00	0.00	0.00
13.75	0.83	0.33	2.51	0.00	0.00	0.00
13.80	0.83	0.33	2.51	0.00	0.00	0.00
13.85	0.83	0.33	2.50	0.00	0.00	0.00
13.90	0.83	0.33	2.50	0.00	0.00	0.00
13.95	0.83	0.33	2.50	0.00	0.00	0.00
14.00	0.83	0.33	2.50	0.00	0.00	0.00
14.05	0.83	0.33	2.50	0.00	0.00	0.00
14.10	0.83	0.33	2.50	0.00	0.00	0.00
14.15	0.83	0.33	2.50	0.00	0.00	0.00
14.20	0.83	0.33	2.50	0.00	0.00	0.00
14.25	0.83	0.33	2.50	0.00	0.00	0.00
14.30	0.83	0.33	2.50	0.00	0.00	0.00
14.35	0.83	0.33	2.50	0.00	0.00	0.00
14.40	0.83	0.33	2.50	0.00	0.00	0.00
14.45	0.83	0.33	2.50	0.00	0.00	0.00
14.50	0.83	0.33	2.50	0.00	0.00	0.00
14.55	0.83	0.33	2.50	0.00	0.00	0.00
14.60	0.83	0.33	2.50	0.00	0.00	0.00
14.65	0.83	0.33	2.50	0.00	0.00	0.00
14.70	0.83	0.33	2.50	0.00	0.00	0.00
14.75	0.83	0.33	2.50	0.00	0.00	0.00
14.80	0.83	0.33	2.50	0.00	0.00	0.00
14.85	0.83	0.33	2.50	0.00	0.00	0.00
14.90	0.83	0.33	2.50	0.00	0.00	0.00
14.95	0.83	0.33	2.50	0.00	0.00	0.00
15.00	0.83	0.33	2.50	0.00	0.00	0.00
15.05	0.83	0.33	2.50	0.00	0.00	0.00
15.10	0.83	0.33	2.50	0.00	0.00	0.00
15.15	0.83	0.33	2.50	0.00	0.00	0.00
15.20	0.83	0.33	2.50	0.00	0.00	0.00
15.25	0.83	0.33	2.50	0.00	0.00	0.00
15.30	0.83	0.33	2.50	0.00	0.00	0.00
15.35	0.83	0.33	2.50	0.00	0.00	0.00
15.40	0.83	0.33	2.50	0.00	0.00	0.00
15.45	0.83	0.33	2.50	0.00	0.00	0.00
15.50	0.83	0.33	2.50	0.00	0.00	0.00
15.55	0.83	0.33	2.50	0.00	0.00	0.00
15.60	0.83	0.33	2.49	0.00	0.00	0.00
15.65	0.83	0.33	2.49	0.00	0.00	0.00
15.70	0.83	0.33	2.49	0.00	0.00	0.00
15.75	0.83	0.33	2.49	0.00	0.00	0.00
15.80	0.83	0.33	2.49	0.00	0.00	0.00
15.85	0.83	0.33	2.49	0.00	0.00	0.00
15.90	0.83	0.33	2.49	0.00	0.00	0.00
15.95	0.83	0.33	2.49	0.00	0.00	0.00
16.00	0.83	0.33	2.49	0.00	0.00	0.00
16.05	0.83	0.33	2.49	0.00	0.00	0.00
16.10	0.83	0.33	2.49	0.00	0.00	0.00

16.15	0.83	0.33	2.49	0.00	0.00	0.00
16.20	0.83	0.33	2.49	0.00	0.00	0.00
16.25	0.83	0.33	2.49	0.00	0.00	0.00
16.30	0.83	0.33	2.49	0.00	0.00	0.00
16.35	0.83	0.33	2.49	0.00	0.00	0.00
16.40	0.83	0.33	2.49	0.00	0.00	0.00
16.45	0.83	0.33	2.49	0.00	0.00	0.00
16.50	0.83	0.33	2.49	0.00	0.00	0.00
16.55	0.83	0.33	2.49	0.00	0.00	0.00
16.60	0.83	0.33	2.49	0.00	0.00	0.00
16.65	0.83	0.33	2.49	0.00	0.00	0.00
16.70	0.83	0.33	2.49	0.00	0.00	0.00
16.75	0.83	0.33	2.49	0.00	0.00	0.00
16.80	0.83	0.33	2.49	0.00	0.00	0.00
16.85	0.83	0.33	2.48	0.00	0.00	0.00
16.90	0.83	0.33	2.48	0.00	0.00	0.00
16.95	0.83	0.33	2.48	0.00	0.00	0.00
17.00	0.83	0.33	2.48	0.00	0.00	0.00
17.05	0.83	0.33	2.48	0.00	0.00	0.00
17.10	0.83	0.33	2.48	0.00	0.00	0.00
17.15	0.83	0.33	2.48	0.00	0.00	0.00
17.20	0.83	0.33	2.48	0.00	0.00	0.00
17.25	0.83	0.33	2.48	0.00	0.00	0.00
17.30	0.83	0.33	2.48	0.00	0.00	0.00
17.35	0.83	0.33	2.48	0.00	0.00	0.00
17.40	0.83	0.33	2.48	0.00	0.00	0.00
17.45	0.83	0.33	2.48	0.00	0.00	0.00
17.50	0.83	0.33	2.48	0.00	0.00	0.00
17.55	0.83	0.33	2.48	0.00	0.00	0.00
17.60	0.83	0.33	2.48	0.00	0.00	0.00
17.65	0.83	0.33	2.48	0.00	0.00	0.00
17.70	0.83	0.33	2.48	0.00	0.00	0.00
17.75	0.83	0.33	2.48	0.00	0.00	0.00
17.80	0.83	0.33	2.48	0.00	0.00	0.00
17.85	0.83	0.33	2.48	0.00	0.00	0.00
17.90	0.83	0.33	2.48	0.00	0.00	0.00
17.95	0.83	0.33	2.48	0.00	0.00	0.00
18.00	0.83	0.33	2.48	0.00	0.00	0.00
18.05	0.83	0.33	2.48	0.00	0.00	0.00
18.10	0.83	0.33	2.48	0.00	0.00	0.00
18.15	0.83	0.33	2.48	0.00	0.00	0.00
18.20	0.83	0.33	2.48	0.00	0.00	0.00
18.25	0.83	0.33	2.48	0.00	0.00	0.00
18.30	0.83	0.33	2.48	0.00	0.00	0.00
18.35	0.83	0.33	2.48	0.00	0.00	0.00
18.40	0.83	0.33	2.48	0.00	0.00	0.00
18.45	0.83	0.33	2.48	0.00	0.00	0.00
18.50	0.83	0.33	2.48	0.00	0.00	0.00
18.55	0.83	0.33	2.48	0.00	0.00	0.00
18.60	0.83	0.34	2.48	0.00	0.00	0.00
18.65	0.83	0.34	2.48	0.00	0.00	0.00
18.70	0.83	0.34	2.48	0.00	0.00	0.00
18.75	0.83	0.34	2.48	0.00	0.00	0.00
18.80	0.83	0.34	2.48	0.00	0.00	0.00
18.85	0.83	0.34	2.48	0.00	0.00	0.00
18.90	0.83	0.34	2.48	0.00	0.00	0.00
18.95	0.83	0.34	2.48	0.00	0.00	0.00
19.00	0.83	0.34	2.48	0.00	0.00	0.00
19.05	0.83	0.34	2.48	0.00	0.00	0.00
19.10	0.83	0.34	2.48	0.00	0.00	0.00
19.15	0.83	0.34	2.48	0.00	0.00	0.00
19.20	0.83	0.34	2.48	0.00	0.00	0.00
19.25	0.83	0.34	2.48	0.00	0.00	0.00
19.30	0.83	0.34	2.48	0.00	0.00	0.00
19.35	0.83	0.34	2.48	0.00	0.00	0.00
19.40	0.83	0.34	2.48	0.00	0.00	0.00
19.45	0.83	0.34	2.48	0.00	0.00	0.00
19.50	0.83	0.34	2.48	0.00	0.00	0.00
19.55	0.83	0.34	2.48	0.00	0.00	0.00
19.60	0.83	0.34	2.48	0.00	0.00	0.00
19.65	0.83	0.34	2.48	0.00	0.00	0.00

19.70	0.83	0.34	2.48	0.00	0.00	0.00
19.75	0.83	0.34	2.48	0.00	0.00	0.00
19.80	0.83	0.34	2.48	0.00	0.00	0.00
19.85	0.83	0.34	2.48	0.00	0.00	0.00
19.90	0.83	0.34	2.48	0.00	0.00	0.00
19.95	0.83	0.34	2.48	0.00	0.00	0.00
20.00	0.83	0.34	2.48	0.00	0.00	0.00
20.05	0.83	0.34	2.48	0.00	0.00	0.00
20.10	0.83	0.34	2.48	0.00	0.00	0.00
20.15	0.83	0.34	2.48	0.00	0.00	0.00
20.20	0.83	0.34	2.48	0.00	0.00	0.00
20.25	0.83	0.34	2.48	0.00	0.00	0.00
20.30	0.83	0.34	2.48	0.00	0.00	0.00
20.35	0.83	0.34	2.48	0.00	0.00	0.00
20.40	0.83	0.34	2.48	0.00	0.00	0.00
20.45	0.83	0.34	2.48	0.00	0.00	0.00
20.50	0.83	0.34	2.47	0.00	0.00	0.00
20.55	0.83	0.34	2.47	0.00	0.00	0.00
20.60	0.83	0.34	2.47	0.00	0.00	0.00
20.65	0.83	0.34	2.47	0.00	0.00	0.00
20.70	0.83	0.34	2.47	0.00	0.00	0.00
20.75	0.83	0.34	2.47	0.00	0.00	0.00
20.80	0.83	0.34	2.47	0.00	0.00	0.00
20.85	0.83	0.34	2.47	0.00	0.00	0.00
20.90	0.83	0.34	2.47	0.00	0.00	0.00
20.95	0.83	0.34	2.47	0.00	0.00	0.00
21.00	0.83	0.34	2.47	0.00	0.00	0.00
21.05	0.83	0.34	2.47	0.00	0.00	0.00
21.10	0.83	0.34	2.47	0.00	0.00	0.00
21.15	0.83	0.34	2.47	0.00	0.00	0.00
21.20	0.83	0.34	2.47	0.00	0.00	0.00
21.25	0.83	0.34	2.47	0.00	0.00	0.00
21.30	0.83	0.34	2.47	0.00	0.00	0.00
21.35	0.83	0.34	2.47	0.00	0.00	0.00
21.40	0.83	0.34	2.47	0.00	0.00	0.00
21.45	0.83	0.34	2.47	0.00	0.00	0.00
21.50	0.83	0.34	2.47	0.00	0.00	0.00
21.55	0.83	0.34	2.47	0.00	0.00	0.00
21.60	0.83	0.34	2.47	0.00	0.00	0.00
21.65	0.83	0.34	2.47	0.00	0.00	0.00
21.70	0.83	0.34	2.47	0.00	0.00	0.00
21.75	0.83	0.34	2.47	0.00	0.00	0.00
21.80	0.83	0.34	2.47	0.00	0.00	0.00
21.85	0.83	0.34	2.47	0.00	0.00	0.00
21.90	0.83	0.34	2.47	0.00	0.00	0.00
21.95	0.83	0.34	2.47	0.00	0.00	0.00
22.00	0.83	0.34	2.47	0.00	0.00	0.00
22.05	0.83	0.34	2.47	0.00	0.00	0.00
22.10	0.83	0.34	2.47	0.00	0.00	0.00
22.15	0.83	0.34	2.47	0.00	0.00	0.00
22.20	0.83	0.34	2.47	0.00	0.00	0.00
22.25	0.83	0.34	2.46	0.00	0.00	0.00
22.30	0.83	0.34	2.46	0.00	0.00	0.00
22.35	0.83	0.34	2.46	0.00	0.00	0.00
22.40	0.83	0.34	2.46	0.00	0.00	0.00
22.45	0.83	0.34	2.46	0.00	0.00	0.00
22.50	0.83	0.34	2.46	0.00	0.00	0.00
22.55	0.83	0.34	2.46	0.00	0.00	0.00
22.60	0.83	0.34	2.46	0.00	0.00	0.00
22.65	0.83	0.34	2.46	0.00	0.00	0.00
22.70	0.83	0.34	2.46	0.00	0.00	0.00
22.75	0.83	0.34	2.46	0.00	0.00	0.00
22.80	0.83	0.34	2.46	0.00	0.00	0.00
22.85	0.83	0.34	2.46	0.00	0.00	0.00
22.90	0.83	0.34	2.46	0.00	0.00	0.00
22.95	0.83	0.34	2.46	0.00	0.00	0.00
23.00	0.83	0.34	2.46	0.00	0.00	0.00
23.05	0.83	0.34	2.46	0.00	0.00	0.00
23.10	0.83	0.34	2.46	0.00	0.00	0.00
23.15	0.83	0.34	2.46	0.00	0.00	0.00
23.20	0.83	0.34	2.46	0.00	0.00	0.00

23.25	0.83	0.34	2.46	0.00	0.00	0.00
23.30	0.83	0.34	2.46	0.00	0.00	0.00
23.35	0.83	0.34	2.46	0.00	0.00	0.00
23.40	0.83	0.34	2.46	0.00	0.00	0.00
23.45	0.83	0.34	2.46	0.00	0.00	0.00
23.50	0.83	0.34	2.46	0.00	0.00	0.00
23.55	0.83	0.34	2.46	0.00	0.00	0.00
23.60	0.83	0.34	2.46	0.00	0.00	0.00
23.65	0.83	0.34	2.46	0.00	0.00	0.00
23.70	0.83	0.34	2.46	0.00	0.00	0.00
23.75	0.83	0.34	2.46	0.00	0.00	0.00
23.80	0.83	0.34	2.46	0.00	0.00	0.00
23.85	0.83	0.34	2.46	0.00	0.00	0.00
23.90	0.83	0.34	2.46	0.00	0.00	0.00
23.95	0.83	0.34	2.46	0.00	0.00	0.00
24.00	0.83	0.34	2.46	0.00	0.00	0.00
24.05	0.83	0.34	2.46	0.00	0.00	0.00
24.10	0.83	0.34	2.46	0.00	0.00	0.00
24.15	0.83	0.34	2.46	0.00	0.00	0.00
24.20	0.83	0.34	2.46	0.00	0.00	0.00
24.25	0.83	0.34	2.46	0.00	0.00	0.00
24.30	0.83	0.34	2.46	0.00	0.00	0.00
24.35	0.83	0.34	2.46	0.00	0.00	0.00
24.40	0.83	0.34	2.46	0.00	0.00	0.00
24.45	0.83	0.34	2.46	0.00	0.00	0.00
24.50	0.83	0.34	2.46	0.00	0.00	0.00
24.55	0.83	0.34	2.46	0.00	0.00	0.00
24.60	0.83	0.34	2.46	0.00	0.00	0.00
24.65	0.83	0.34	2.46	0.00	0.00	0.00
24.70	0.83	0.34	2.46	0.00	0.00	0.00
24.75	0.83	0.34	2.46	0.00	0.00	0.00
24.80	0.83	0.34	2.46	0.00	0.00	0.00
24.85	0.83	0.34	2.46	0.00	0.00	0.00
24.90	0.83	0.34	2.46	0.00	0.00	0.00
24.95	0.83	0.34	2.45	0.00	0.00	0.00
25.00	0.83	0.34	2.45	0.00	0.00	0.00
25.05	0.83	0.34	2.45	0.00	0.00	0.00
25.10	0.83	0.34	2.45	0.00	0.00	0.00
25.15	0.83	0.34	2.45	0.00	0.00	0.00
25.20	0.83	0.34	2.45	0.00	0.00	0.00
25.25	0.83	0.34	2.45	0.00	0.00	0.00
25.30	0.83	0.34	2.45	0.00	0.00	0.00
25.35	0.83	0.34	2.46	0.00	0.00	0.00
25.40	0.83	0.34	2.46	0.00	0.00	0.00
25.45	0.83	0.34	2.46	0.00	0.00	0.00
25.50	0.83	0.34	2.46	0.00	0.00	0.00
25.55	0.83	0.34	2.46	0.00	0.00	0.00
25.60	0.83	0.34	2.46	0.00	0.00	0.00
25.65	0.83	0.34	2.46	0.00	0.00	0.00
25.70	0.83	0.34	2.46	0.00	0.00	0.00
25.75	0.83	0.34	2.46	0.00	0.00	0.00
25.80	0.83	0.34	2.46	0.00	0.00	0.00
25.85	0.83	0.34	2.46	0.00	0.00	0.00
25.90	0.83	0.34	2.46	0.00	0.00	0.00
25.95	0.83	0.34	2.46	0.00	0.00	0.00
26.00	0.83	0.34	2.46	0.00	0.00	0.00
26.05	0.83	0.34	2.46	0.00	0.00	0.00
26.10	0.83	0.34	2.46	0.00	0.00	0.00
26.15	0.83	0.34	2.46	0.00	0.00	0.00
26.20	0.83	0.34	2.46	0.00	0.00	0.00
26.25	0.83	0.34	2.46	0.00	0.00	0.00
26.30	0.83	0.34	2.46	0.00	0.00	0.00
26.35	0.83	0.34	2.46	0.00	0.00	0.00
26.40	0.83	0.34	2.46	0.00	0.00	0.00
26.45	0.83	0.34	2.46	0.00	0.00	0.00
26.50	0.83	0.34	2.46	0.00	0.00	0.00
26.55	0.83	0.34	2.46	0.00	0.00	0.00
26.60	0.83	0.34	2.46	0.00	0.00	0.00
26.65	0.83	0.34	2.46	0.00	0.00	0.00
26.70	0.83	0.34	2.46	0.00	0.00	0.00
26.75	0.83	0.34	2.46	0.00	0.00	0.00

26.80	0.83	0.34	2.46	0.00	0.00	0.00
26.85	0.83	0.34	2.46	0.00	0.00	0.00
26.90	0.83	0.34	2.46	0.00	0.00	0.00
26.95	0.83	0.34	2.46	0.00	0.00	0.00
27.00	0.83	0.34	2.46	0.00	0.00	0.00
27.05	0.83	0.34	2.46	0.00	0.00	0.00
27.10	0.83	0.34	2.46	0.00	0.00	0.00
27.15	0.83	0.34	2.46	0.00	0.00	0.00
27.20	0.83	0.34	2.46	0.00	0.00	0.00
27.25	0.83	0.34	2.46	0.00	0.00	0.00
27.30	0.83	0.34	2.46	0.00	0.00	0.00
27.35	0.83	0.34	2.46	0.00	0.00	0.00
27.40	0.83	0.34	2.46	0.00	0.00	0.00
27.45	0.83	0.34	2.46	0.00	0.00	0.00
27.50	0.83	0.34	2.46	0.00	0.00	0.00
27.55	0.83	0.34	2.46	0.00	0.00	0.00
27.60	0.83	0.34	2.46	0.00	0.00	0.00
27.65	0.83	0.34	2.46	0.00	0.00	0.00
27.70	0.83	0.34	2.46	0.00	0.00	0.00
27.75	0.83	0.34	2.46	0.00	0.00	0.00
27.80	0.83	0.34	2.46	0.00	0.00	0.00
27.85	0.83	0.34	2.46	0.00	0.00	0.00
27.90	0.83	0.34	2.46	0.00	0.00	0.00
27.95	0.83	0.34	2.46	0.00	0.00	0.00
28.00	0.83	0.34	2.46	0.00	0.00	0.00
28.05	0.83	0.34	2.46	0.00	0.00	0.00
28.10	0.83	0.34	2.46	0.00	0.00	0.00
28.15	0.83	0.34	2.46	0.00	0.00	0.00
28.20	0.83	0.34	2.46	0.00	0.00	0.00
28.25	0.83	0.34	2.46	0.00	0.00	0.00
28.30	0.83	0.34	2.46	0.00	0.00	0.00
28.35	0.83	0.34	2.46	0.00	0.00	0.00
28.40	0.83	0.34	2.46	0.00	0.00	0.00
28.45	0.83	0.34	2.46	0.00	0.00	0.00
28.50	0.83	0.34	2.46	0.00	0.00	0.00
28.55	0.83	0.34	2.46	0.00	0.00	0.00
28.60	0.83	0.34	2.46	0.00	0.00	0.00
28.65	0.83	0.34	2.46	0.00	0.00	0.00
28.70	0.83	0.34	2.46	0.00	0.00	0.00
28.75	0.83	0.34	2.46	0.00	0.00	0.00
28.80	0.83	0.34	2.46	0.00	0.00	0.00
28.85	0.83	0.34	2.46	0.00	0.00	0.00
28.90	0.83	0.34	2.46	0.00	0.00	0.00
28.95	0.83	0.34	2.46	0.00	0.00	0.00
29.00	0.83	0.34	2.46	0.00	0.00	0.00
29.05	0.83	0.34	2.46	0.00	0.00	0.00
29.10	0.83	0.34	2.46	0.00	0.00	0.00
29.15	0.83	0.34	2.46	0.00	0.00	0.00
29.20	0.83	0.34	2.46	0.00	0.00	0.00
29.25	0.83	0.34	2.46	0.00	0.00	0.00
29.30	0.83	0.34	2.46	0.00	0.00	0.00
29.35	0.83	0.34	2.46	0.00	0.00	0.00
29.40	0.83	0.34	2.46	0.00	0.00	0.00
29.45	0.83	0.34	2.46	0.00	0.00	0.00
29.50	0.83	0.34	2.46	0.00	0.00	0.00
29.55	0.83	0.34	2.46	0.00	0.00	0.00
29.60	0.83	0.34	2.46	0.00	0.00	0.00
29.65	0.83	0.34	2.46	0.00	0.00	0.00
29.70	0.83	0.34	2.46	0.00	0.00	0.00
29.75	0.83	0.34	2.46	0.00	0.00	0.00
29.80	0.83	0.34	2.46	0.00	0.00	0.00
29.85	0.83	0.34	2.46	0.00	0.00	0.00
29.90	0.83	0.34	2.46	0.00	0.00	0.00
29.95	0.83	0.34	2.46	0.00	0.00	0.00
30.00	0.83	0.34	2.46	0.00	0.00	0.00
30.05	0.83	0.34	2.47	0.00	0.00	0.00
30.10	0.83	0.34	2.47	0.00	0.00	0.00
30.15	0.83	0.34	2.47	0.00	0.00	0.00
30.20	0.83	0.34	2.47	0.00	0.00	0.00
30.25	0.83	0.34	2.47	0.00	0.00	0.00
30.30	0.83	0.34	2.47	0.00	0.00	0.00

30.35	0.83	0.34	2.47	0.00	0.00	0.00
30.40	0.83	0.34	2.47	0.00	0.00	0.00
30.45	0.83	0.34	2.47	0.00	0.00	0.00
30.50	0.83	0.34	2.47	0.00	0.00	0.00
30.55	0.83	0.34	2.47	0.00	0.00	0.00
30.60	0.83	0.34	2.48	0.00	0.00	0.00
30.65	0.83	0.34	2.48	0.00	0.00	0.00
30.70	0.83	0.34	2.48	0.00	0.00	0.00
30.75	0.83	0.34	2.48	0.00	0.00	0.00
30.80	0.83	0.34	2.48	0.00	0.00	0.00
30.85	0.83	0.33	2.48	0.00	0.00	0.00
30.90	0.83	0.33	2.48	0.00	0.00	0.00
30.95	0.83	0.33	2.48	0.00	0.00	0.00
31.00	0.83	0.33	2.48	0.00	0.00	0.00
31.05	0.83	0.33	2.48	0.00	0.00	0.00
31.10	0.83	0.33	2.49	0.00	0.00	0.00
31.15	0.83	0.33	2.49	0.00	0.00	0.00
31.20	0.83	0.33	2.49	0.00	0.00	0.00
31.25	0.83	0.33	2.49	0.00	0.00	0.00
31.30	0.83	0.33	2.49	0.00	0.00	0.00
31.35	0.83	0.33	2.49	0.00	0.00	0.00
31.40	0.83	0.33	2.49	0.00	0.00	0.00
31.45	0.83	0.33	2.49	0.00	0.00	0.00
31.50	0.83	0.33	2.49	0.00	0.00	0.00
31.55	0.83	0.33	2.49	0.00	0.00	0.00
31.60	0.83	0.33	2.49	0.00	0.00	0.00
31.65	0.83	0.33	2.50	0.00	0.00	0.00
31.70	0.83	0.33	2.50	0.00	0.00	0.00
31.75	0.83	0.33	2.50	0.00	0.00	0.00
31.80	0.83	0.33	2.50	0.00	0.00	0.00
31.85	0.83	0.33	2.50	0.00	0.00	0.00
31.90	0.83	0.33	2.50	0.00	0.00	0.00
31.95	0.83	0.33	2.50	0.00	0.00	0.00
32.00	0.83	0.33	2.50	0.00	0.00	0.00
32.05	0.83	0.33	2.50	0.00	0.00	0.00
32.10	0.83	0.33	2.50	0.00	0.00	0.00
32.15	0.83	0.33	2.51	0.00	0.00	0.00
32.20	0.83	0.33	2.51	0.00	0.00	0.00
32.25	0.83	0.33	2.51	0.00	0.00	0.00
32.30	0.83	0.33	2.51	0.00	0.00	0.00
32.35	0.83	0.33	2.51	0.00	0.00	0.00
32.40	0.83	0.33	2.51	0.00	0.00	0.00
32.45	0.83	0.33	2.51	0.00	0.00	0.00
32.50	0.83	0.33	2.51	0.00	0.00	0.00
32.55	0.83	0.33	2.51	0.00	0.00	0.00
32.60	0.83	0.33	2.51	0.00	0.00	0.00
32.65	0.83	0.33	2.52	0.00	0.00	0.00
32.70	0.83	0.33	2.52	0.00	0.00	0.00
32.75	0.83	0.33	2.52	0.00	0.00	0.00
32.80	0.83	0.33	2.52	0.00	0.00	0.00
32.85	0.83	0.33	2.52	0.00	0.00	0.00
32.90	0.83	0.33	2.52	0.00	0.00	0.00
32.95	0.83	0.33	2.52	0.00	0.00	0.00
33.00	0.83	0.33	2.52	0.00	0.00	0.00
33.05	0.83	0.33	2.52	0.00	0.00	0.00
33.10	0.83	0.33	2.52	0.00	0.00	0.00
33.15	0.83	0.33	2.53	0.00	0.00	0.00
33.20	0.83	0.33	2.53	0.00	0.00	0.00
33.25	0.83	0.33	2.53	0.00	0.00	0.00
33.30	0.83	0.33	2.53	0.00	0.00	0.00
33.35	0.83	0.33	2.53	0.00	0.00	0.00
33.40	0.83	0.33	2.53	0.00	0.00	0.00
33.45	0.83	0.33	2.53	0.00	0.00	0.00
33.50	0.83	0.33	2.53	0.00	0.00	0.00
33.55	0.83	0.33	2.53	0.00	0.00	0.00
33.60	0.83	0.33	2.53	0.00	0.00	0.00
33.65	0.83	0.33	2.54	0.00	0.00	0.00
33.70	0.83	0.33	2.54	0.00	0.00	0.00
33.75	0.83	0.33	2.54	0.00	0.00	0.00
33.80	0.83	0.33	2.54	0.00	0.00	0.00
33.85	0.83	0.33	2.54	0.00	0.00	0.00

33.90	0.83	0.33	2.54	0.00	0.00	0.00
33.95	0.83	0.33	2.54	0.00	0.00	0.00
34.00	0.83	0.33	2.54	0.00	0.00	0.00
34.05	0.83	0.33	2.54	0.00	0.00	0.00
34.10	0.83	0.33	2.55	0.00	0.00	0.00
34.15	0.83	0.33	2.55	0.00	0.00	0.00
34.20	0.83	0.33	2.55	0.00	0.00	0.00
34.25	0.83	0.33	2.55	0.00	0.00	0.00
34.30	0.83	0.33	2.55	0.00	0.00	0.00
34.35	0.83	0.33	2.55	0.00	0.00	0.00
34.40	0.83	0.33	2.55	0.00	0.00	0.00
34.45	0.83	0.33	2.55	0.00	0.00	0.00
34.50	0.83	0.33	2.55	0.00	0.00	0.00
34.55	0.83	0.33	2.55	0.00	0.00	0.00
34.60	0.83	0.33	2.56	0.00	0.00	0.00
34.65	0.83	0.32	2.56	0.00	0.00	0.00
34.70	0.83	0.32	2.56	0.00	0.00	0.00
34.75	0.83	0.32	2.56	0.00	0.00	0.00
34.80	0.83	0.32	2.56	0.00	0.00	0.00
34.85	0.83	0.32	2.56	0.00	0.00	0.00
34.90	0.83	0.32	2.56	0.00	0.00	0.00
34.95	0.83	0.32	2.56	0.00	0.00	0.00
35.00	0.83	0.32	2.56	0.00	0.00	0.00
35.05	0.83	0.32	2.56	0.00	0.00	0.00
35.10	0.83	0.32	2.57	0.00	0.00	0.00
35.15	0.83	0.32	2.57	0.00	0.00	0.00
35.20	0.83	0.32	2.57	0.00	0.00	0.00
35.25	0.83	0.32	2.57	0.00	0.00	0.00
35.30	0.83	0.32	2.57	0.00	0.00	0.00
35.35	0.83	0.32	2.57	0.00	0.00	0.00
35.40	0.83	0.32	2.57	0.00	0.00	0.00
35.45	0.83	0.32	2.57	0.00	0.00	0.00
35.50	0.83	0.32	2.58	0.00	0.00	0.00
35.55	0.83	0.32	2.58	0.00	0.00	0.00
35.60	0.83	0.32	2.58	0.00	0.00	0.00
35.65	0.83	0.32	2.58	0.00	0.00	0.00
35.70	0.83	0.32	2.58	0.00	0.00	0.00
35.75	0.83	0.32	2.58	0.00	0.00	0.00
35.80	0.83	0.32	2.58	0.00	0.00	0.00
35.85	0.83	0.32	2.58	0.00	0.00	0.00
35.90	0.83	0.32	2.58	0.00	0.00	0.00
35.95	0.83	0.32	2.59	0.00	0.00	0.00
36.00	0.83	0.32	2.59	0.00	0.00	0.00
36.05	0.83	0.32	2.59	0.00	0.00	0.00
36.10	0.83	0.32	2.59	0.00	0.00	0.00
36.15	0.83	0.32	2.59	0.00	0.00	0.00
36.20	0.83	0.32	2.59	0.00	0.00	0.00
36.25	0.83	0.32	2.59	0.00	0.00	0.00
36.30	0.83	0.32	2.59	0.00	0.00	0.00
36.35	0.83	0.32	2.60	0.00	0.00	0.00
36.40	0.83	0.32	2.60	0.00	0.00	0.00
36.45	0.83	0.32	2.60	0.00	0.00	0.00
36.50	0.83	0.32	2.60	0.00	0.00	0.00
36.55	0.83	0.32	2.60	0.00	0.00	0.00
36.60	0.83	0.32	2.60	0.00	0.00	0.00
36.65	0.83	0.32	2.60	0.00	0.00	0.00
36.70	0.83	0.32	2.60	0.00	0.00	0.00
36.75	0.83	0.32	2.60	0.00	0.00	0.00
36.80	0.83	0.32	2.61	0.00	0.00	0.00
36.85	0.83	0.32	2.61	0.00	0.00	0.00
36.90	0.83	0.32	2.61	0.00	0.00	0.00
36.95	0.83	0.32	2.61	0.00	0.00	0.00
37.00	0.83	0.32	2.61	0.00	0.00	0.00
37.05	0.83	0.32	2.61	0.00	0.00	0.00
37.10	0.83	0.32	2.61	0.00	0.00	0.00
37.15	0.83	0.32	2.61	0.00	0.00	0.00
37.20	0.83	0.32	2.62	0.00	0.00	0.00
37.25	0.83	0.32	2.62	0.00	0.00	0.00
37.30	0.83	0.32	2.62	0.00	0.00	0.00
37.35	0.83	0.32	2.62	0.00	0.00	0.00
37.40	0.83	0.32	2.62	0.00	0.00	0.00

37.45	0.83	0.32	2.62	0.00	0.00	0.00
37.50	0.83	0.32	2.62	0.00	0.00	0.00
37.55	0.83	0.32	2.62	0.00	0.00	0.00
37.60	0.83	0.32	2.63	0.00	0.00	0.00
37.65	0.83	0.32	2.63	0.00	0.00	0.00
37.70	0.83	0.32	2.63	0.00	0.00	0.00
37.75	0.83	0.32	2.63	0.00	0.00	0.00
37.80	0.83	0.32	2.63	0.00	0.00	0.00
37.85	0.83	0.32	2.63	0.00	0.00	0.00
37.90	0.83	0.32	2.63	0.00	0.00	0.00
37.95	0.83	0.32	2.63	0.00	0.00	0.00
38.00	0.83	0.32	2.63	0.00	0.00	0.00
38.05	0.83	0.32	2.64	0.00	0.00	0.00
38.10	0.83	0.31	2.64	0.00	0.00	0.00
38.15	0.83	0.31	2.64	0.00	0.00	0.00
38.20	0.83	0.31	2.64	0.00	0.00	0.00
38.25	0.83	0.31	2.64	0.00	0.00	0.00
38.30	0.83	0.31	2.64	0.00	0.00	0.00
38.35	0.83	0.31	2.64	0.00	0.00	0.00
38.40	0.83	0.31	2.64	0.00	0.00	0.00
38.45	0.83	0.31	2.65	0.00	0.00	0.00
38.50	0.83	0.31	2.65	0.00	0.00	0.00
38.55	0.83	0.31	2.65	0.00	0.00	0.00
38.60	0.83	0.31	2.65	0.00	0.00	0.00
38.65	0.83	0.31	2.65	0.00	0.00	0.00
38.70	0.83	0.31	2.65	0.00	0.00	0.00
38.75	0.83	0.31	2.65	0.00	0.00	0.00
38.80	0.83	0.31	2.65	0.00	0.00	0.00
38.85	0.83	0.31	2.66	0.00	0.00	0.00
38.90	0.83	0.31	2.66	0.00	0.00	0.00
38.95	0.83	0.31	2.66	0.00	0.00	0.00
39.00	0.83	0.31	2.66	0.00	0.00	0.00
39.05	0.83	0.31	2.66	0.00	0.00	0.00
39.10	0.83	0.31	2.66	0.00	0.00	0.00
39.15	0.83	0.31	2.66	0.00	0.00	0.00
39.20	0.83	0.31	2.66	0.00	0.00	0.00
39.25	0.83	0.31	2.67	0.00	0.00	0.00
39.30	0.83	0.31	2.67	0.00	0.00	0.00
39.35	0.83	0.31	2.67	0.00	0.00	0.00
39.40	0.83	0.31	2.67	0.00	0.00	0.00
39.45	0.83	0.31	2.67	0.00	0.00	0.00
39.50	0.83	0.31	2.67	0.00	0.00	0.00
39.55	0.83	0.31	2.67	0.00	0.00	0.00
39.60	0.83	0.31	2.67	0.00	0.00	0.00
39.65	0.83	0.31	2.68	0.00	0.00	0.00
39.70	0.83	0.31	2.68	0.00	0.00	0.00
39.75	0.83	0.31	2.68	0.00	0.00	0.00
39.80	0.83	0.31	2.68	0.00	0.00	0.00
39.85	0.83	0.31	2.68	0.00	0.00	0.00
39.90	0.83	0.31	2.68	0.00	0.00	0.00
39.95	0.83	0.31	2.68	0.00	0.00	0.00
40.00	0.83	0.31	2.68	0.00	0.00	0.00
40.05	0.83	0.31	2.69	0.00	0.00	0.00
40.10	0.83	0.31	2.69	0.00	0.00	0.00
40.15	0.83	0.31	2.69	0.00	0.00	0.00
40.20	0.83	0.31	2.69	0.00	0.00	0.00
40.25	0.83	0.31	2.69	0.00	0.00	0.00
40.30	0.83	0.31	2.69	0.00	0.00	0.00
40.35	0.83	0.31	2.69	0.00	0.00	0.00
40.40	0.83	0.31	2.70	0.00	0.00	0.00
40.45	0.83	0.31	2.70	0.00	0.00	0.00
40.50	0.83	0.31	2.70	0.00	0.00	0.00
40.55	0.83	0.31	2.70	0.00	0.00	0.00
40.60	0.83	0.31	2.70	0.00	0.00	0.00
40.65	0.83	0.31	2.70	0.00	0.00	0.00
40.70	0.83	0.31	2.70	0.00	0.00	0.00
40.75	0.83	0.31	2.70	0.00	0.00	0.00
40.80	0.83	0.31	2.71	0.00	0.00	0.00
40.85	0.83	0.31	2.71	0.00	0.00	0.00
40.90	0.83	0.31	2.71	0.00	0.00	0.00
40.95	0.83	0.31	2.71	0.00	0.00	0.00

41.00	0.83	0.31	2.71	0.00	0.00	0.00
41.05	0.83	0.31	2.71	0.00	0.00	0.00
41.10	0.83	0.31	2.71	0.00	0.00	0.00
41.15	0.83	0.31	2.72	0.00	0.00	0.00
41.20	0.83	0.31	2.72	0.00	0.00	0.00
41.25	0.83	0.31	2.72	0.00	0.00	0.00
41.30	0.83	0.31	2.72	0.00	0.00	0.00
41.35	0.83	0.31	2.72	0.00	0.00	0.00
41.40	0.83	0.31	2.72	0.00	0.00	0.00
41.45	0.83	0.31	2.72	0.00	0.00	0.00
41.50	0.83	0.30	2.72	0.00	0.00	0.00
41.55	0.83	0.30	2.73	0.00	0.00	0.00
41.60	0.83	0.30	2.73	0.00	0.00	0.00
41.65	0.83	0.30	2.73	0.00	0.00	0.00
41.70	0.83	0.30	2.73	0.00	0.00	0.00
41.75	0.83	0.30	2.73	0.00	0.00	0.00
41.80	0.83	0.30	2.73	0.00	0.00	0.00
41.85	0.83	0.30	2.73	0.00	0.00	0.00
41.90	0.83	0.30	2.74	0.00	0.00	0.00
41.95	0.83	0.30	2.74	0.00	0.00	0.00
42.00	0.83	0.30	2.74	0.00	0.00	0.00
42.05	0.83	0.30	2.74	0.00	0.00	0.00
42.10	0.83	0.30	2.74	0.00	0.00	0.00
42.15	0.83	0.30	2.74	0.00	0.00	0.00
42.20	0.83	0.30	2.74	0.00	0.00	0.00
42.25	0.83	0.30	2.75	0.00	0.00	0.00
42.30	0.83	0.30	2.75	0.00	0.00	0.00
42.35	0.83	0.30	2.75	0.00	0.00	0.00
42.40	0.83	0.30	2.75	0.00	0.00	0.00
42.45	0.83	0.30	2.75	0.00	0.00	0.00
42.50	0.83	0.30	2.75	0.00	0.00	0.00
42.55	0.83	0.30	2.75	0.00	0.00	0.00
42.60	0.83	0.30	2.75	0.00	0.00	0.00
42.65	0.83	0.30	2.76	0.00	0.00	0.00
42.70	0.83	0.30	2.76	0.00	0.00	0.00
42.75	0.83	0.30	2.76	0.00	0.00	0.00
42.80	0.83	0.30	2.76	0.00	0.00	0.00
42.85	0.83	0.30	2.76	0.00	0.00	0.00
42.90	0.83	0.30	2.76	0.00	0.00	0.00
42.95	0.83	0.30	2.76	0.00	0.00	0.00
43.00	0.83	0.30	2.77	0.00	0.00	0.00
43.05	0.83	0.30	2.77	0.00	0.00	0.00
43.10	0.83	0.30	2.77	0.00	0.00	0.00
43.15	0.83	0.30	2.77	0.00	0.00	0.00
43.20	0.83	0.30	2.77	0.00	0.00	0.00
43.25	0.83	0.30	2.77	0.00	0.00	0.00
43.30	0.83	0.30	2.77	0.00	0.00	0.00
43.35	0.83	0.30	2.78	0.00	0.00	0.00
43.40	0.83	0.30	2.78	0.00	0.00	0.00
43.45	0.83	0.30	2.78	0.00	0.00	0.00
43.50	0.83	0.30	2.78	0.00	0.00	0.00
43.55	0.83	0.30	2.78	0.00	0.00	0.00
43.60	0.83	0.30	2.78	0.00	0.00	0.00
43.65	0.83	0.30	2.78	0.00	0.00	0.00
43.70	0.83	0.30	2.79	0.00	0.00	0.00
43.75	0.83	0.30	2.79	0.00	0.00	0.00
43.80	0.83	0.30	2.79	0.00	0.00	0.00
43.85	0.83	0.30	2.79	0.00	0.00	0.00
43.90	0.83	0.30	2.79	0.00	0.00	0.00
43.95	0.83	0.30	2.79	0.00	0.00	0.00
44.00	0.83	0.30	2.79	0.00	0.00	0.00
44.05	0.83	0.30	2.80	0.00	0.00	0.00
44.10	0.83	0.30	2.80	0.00	0.00	0.00
44.15	0.83	0.30	2.80	0.00	0.00	0.00
44.20	0.83	0.30	2.80	0.00	0.00	0.00
44.25	0.83	0.30	2.80	0.00	0.00	0.00
44.30	0.83	0.30	2.80	0.00	0.00	0.00
44.35	0.83	0.30	2.80	0.00	0.00	0.00
44.40	0.83	0.30	2.81	0.00	0.00	0.00
44.45	0.83	0.30	2.81	0.00	0.00	0.00
44.50	0.83	0.30	2.81	0.00	0.00	0.00

44.55	0.83	0.30	2.81	0.00	0.00	0.00
44.60	0.83	0.30	2.81	0.00	0.00	0.00
44.65	0.83	0.30	2.81	0.00	0.00	0.00
44.70	0.83	0.30	2.81	0.00	0.00	0.00
44.75	0.83	0.30	2.82	0.00	0.00	0.00
44.80	0.83	0.29	2.82	0.00	0.00	0.00
44.85	0.83	0.29	2.82	0.00	0.00	0.00
44.90	0.83	0.29	2.82	0.00	0.00	0.00
44.95	0.83	0.29	2.82	0.00	0.00	0.00
45.00	0.83	0.29	2.82	0.00	0.00	0.00
45.05	0.83	0.29	2.82	0.00	0.00	0.00
45.10	0.84	0.29	2.84	0.00	0.00	0.00
45.15	0.84	0.29	2.84	0.00	0.00	0.00
45.20	0.84	0.29	2.84	0.00	0.00	0.00
45.25	0.84	0.29	2.85	0.00	0.00	0.00
45.30	0.84	0.29	2.85	0.00	0.00	0.00
45.35	0.84	0.29	2.85	0.00	0.00	0.00
45.40	0.83	0.29	2.85	0.00	0.00	0.00
45.45	0.83	0.29	2.85	0.00	0.00	0.00
45.50	0.83	0.29	2.85	0.00	0.00	0.00
45.55	0.83	0.29	2.85	0.00	0.00	0.00
45.60	0.83	0.29	2.85	0.00	0.00	0.00
45.65	0.83	0.29	2.85	0.00	0.00	0.00
45.70	0.83	0.29	2.85	0.00	0.00	0.00
45.75	0.83	0.29	2.85	0.00	0.00	0.00
45.80	0.83	0.29	2.86	0.00	0.00	0.00
45.85	0.83	0.29	2.86	0.00	0.00	0.00
45.90	0.83	0.29	2.86	0.00	0.00	0.00
45.95	0.83	0.29	2.86	0.00	0.00	0.00
46.00	0.83	0.29	2.86	0.00	0.00	0.00
46.05	0.83	0.29	2.86	0.00	0.00	0.00
46.10	0.83	0.29	2.86	0.00	0.00	0.00
46.15	0.83	0.29	2.86	0.00	0.00	0.00
46.20	0.83	0.29	2.86	0.00	0.00	0.00
46.25	0.83	0.29	2.86	0.00	0.00	0.00
46.30	0.83	0.29	2.87	0.00	0.00	0.00
46.35	0.83	0.29	2.87	0.00	0.00	0.00
46.40	0.83	0.29	2.87	0.00	0.00	0.00
46.45	0.83	0.29	2.87	0.00	0.00	0.00
46.50	0.83	0.29	2.87	0.00	0.00	0.00
46.55	0.83	0.29	2.87	0.00	0.00	0.00
46.60	0.83	0.29	2.87	0.00	0.00	0.00
46.65	0.83	0.29	2.87	0.00	0.00	0.00
46.70	0.83	0.29	2.87	0.00	0.00	0.00
46.75	0.83	0.29	2.87	0.00	0.00	0.00
46.80	0.83	0.29	2.88	0.00	0.00	0.00
46.85	0.83	0.29	2.88	0.00	0.00	0.00
46.90	0.83	0.29	2.88	0.00	0.00	0.00
46.95	0.83	0.29	2.88	0.00	0.00	0.00
47.00	0.83	0.29	2.88	0.00	0.00	0.00
47.05	0.83	0.29	2.88	0.00	0.00	0.00
47.10	0.83	0.29	2.88	0.00	0.00	0.00
47.15	0.83	0.29	2.88	0.00	0.00	0.00
47.20	0.83	0.29	2.88	0.00	0.00	0.00
47.25	0.83	0.29	2.88	0.00	0.00	0.00
47.30	0.83	0.29	2.88	0.00	0.00	0.00
47.35	0.83	0.29	2.89	0.00	0.00	0.00
47.40	0.83	0.29	2.89	0.00	0.00	0.00
47.45	0.83	0.29	2.89	0.00	0.00	0.00
47.50	0.83	0.29	2.89	0.00	0.00	0.00
47.55	0.83	0.29	2.89	0.00	0.00	0.00
47.60	0.83	0.29	2.89	0.00	0.00	0.00
47.65	0.83	0.29	2.89	0.00	0.00	0.00
47.70	0.83	0.29	2.89	0.00	0.00	0.00
47.75	0.83	0.29	2.89	0.00	0.00	0.00
47.80	0.83	0.29	2.89	0.00	0.00	0.00
47.85	0.83	0.29	2.90	0.00	0.00	0.00
47.90	0.83	0.29	2.90	0.00	0.00	0.00
47.95	0.83	0.29	2.90	0.00	0.00	0.00
48.00	0.83	0.29	2.90	0.00	0.00	0.00
48.05	0.83	0.29	2.90	0.00	0.00	0.00

48.10	0.83	0.28	2.90	0.00	0.00	0.00
48.15	0.83	0.28	2.90	0.00	0.00	0.00
48.20	0.83	0.28	2.90	0.00	0.00	0.00
48.25	0.83	0.28	2.90	0.00	0.00	0.00
48.30	0.83	0.28	2.90	0.00	0.00	0.00
48.35	0.83	0.28	2.91	0.00	0.00	0.00
48.40	0.83	0.28	2.91	0.00	0.00	0.00
48.45	0.83	0.28	2.91	0.00	0.00	0.00
48.50	0.83	0.28	2.91	0.00	0.00	0.00
48.55	0.83	0.28	2.91	0.00	0.00	0.00
48.60	0.82	0.28	2.91	0.00	0.00	0.00
48.65	0.82	0.28	2.91	0.00	0.00	0.00
48.70	0.82	0.28	2.91	0.00	0.00	0.00
48.75	0.82	0.28	2.91	0.00	0.00	0.00
48.80	0.82	0.28	2.91	0.00	0.00	0.00
48.85	0.82	0.28	2.92	0.00	0.00	0.00
48.90	0.82	0.28	2.92	0.00	0.00	0.00
48.95	0.82	0.28	2.92	0.00	0.00	0.00
49.00	0.82	0.28	2.92	0.00	0.00	0.00
49.05	0.82	0.28	2.92	0.00	0.00	0.00
49.10	0.82	0.28	2.92	0.00	0.00	0.00
49.15	0.82	0.28	2.92	0.00	0.00	0.00
49.20	0.82	0.28	2.92	0.00	0.00	0.00
49.25	0.82	0.28	2.92	0.00	0.00	0.00
49.30	0.82	0.28	2.93	0.00	0.00	0.00
49.35	0.82	0.28	2.93	0.00	0.00	0.00
49.40	0.82	0.28	2.93	0.00	0.00	0.00
49.45	0.82	0.28	2.93	0.00	0.00	0.00
49.50	0.82	0.28	2.93	0.00	0.00	0.00
49.55	0.82	0.28	2.93	0.00	0.00	0.00
49.60	0.82	0.28	2.93	0.00	0.00	0.00
49.65	0.82	0.28	2.93	0.00	0.00	0.00
49.70	0.82	0.28	2.93	0.00	0.00	0.00
49.75	0.82	0.28	2.93	0.00	0.00	0.00
49.80	0.82	0.28	2.94	0.00	0.00	0.00
49.85	0.82	0.28	2.94	0.00	0.00	0.00
49.90	0.82	0.28	2.94	0.00	0.00	0.00
49.95	0.82	0.28	2.94	0.00	0.00	0.00
50.00	0.82	0.28	2.94	0.00	0.00	0.00

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* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)

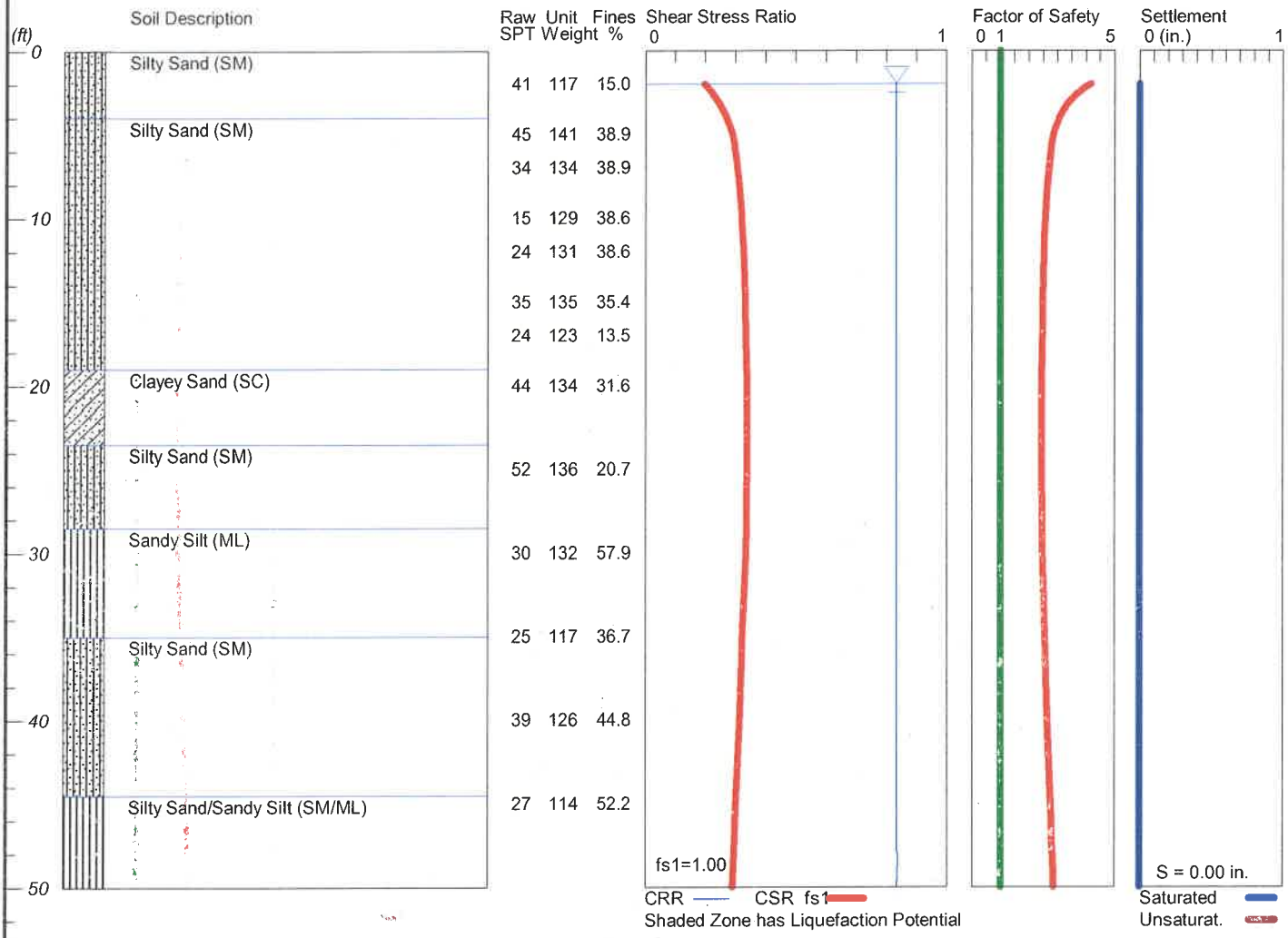
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Triangle Development

Hole No.=B3 Water Depth=2 ft

Magnitude=6.15
Acceleration=0.307g



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LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: C:\Users\mweber\Documents\Krazan\Projects\012\22\165 Triangle Development\B3\01222165 B3 Liquefaction.liq
Title: Triangle Development
Subtitle: 012-22165

Surface Elev.=
Hole No.=B3
Depth of Hole= 50.00 ft
Water Table during Earthquake= 2.00 ft
Water Table during In-Situ Testing= 2.00 ft
Max. Acceleration= 0.31 g
Earthquake Magnitude= 6.15

Input Data:
Surface Elev.=
Hole No.=B3
Depth of Hole=50.00 ft
Water Table during Earthquake= 2.00 ft
Water Table during In-Situ Testing= 2.00 ft
Max. Acceleration=0.31 g
Earthquake Magnitude=6.15
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1
8. Sampling Method, Cs= 1
9. User request factor of safety (apply to CSR) , User= 1
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: No
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
2.00	41.00	117.00	15.00
5.00	45.00	141.00	38.90
7.00	34.00	134.00	38.90
10.00	15.00	129.00	38.60
12.00	24.00	131.00	38.60
15.00	35.00	135.00	35.40
17.00	24.00	123.00	13.50
20.00	44.00	134.00	31.60
25.00	52.00	136.00	20.70
30.00	30.00	132.00	57.90
35.00	25.00	117.00	36.70
40.00	39.00	126.00	44.80
45.00	27.00	114.00	52.20

Output Results:
Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=0.00 in.
Total Settlement of Saturated and Unsaturated Sands=0.00 in.
Differential Settlement=0.000 to 0.000 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.

2.00	0.83	0.20	4.18	0.00	0.00	0.00
2.05	0.83	0.20	4.13	0.00	0.00	0.00
2.10	0.83	0.20	4.08	0.00	0.00	0.00
2.15	0.83	0.21	4.03	0.00	0.00	0.00
2.20	0.83	0.21	3.98	0.00	0.00	0.00
2.25	0.83	0.21	3.94	0.00	0.00	0.00
2.30	0.83	0.21	3.89	0.00	0.00	0.00
2.35	0.83	0.22	3.85	0.00	0.00	0.00
2.40	0.83	0.22	3.81	0.00	0.00	0.00
2.45	0.83	0.22	3.78	0.00	0.00	0.00
2.50	0.83	0.22	3.74	0.00	0.00	0.00
2.55	0.83	0.22	3.71	0.00	0.00	0.00
2.60	0.83	0.23	3.67	0.00	0.00	0.00
2.65	0.83	0.23	3.64	0.00	0.00	0.00
2.70	0.83	0.23	3.61	0.00	0.00	0.00
2.75	0.83	0.23	3.58	0.00	0.00	0.00
2.80	0.83	0.23	3.55	0.00	0.00	0.00
2.85	0.83	0.24	3.52	0.00	0.00	0.00
2.90	0.83	0.24	3.50	0.00	0.00	0.00
2.95	0.83	0.24	3.47	0.00	0.00	0.00
3.00	0.83	0.24	3.45	0.00	0.00	0.00
3.05	0.83	0.24	3.42	0.00	0.00	0.00
3.10	0.83	0.24	3.40	0.00	0.00	0.00
3.15	0.83	0.25	3.38	0.00	0.00	0.00
3.20	0.83	0.25	3.36	0.00	0.00	0.00
3.25	0.83	0.25	3.33	0.00	0.00	0.00
3.30	0.83	0.25	3.31	0.00	0.00	0.00
3.35	0.83	0.25	3.29	0.00	0.00	0.00
3.40	0.83	0.25	3.27	0.00	0.00	0.00
3.45	0.83	0.26	3.26	0.00	0.00	0.00
3.50	0.83	0.26	3.24	0.00	0.00	0.00
3.55	0.83	0.26	3.22	0.00	0.00	0.00
3.60	0.83	0.26	3.20	0.00	0.00	0.00
3.65	0.83	0.26	3.19	0.00	0.00	0.00
3.70	0.83	0.26	3.17	0.00	0.00	0.00
3.75	0.83	0.26	3.15	0.00	0.00	0.00
3.80	0.83	0.26	3.14	0.00	0.00	0.00
3.85	0.83	0.27	3.12	0.00	0.00	0.00
3.90	0.83	0.27	3.11	0.00	0.00	0.00
3.95	0.83	0.27	3.10	0.00	0.00	0.00
4.00	0.83	0.27	3.08	0.00	0.00	0.00
4.05	0.83	0.27	3.07	0.00	0.00	0.00
4.10	0.83	0.27	3.05	0.00	0.00	0.00
4.15	0.83	0.27	3.04	0.00	0.00	0.00
4.20	0.83	0.27	3.03	0.00	0.00	0.00
4.25	0.83	0.28	3.02	0.00	0.00	0.00
4.30	0.83	0.28	3.01	0.00	0.00	0.00
4.35	0.83	0.28	2.99	0.00	0.00	0.00
4.40	0.83	0.28	2.98	0.00	0.00	0.00
4.45	0.83	0.28	2.97	0.00	0.00	0.00
4.50	0.83	0.28	2.96	0.00	0.00	0.00
4.55	0.83	0.28	2.95	0.00	0.00	0.00
4.60	0.83	0.28	2.94	0.00	0.00	0.00
4.65	0.83	0.28	2.93	0.00	0.00	0.00
4.70	0.83	0.28	2.92	0.00	0.00	0.00
4.75	0.83	0.29	2.91	0.00	0.00	0.00
4.80	0.83	0.29	2.90	0.00	0.00	0.00
4.85	0.83	0.29	2.89	0.00	0.00	0.00
4.90	0.83	0.29	2.88	0.00	0.00	0.00
4.95	0.83	0.29	2.87	0.00	0.00	0.00
5.00	0.83	0.29	2.86	0.00	0.00	0.00
5.05	0.83	0.29	2.86	0.00	0.00	0.00
5.10	0.83	0.29	2.85	0.00	0.00	0.00
5.15	0.83	0.29	2.85	0.00	0.00	0.00
5.20	0.83	0.29	2.84	0.00	0.00	0.00
5.25	0.83	0.29	2.84	0.00	0.00	0.00
5.30	0.83	0.29	2.83	0.00	0.00	0.00
5.35	0.83	0.29	2.83	0.00	0.00	0.00
5.40	0.83	0.29	2.82	0.00	0.00	0.00
5.45	0.83	0.29	2.82	0.00	0.00	0.00

5.50	0.83	0.30	2.81	0.00	0.00	0.00
5.55	0.83	0.30	2.81	0.00	0.00	0.00
5.60	0.83	0.30	2.80	0.00	0.00	0.00
5.65	0.83	0.30	2.80	0.00	0.00	0.00
5.70	0.83	0.30	2.79	0.00	0.00	0.00
5.75	0.83	0.30	2.79	0.00	0.00	0.00
5.80	0.83	0.30	2.79	0.00	0.00	0.00
5.85	0.83	0.30	2.78	0.00	0.00	0.00
5.90	0.83	0.30	2.78	0.00	0.00	0.00
5.95	0.83	0.30	2.77	0.00	0.00	0.00
6.00	0.83	0.30	2.77	0.00	0.00	0.00
6.05	0.83	0.30	2.77	0.00	0.00	0.00
6.10	0.83	0.30	2.76	0.00	0.00	0.00
6.15	0.83	0.30	2.76	0.00	0.00	0.00
6.20	0.83	0.30	2.76	0.00	0.00	0.00
6.25	0.83	0.30	2.75	0.00	0.00	0.00
6.30	0.83	0.30	2.75	0.00	0.00	0.00
6.35	0.83	0.30	2.75	0.00	0.00	0.00
6.40	0.83	0.30	2.74	0.00	0.00	0.00
6.45	0.83	0.30	2.74	0.00	0.00	0.00
6.50	0.83	0.30	2.74	0.00	0.00	0.00
6.55	0.83	0.30	2.73	0.00	0.00	0.00
6.60	0.83	0.30	2.73	0.00	0.00	0.00
6.65	0.83	0.30	2.73	0.00	0.00	0.00
6.70	0.83	0.30	2.73	0.00	0.00	0.00
6.75	0.83	0.31	2.72	0.00	0.00	0.00
6.80	0.83	0.31	2.72	0.00	0.00	0.00
6.85	0.83	0.31	2.72	0.00	0.00	0.00
6.90	0.83	0.31	2.71	0.00	0.00	0.00
6.95	0.83	0.31	2.71	0.00	0.00	0.00
7.00	0.83	0.31	2.71	0.00	0.00	0.00
7.05	0.83	0.31	2.71	0.00	0.00	0.00
7.10	0.83	0.31	2.70	0.00	0.00	0.00
7.15	0.83	0.31	2.70	0.00	0.00	0.00
7.20	0.83	0.31	2.70	0.00	0.00	0.00
7.25	0.83	0.31	2.69	0.00	0.00	0.00
7.30	0.83	0.31	2.69	0.00	0.00	0.00
7.35	0.83	0.31	2.69	0.00	0.00	0.00
7.40	0.83	0.31	2.69	0.00	0.00	0.00
7.45	0.83	0.31	2.68	0.00	0.00	0.00
7.50	0.83	0.31	2.68	0.00	0.00	0.00
7.55	0.83	0.31	2.68	0.00	0.00	0.00
7.60	0.83	0.31	2.67	0.00	0.00	0.00
7.65	0.83	0.31	2.67	0.00	0.00	0.00
7.70	0.83	0.31	2.67	0.00	0.00	0.00
7.75	0.83	0.31	2.67	0.00	0.00	0.00
7.80	0.83	0.31	2.66	0.00	0.00	0.00
7.85	0.83	0.31	2.66	0.00	0.00	0.00
7.90	0.83	0.31	2.66	0.00	0.00	0.00
7.95	0.83	0.31	2.66	0.00	0.00	0.00
8.00	0.83	0.31	2.66	0.00	0.00	0.00
8.05	0.83	0.31	2.65	0.00	0.00	0.00
8.10	0.83	0.31	2.65	0.00	0.00	0.00
8.15	0.83	0.31	2.65	0.00	0.00	0.00
8.20	0.83	0.31	2.65	0.00	0.00	0.00
8.25	0.83	0.31	2.64	0.00	0.00	0.00
8.30	0.83	0.31	2.64	0.00	0.00	0.00
8.35	0.83	0.31	2.64	0.00	0.00	0.00
8.40	0.83	0.31	2.64	0.00	0.00	0.00
8.45	0.83	0.32	2.64	0.00	0.00	0.00
8.50	0.83	0.32	2.63	0.00	0.00	0.00
8.55	0.83	0.32	2.63	0.00	0.00	0.00
8.60	0.83	0.32	2.63	0.00	0.00	0.00
8.65	0.83	0.32	2.63	0.00	0.00	0.00
8.70	0.83	0.32	2.63	0.00	0.00	0.00
8.75	0.83	0.32	2.62	0.00	0.00	0.00
8.80	0.83	0.32	2.62	0.00	0.00	0.00
8.85	0.83	0.32	2.62	0.00	0.00	0.00
8.90	0.83	0.32	2.62	0.00	0.00	0.00
8.95	0.83	0.32	2.62	0.00	0.00	0.00
9.00	0.83	0.32	2.62	0.00	0.00	0.00

9.05	0.83	0.32	2.61	0.00	0.00	0.00
9.10	0.83	0.32	2.61	0.00	0.00	0.00
9.15	0.83	0.32	2.61	0.00	0.00	0.00
9.20	0.83	0.32	2.61	0.00	0.00	0.00
9.25	0.83	0.32	2.61	0.00	0.00	0.00
9.30	0.83	0.32	2.61	0.00	0.00	0.00
9.35	0.83	0.32	2.60	0.00	0.00	0.00
9.40	0.83	0.32	2.60	0.00	0.00	0.00
9.45	0.83	0.32	2.60	0.00	0.00	0.00
9.50	0.83	0.32	2.60	0.00	0.00	0.00
9.55	0.83	0.32	2.60	0.00	0.00	0.00
9.60	0.83	0.32	2.60	0.00	0.00	0.00
9.65	0.83	0.32	2.60	0.00	0.00	0.00
9.70	0.83	0.32	2.59	0.00	0.00	0.00
9.75	0.83	0.32	2.59	0.00	0.00	0.00
9.80	0.83	0.32	2.59	0.00	0.00	0.00
9.85	0.83	0.32	2.59	0.00	0.00	0.00
9.90	0.83	0.32	2.59	0.00	0.00	0.00
9.95	0.83	0.32	2.59	0.00	0.00	0.00
10.00	0.83	0.32	2.59	0.00	0.00	0.00
10.05	0.83	0.32	2.58	0.00	0.00	0.00
10.10	0.83	0.32	2.58	0.00	0.00	0.00
10.15	0.83	0.32	2.58	0.00	0.00	0.00
10.20	0.83	0.32	2.58	0.00	0.00	0.00
10.25	0.83	0.32	2.58	0.00	0.00	0.00
10.30	0.83	0.32	2.58	0.00	0.00	0.00
10.35	0.83	0.32	2.57	0.00	0.00	0.00
10.40	0.83	0.32	2.57	0.00	0.00	0.00
10.45	0.83	0.32	2.57	0.00	0.00	0.00
10.50	0.83	0.32	2.57	0.00	0.00	0.00
10.55	0.83	0.32	2.57	0.00	0.00	0.00
10.60	0.83	0.32	2.57	0.00	0.00	0.00
10.65	0.83	0.32	2.57	0.00	0.00	0.00
10.70	0.83	0.32	2.56	0.00	0.00	0.00
10.75	0.83	0.32	2.56	0.00	0.00	0.00
10.80	0.83	0.32	2.56	0.00	0.00	0.00
10.85	0.83	0.32	2.56	0.00	0.00	0.00
10.90	0.83	0.32	2.56	0.00	0.00	0.00
10.95	0.83	0.32	2.56	0.00	0.00	0.00
11.00	0.83	0.32	2.56	0.00	0.00	0.00
11.05	0.83	0.33	2.55	0.00	0.00	0.00
11.10	0.83	0.33	2.55	0.00	0.00	0.00
11.15	0.83	0.33	2.55	0.00	0.00	0.00
11.20	0.83	0.33	2.55	0.00	0.00	0.00
11.25	0.83	0.33	2.55	0.00	0.00	0.00
11.30	0.83	0.33	2.55	0.00	0.00	0.00
11.35	0.83	0.33	2.55	0.00	0.00	0.00
11.40	0.83	0.33	2.55	0.00	0.00	0.00
11.45	0.83	0.33	2.54	0.00	0.00	0.00
11.50	0.83	0.33	2.54	0.00	0.00	0.00
11.55	0.83	0.33	2.54	0.00	0.00	0.00
11.60	0.83	0.33	2.54	0.00	0.00	0.00
11.65	0.83	0.33	2.54	0.00	0.00	0.00
11.70	0.83	0.33	2.54	0.00	0.00	0.00
11.75	0.83	0.33	2.54	0.00	0.00	0.00
11.80	0.83	0.33	2.54	0.00	0.00	0.00
11.85	0.83	0.33	2.54	0.00	0.00	0.00
11.90	0.83	0.33	2.53	0.00	0.00	0.00
11.95	0.83	0.33	2.53	0.00	0.00	0.00
12.00	0.83	0.33	2.53	0.00	0.00	0.00
12.05	0.83	0.33	2.53	0.00	0.00	0.00
12.10	0.83	0.33	2.53	0.00	0.00	0.00
12.15	0.83	0.33	2.53	0.00	0.00	0.00
12.20	0.83	0.33	2.53	0.00	0.00	0.00
12.25	0.83	0.33	2.53	0.00	0.00	0.00
12.30	0.83	0.33	2.53	0.00	0.00	0.00
12.35	0.83	0.33	2.53	0.00	0.00	0.00
12.40	0.83	0.33	2.53	0.00	0.00	0.00
12.45	0.83	0.33	2.52	0.00	0.00	0.00
12.50	0.83	0.33	2.52	0.00	0.00	0.00
12.55	0.83	0.33	2.52	0.00	0.00	0.00

12.60	0.83	0.33	2.52	0.00	0.00	0.00
12.65	0.83	0.33	2.52	0.00	0.00	0.00
12.70	0.83	0.33	2.52	0.00	0.00	0.00
12.75	0.83	0.33	2.52	0.00	0.00	0.00
12.80	0.83	0.33	2.52	0.00	0.00	0.00
12.85	0.83	0.33	2.52	0.00	0.00	0.00
12.90	0.83	0.33	2.52	0.00	0.00	0.00
12.95	0.83	0.33	2.52	0.00	0.00	0.00
13.00	0.83	0.33	2.52	0.00	0.00	0.00
13.05	0.83	0.33	2.51	0.00	0.00	0.00
13.10	0.83	0.33	2.51	0.00	0.00	0.00
13.15	0.83	0.33	2.51	0.00	0.00	0.00
13.20	0.83	0.33	2.51	0.00	0.00	0.00
13.25	0.83	0.33	2.51	0.00	0.00	0.00
13.30	0.83	0.33	2.51	0.00	0.00	0.00
13.35	0.83	0.33	2.51	0.00	0.00	0.00
13.40	0.83	0.33	2.51	0.00	0.00	0.00
13.45	0.83	0.33	2.51	0.00	0.00	0.00
13.50	0.83	0.33	2.51	0.00	0.00	0.00
13.55	0.83	0.33	2.51	0.00	0.00	0.00
13.60	0.83	0.33	2.51	0.00	0.00	0.00
13.65	0.83	0.33	2.51	0.00	0.00	0.00
13.70	0.83	0.33	2.51	0.00	0.00	0.00
13.75	0.83	0.33	2.51	0.00	0.00	0.00
13.80	0.83	0.33	2.50	0.00	0.00	0.00
13.85	0.83	0.33	2.50	0.00	0.00	0.00
13.90	0.83	0.33	2.50	0.00	0.00	0.00
13.95	0.83	0.33	2.50	0.00	0.00	0.00
14.00	0.83	0.33	2.50	0.00	0.00	0.00
14.05	0.83	0.33	2.50	0.00	0.00	0.00
14.10	0.83	0.33	2.50	0.00	0.00	0.00
14.15	0.83	0.33	2.50	0.00	0.00	0.00
14.20	0.83	0.33	2.50	0.00	0.00	0.00
14.25	0.83	0.33	2.50	0.00	0.00	0.00
14.30	0.83	0.33	2.50	0.00	0.00	0.00
14.35	0.83	0.33	2.50	0.00	0.00	0.00
14.40	0.83	0.33	2.50	0.00	0.00	0.00
14.45	0.83	0.33	2.50	0.00	0.00	0.00
14.50	0.83	0.33	2.50	0.00	0.00	0.00
14.55	0.83	0.33	2.50	0.00	0.00	0.00
14.60	0.83	0.33	2.50	0.00	0.00	0.00
14.65	0.83	0.33	2.49	0.00	0.00	0.00
14.70	0.83	0.33	2.49	0.00	0.00	0.00
14.75	0.83	0.33	2.49	0.00	0.00	0.00
14.80	0.83	0.33	2.49	0.00	0.00	0.00
14.85	0.83	0.33	2.49	0.00	0.00	0.00
14.90	0.83	0.33	2.49	0.00	0.00	0.00
14.95	0.83	0.33	2.49	0.00	0.00	0.00
15.00	0.83	0.33	2.49	0.00	0.00	0.00
15.05	0.83	0.33	2.49	0.00	0.00	0.00
15.10	0.83	0.33	2.49	0.00	0.00	0.00
15.15	0.83	0.33	2.49	0.00	0.00	0.00
15.20	0.83	0.33	2.49	0.00	0.00	0.00
15.25	0.83	0.33	2.49	0.00	0.00	0.00
15.30	0.83	0.33	2.49	0.00	0.00	0.00
15.35	0.83	0.33	2.49	0.00	0.00	0.00
15.40	0.83	0.33	2.49	0.00	0.00	0.00
15.45	0.83	0.33	2.49	0.00	0.00	0.00
15.50	0.83	0.33	2.49	0.00	0.00	0.00
15.55	0.83	0.33	2.49	0.00	0.00	0.00
15.60	0.83	0.33	2.49	0.00	0.00	0.00
15.65	0.83	0.33	2.49	0.00	0.00	0.00
15.70	0.83	0.33	2.49	0.00	0.00	0.00
15.75	0.83	0.33	2.49	0.00	0.00	0.00
15.80	0.83	0.33	2.49	0.00	0.00	0.00
15.85	0.83	0.33	2.49	0.00	0.00	0.00
15.90	0.83	0.33	2.49	0.00	0.00	0.00
15.95	0.83	0.33	2.49	0.00	0.00	0.00
16.00	0.83	0.33	2.49	0.00	0.00	0.00
16.05	0.83	0.33	2.49	0.00	0.00	0.00
16.10	0.83	0.33	2.49	0.00	0.00	0.00

16.15	0.83	0.33	2.49	0.00	0.00	0.00
16.20	0.83	0.33	2.49	0.00	0.00	0.00
16.25	0.83	0.33	2.48	0.00	0.00	0.00
16.30	0.83	0.33	2.48	0.00	0.00	0.00
16.35	0.83	0.33	2.48	0.00	0.00	0.00
16.40	0.83	0.33	2.48	0.00	0.00	0.00
16.45	0.83	0.33	2.48	0.00	0.00	0.00
16.50	0.83	0.33	2.48	0.00	0.00	0.00
16.55	0.83	0.33	2.48	0.00	0.00	0.00
16.60	0.83	0.33	2.48	0.00	0.00	0.00
16.65	0.83	0.33	2.48	0.00	0.00	0.00
16.70	0.83	0.33	2.48	0.00	0.00	0.00
16.75	0.83	0.33	2.48	0.00	0.00	0.00
16.80	0.83	0.33	2.48	0.00	0.00	0.00
16.85	0.83	0.33	2.48	0.00	0.00	0.00
16.90	0.83	0.33	2.48	0.00	0.00	0.00
16.95	0.83	0.33	2.48	0.00	0.00	0.00
17.00	0.83	0.33	2.48	0.00	0.00	0.00
17.05	0.83	0.33	2.48	0.00	0.00	0.00
17.10	0.83	0.33	2.48	0.00	0.00	0.00
17.15	0.83	0.33	2.48	0.00	0.00	0.00
17.20	0.83	0.34	2.48	0.00	0.00	0.00
17.25	0.83	0.34	2.48	0.00	0.00	0.00
17.30	0.83	0.34	2.48	0.00	0.00	0.00
17.35	0.83	0.34	2.48	0.00	0.00	0.00
17.40	0.83	0.34	2.48	0.00	0.00	0.00
17.45	0.83	0.34	2.48	0.00	0.00	0.00
17.50	0.83	0.34	2.48	0.00	0.00	0.00
17.55	0.83	0.34	2.48	0.00	0.00	0.00
17.60	0.83	0.34	2.47	0.00	0.00	0.00
17.65	0.83	0.34	2.47	0.00	0.00	0.00
17.70	0.83	0.34	2.47	0.00	0.00	0.00
17.75	0.83	0.34	2.47	0.00	0.00	0.00
17.80	0.83	0.34	2.47	0.00	0.00	0.00
17.85	0.83	0.34	2.47	0.00	0.00	0.00
17.90	0.83	0.34	2.47	0.00	0.00	0.00
17.95	0.83	0.34	2.47	0.00	0.00	0.00
18.00	0.83	0.34	2.47	0.00	0.00	0.00
18.05	0.83	0.34	2.47	0.00	0.00	0.00
18.10	0.83	0.34	2.47	0.00	0.00	0.00
18.15	0.83	0.34	2.47	0.00	0.00	0.00
18.20	0.83	0.34	2.47	0.00	0.00	0.00
18.25	0.83	0.34	2.47	0.00	0.00	0.00
18.30	0.83	0.34	2.47	0.00	0.00	0.00
18.35	0.83	0.34	2.47	0.00	0.00	0.00
18.40	0.83	0.34	2.47	0.00	0.00	0.00
18.45	0.83	0.34	2.46	0.00	0.00	0.00
18.50	0.83	0.34	2.46	0.00	0.00	0.00
18.55	0.83	0.34	2.46	0.00	0.00	0.00
18.60	0.83	0.34	2.46	0.00	0.00	0.00
18.65	0.83	0.34	2.46	0.00	0.00	0.00
18.70	0.83	0.34	2.46	0.00	0.00	0.00
18.75	0.83	0.34	2.46	0.00	0.00	0.00
18.80	0.83	0.34	2.46	0.00	0.00	0.00
18.85	0.83	0.34	2.46	0.00	0.00	0.00
18.90	0.83	0.34	2.46	0.00	0.00	0.00
18.95	0.83	0.34	2.46	0.00	0.00	0.00
19.00	0.83	0.34	2.46	0.00	0.00	0.00
19.05	0.83	0.34	2.46	0.00	0.00	0.00
19.10	0.83	0.34	2.46	0.00	0.00	0.00
19.15	0.83	0.34	2.46	0.00	0.00	0.00
19.20	0.83	0.34	2.46	0.00	0.00	0.00
19.25	0.83	0.34	2.46	0.00	0.00	0.00
19.30	0.83	0.34	2.46	0.00	0.00	0.00
19.35	0.83	0.34	2.46	0.00	0.00	0.00
19.40	0.83	0.34	2.46	0.00	0.00	0.00
19.45	0.83	0.34	2.45	0.00	0.00	0.00
19.50	0.83	0.34	2.45	0.00	0.00	0.00
19.55	0.83	0.34	2.45	0.00	0.00	0.00
19.60	0.83	0.34	2.45	0.00	0.00	0.00
19.65	0.83	0.34	2.45	0.00	0.00	0.00

19.70	0.83	0.34	2.45	0.00	0.00	0.00
19.75	0.83	0.34	2.45	0.00	0.00	0.00
19.80	0.83	0.34	2.45	0.00	0.00	0.00
19.85	0.83	0.34	2.45	0.00	0.00	0.00
19.90	0.83	0.34	2.45	0.00	0.00	0.00
19.95	0.83	0.34	2.45	0.00	0.00	0.00
20.00	0.83	0.34	2.45	0.00	0.00	0.00
20.05	0.83	0.34	2.45	0.00	0.00	0.00
20.10	0.83	0.34	2.45	0.00	0.00	0.00
20.15	0.83	0.34	2.45	0.00	0.00	0.00
20.20	0.83	0.34	2.45	0.00	0.00	0.00
20.25	0.83	0.34	2.45	0.00	0.00	0.00
20.30	0.83	0.34	2.45	0.00	0.00	0.00
20.35	0.83	0.34	2.45	0.00	0.00	0.00
20.40	0.83	0.34	2.45	0.00	0.00	0.00
20.45	0.83	0.34	2.45	0.00	0.00	0.00
20.50	0.83	0.34	2.45	0.00	0.00	0.00
20.55	0.83	0.34	2.45	0.00	0.00	0.00
20.60	0.83	0.34	2.45	0.00	0.00	0.00
20.65	0.83	0.34	2.45	0.00	0.00	0.00
20.70	0.83	0.34	2.45	0.00	0.00	0.00
20.75	0.83	0.34	2.45	0.00	0.00	0.00
20.80	0.83	0.34	2.45	0.00	0.00	0.00
20.85	0.83	0.34	2.45	0.00	0.00	0.00
20.90	0.83	0.34	2.45	0.00	0.00	0.00
20.95	0.83	0.34	2.45	0.00	0.00	0.00
21.00	0.83	0.34	2.45	0.00	0.00	0.00
21.05	0.83	0.34	2.45	0.00	0.00	0.00
21.10	0.83	0.34	2.45	0.00	0.00	0.00
21.15	0.83	0.34	2.45	0.00	0.00	0.00
21.20	0.83	0.34	2.45	0.00	0.00	0.00
21.25	0.83	0.34	2.45	0.00	0.00	0.00
21.30	0.83	0.34	2.45	0.00	0.00	0.00
21.35	0.83	0.34	2.45	0.00	0.00	0.00
21.40	0.83	0.34	2.45	0.00	0.00	0.00
21.45	0.83	0.34	2.45	0.00	0.00	0.00
21.50	0.83	0.34	2.45	0.00	0.00	0.00
21.55	0.83	0.34	2.45	0.00	0.00	0.00
21.60	0.83	0.34	2.45	0.00	0.00	0.00
21.65	0.83	0.34	2.45	0.00	0.00	0.00
21.70	0.83	0.34	2.45	0.00	0.00	0.00
21.75	0.83	0.34	2.45	0.00	0.00	0.00
21.80	0.83	0.34	2.45	0.00	0.00	0.00
21.85	0.83	0.34	2.45	0.00	0.00	0.00
21.90	0.83	0.34	2.45	0.00	0.00	0.00
21.95	0.83	0.34	2.45	0.00	0.00	0.00
22.00	0.83	0.34	2.45	0.00	0.00	0.00
22.05	0.83	0.34	2.45	0.00	0.00	0.00
22.10	0.83	0.34	2.45	0.00	0.00	0.00
22.15	0.83	0.34	2.45	0.00	0.00	0.00
22.20	0.83	0.34	2.45	0.00	0.00	0.00
22.25	0.83	0.34	2.45	0.00	0.00	0.00
22.30	0.83	0.34	2.45	0.00	0.00	0.00
22.35	0.83	0.34	2.45	0.00	0.00	0.00
22.40	0.83	0.34	2.45	0.00	0.00	0.00
22.45	0.83	0.34	2.45	0.00	0.00	0.00
22.50	0.83	0.34	2.45	0.00	0.00	0.00
22.55	0.83	0.34	2.45	0.00	0.00	0.00
22.60	0.83	0.34	2.45	0.00	0.00	0.00
22.65	0.83	0.34	2.45	0.00	0.00	0.00
22.70	0.83	0.34	2.45	0.00	0.00	0.00
22.75	0.83	0.34	2.45	0.00	0.00	0.00
22.80	0.83	0.34	2.45	0.00	0.00	0.00
22.85	0.83	0.34	2.45	0.00	0.00	0.00
22.90	0.83	0.34	2.45	0.00	0.00	0.00
22.95	0.83	0.34	2.45	0.00	0.00	0.00
23.00	0.83	0.34	2.45	0.00	0.00	0.00
23.05	0.83	0.34	2.45	0.00	0.00	0.00
23.10	0.83	0.34	2.45	0.00	0.00	0.00
23.15	0.83	0.34	2.45	0.00	0.00	0.00
23.20	0.83	0.34	2.45	0.00	0.00	0.00

23.25	0.83	0.34	2.45	0.00	0.00	0.00
23.30	0.83	0.34	2.45	0.00	0.00	0.00
23.35	0.83	0.34	2.45	0.00	0.00	0.00
23.40	0.83	0.34	2.45	0.00	0.00	0.00
23.45	0.83	0.34	2.45	0.00	0.00	0.00
23.50	0.83	0.34	2.45	0.00	0.00	0.00
23.55	0.83	0.34	2.45	0.00	0.00	0.00
23.60	0.83	0.34	2.45	0.00	0.00	0.00
23.65	0.83	0.34	2.45	0.00	0.00	0.00
23.70	0.83	0.34	2.45	0.00	0.00	0.00
23.75	0.83	0.34	2.45	0.00	0.00	0.00
23.80	0.83	0.34	2.45	0.00	0.00	0.00
23.85	0.83	0.34	2.45	0.00	0.00	0.00
23.90	0.83	0.34	2.45	0.00	0.00	0.00
23.95	0.83	0.34	2.45	0.00	0.00	0.00
24.00	0.83	0.34	2.45	0.00	0.00	0.00
24.05	0.83	0.34	2.45	0.00	0.00	0.00
24.10	0.83	0.34	2.45	0.00	0.00	0.00
24.15	0.83	0.34	2.45	0.00	0.00	0.00
24.20	0.83	0.34	2.45	0.00	0.00	0.00
24.25	0.83	0.34	2.45	0.00	0.00	0.00
24.30	0.83	0.34	2.45	0.00	0.00	0.00
24.35	0.83	0.34	2.45	0.00	0.00	0.00
24.40	0.83	0.34	2.45	0.00	0.00	0.00
24.45	0.83	0.34	2.45	0.00	0.00	0.00
24.50	0.83	0.34	2.45	0.00	0.00	0.00
24.55	0.83	0.34	2.45	0.00	0.00	0.00
24.60	0.83	0.34	2.45	0.00	0.00	0.00
24.65	0.83	0.34	2.45	0.00	0.00	0.00
24.70	0.83	0.34	2.45	0.00	0.00	0.00
24.75	0.83	0.34	2.45	0.00	0.00	0.00
24.80	0.83	0.34	2.45	0.00	0.00	0.00
24.85	0.83	0.34	2.46	0.00	0.00	0.00
24.90	0.83	0.34	2.46	0.00	0.00	0.00
24.95	0.83	0.34	2.46	0.00	0.00	0.00
25.00	0.83	0.34	2.46	0.00	0.00	0.00
25.05	0.83	0.34	2.46	0.00	0.00	0.00
25.10	0.83	0.34	2.46	0.00	0.00	0.00
25.15	0.83	0.34	2.46	0.00	0.00	0.00
25.20	0.83	0.34	2.46	0.00	0.00	0.00
25.25	0.83	0.34	2.46	0.00	0.00	0.00
25.30	0.83	0.34	2.46	0.00	0.00	0.00
25.35	0.83	0.34	2.46	0.00	0.00	0.00
25.40	0.83	0.34	2.46	0.00	0.00	0.00
25.45	0.83	0.34	2.46	0.00	0.00	0.00
25.50	0.83	0.34	2.46	0.00	0.00	0.00
25.55	0.83	0.34	2.46	0.00	0.00	0.00
25.60	0.83	0.34	2.46	0.00	0.00	0.00
25.65	0.83	0.34	2.46	0.00	0.00	0.00
25.70	0.83	0.34	2.46	0.00	0.00	0.00
25.75	0.83	0.34	2.46	0.00	0.00	0.00
25.80	0.83	0.34	2.46	0.00	0.00	0.00
25.85	0.83	0.34	2.46	0.00	0.00	0.00
25.90	0.83	0.34	2.46	0.00	0.00	0.00
25.95	0.83	0.34	2.46	0.00	0.00	0.00
26.00	0.83	0.34	2.46	0.00	0.00	0.00
26.05	0.83	0.34	2.46	0.00	0.00	0.00
26.10	0.83	0.34	2.46	0.00	0.00	0.00
26.15	0.83	0.34	2.46	0.00	0.00	0.00
26.20	0.83	0.34	2.46	0.00	0.00	0.00
26.25	0.83	0.34	2.46	0.00	0.00	0.00
26.30	0.83	0.34	2.46	0.00	0.00	0.00
26.35	0.83	0.34	2.46	0.00	0.00	0.00
26.40	0.83	0.34	2.46	0.00	0.00	0.00
26.45	0.83	0.34	2.46	0.00	0.00	0.00
26.50	0.83	0.34	2.46	0.00	0.00	0.00
26.55	0.83	0.34	2.46	0.00	0.00	0.00
26.60	0.83	0.34	2.46	0.00	0.00	0.00
26.65	0.83	0.34	2.46	0.00	0.00	0.00
26.70	0.83	0.34	2.46	0.00	0.00	0.00
26.75	0.83	0.34	2.46	0.00	0.00	0.00

26.80	0.83	0.34	2.46	0.00	0.00	0.00
26.85	0.83	0.34	2.46	0.00	0.00	0.00
26.90	0.83	0.34	2.46	0.00	0.00	0.00
26.95	0.83	0.34	2.46	0.00	0.00	0.00
27.00	0.83	0.34	2.46	0.00	0.00	0.00
27.05	0.83	0.34	2.46	0.00	0.00	0.00
27.10	0.83	0.34	2.46	0.00	0.00	0.00
27.15	0.83	0.34	2.46	0.00	0.00	0.00
27.20	0.83	0.34	2.46	0.00	0.00	0.00
27.25	0.83	0.34	2.46	0.00	0.00	0.00
27.30	0.83	0.34	2.46	0.00	0.00	0.00
27.35	0.83	0.34	2.46	0.00	0.00	0.00
27.40	0.83	0.34	2.46	0.00	0.00	0.00
27.45	0.83	0.34	2.46	0.00	0.00	0.00
27.50	0.83	0.34	2.46	0.00	0.00	0.00
27.55	0.83	0.34	2.46	0.00	0.00	0.00
27.60	0.83	0.34	2.47	0.00	0.00	0.00
27.65	0.83	0.34	2.47	0.00	0.00	0.00
27.70	0.83	0.34	2.47	0.00	0.00	0.00
27.75	0.83	0.34	2.47	0.00	0.00	0.00
27.80	0.83	0.34	2.47	0.00	0.00	0.00
27.85	0.83	0.34	2.47	0.00	0.00	0.00
27.90	0.83	0.34	2.47	0.00	0.00	0.00
27.95	0.83	0.34	2.47	0.00	0.00	0.00
28.00	0.83	0.34	2.47	0.00	0.00	0.00
28.05	0.83	0.34	2.47	0.00	0.00	0.00
28.10	0.83	0.34	2.47	0.00	0.00	0.00
28.15	0.83	0.34	2.47	0.00	0.00	0.00
28.20	0.83	0.34	2.47	0.00	0.00	0.00
28.25	0.83	0.34	2.47	0.00	0.00	0.00
28.30	0.83	0.34	2.47	0.00	0.00	0.00
28.35	0.83	0.34	2.47	0.00	0.00	0.00
28.40	0.83	0.34	2.47	0.00	0.00	0.00
28.45	0.83	0.34	2.47	0.00	0.00	0.00
28.50	0.83	0.34	2.47	0.00	0.00	0.00
28.55	0.83	0.34	2.47	0.00	0.00	0.00
28.60	0.83	0.34	2.47	0.00	0.00	0.00
28.65	0.83	0.34	2.47	0.00	0.00	0.00
28.70	0.83	0.34	2.47	0.00	0.00	0.00
28.75	0.83	0.34	2.47	0.00	0.00	0.00
28.80	0.83	0.34	2.47	0.00	0.00	0.00
28.85	0.83	0.34	2.47	0.00	0.00	0.00
28.90	0.83	0.34	2.47	0.00	0.00	0.00
28.95	0.83	0.34	2.47	0.00	0.00	0.00
29.00	0.83	0.34	2.47	0.00	0.00	0.00
29.05	0.83	0.34	2.47	0.00	0.00	0.00
29.10	0.83	0.34	2.47	0.00	0.00	0.00
29.15	0.83	0.34	2.47	0.00	0.00	0.00
29.20	0.83	0.34	2.47	0.00	0.00	0.00
29.25	0.83	0.34	2.47	0.00	0.00	0.00
29.30	0.83	0.34	2.47	0.00	0.00	0.00
29.35	0.83	0.34	2.47	0.00	0.00	0.00
29.40	0.83	0.34	2.47	0.00	0.00	0.00
29.45	0.83	0.34	2.47	0.00	0.00	0.00
29.50	0.83	0.34	2.47	0.00	0.00	0.00
29.55	0.83	0.34	2.47	0.00	0.00	0.00
29.60	0.83	0.34	2.47	0.00	0.00	0.00
29.65	0.83	0.34	2.47	0.00	0.00	0.00
29.70	0.83	0.34	2.47	0.00	0.00	0.00
29.75	0.83	0.34	2.47	0.00	0.00	0.00
29.80	0.83	0.34	2.47	0.00	0.00	0.00
29.85	0.83	0.34	2.47	0.00	0.00	0.00
29.90	0.83	0.34	2.47	0.00	0.00	0.00
29.95	0.83	0.34	2.47	0.00	0.00	0.00
30.00	0.83	0.34	2.48	0.00	0.00	0.00
30.05	0.83	0.34	2.48	0.00	0.00	0.00
30.10	0.83	0.34	2.48	0.00	0.00	0.00
30.15	0.83	0.34	2.48	0.00	0.00	0.00
30.20	0.83	0.34	2.48	0.00	0.00	0.00
30.25	0.83	0.33	2.48	0.00	0.00	0.00
30.30	0.83	0.33	2.48	0.00	0.00	0.00

30.35	0.83	0.33	2.48	0.00	0.00	0.00
30.40	0.83	0.33	2.48	0.00	0.00	0.00
30.45	0.83	0.33	2.48	0.00	0.00	0.00
30.50	0.83	0.33	2.48	0.00	0.00	0.00
30.55	0.83	0.33	2.49	0.00	0.00	0.00
30.60	0.83	0.33	2.49	0.00	0.00	0.00
30.65	0.83	0.33	2.49	0.00	0.00	0.00
30.70	0.83	0.33	2.49	0.00	0.00	0.00
30.75	0.83	0.33	2.49	0.00	0.00	0.00
30.80	0.83	0.33	2.49	0.00	0.00	0.00
30.85	0.83	0.33	2.49	0.00	0.00	0.00
30.90	0.83	0.33	2.49	0.00	0.00	0.00
30.95	0.83	0.33	2.49	0.00	0.00	0.00
31.00	0.83	0.33	2.49	0.00	0.00	0.00
31.05	0.83	0.33	2.49	0.00	0.00	0.00
31.10	0.83	0.33	2.50	0.00	0.00	0.00
31.15	0.83	0.33	2.50	0.00	0.00	0.00
31.20	0.83	0.33	2.50	0.00	0.00	0.00
31.25	0.83	0.33	2.50	0.00	0.00	0.00
31.30	0.83	0.33	2.50	0.00	0.00	0.00
31.35	0.83	0.33	2.50	0.00	0.00	0.00
31.40	0.83	0.33	2.50	0.00	0.00	0.00
31.45	0.83	0.33	2.50	0.00	0.00	0.00
31.50	0.83	0.33	2.50	0.00	0.00	0.00
31.55	0.83	0.33	2.50	0.00	0.00	0.00
31.60	0.83	0.33	2.50	0.00	0.00	0.00
31.65	0.83	0.33	2.51	0.00	0.00	0.00
31.70	0.83	0.33	2.51	0.00	0.00	0.00
31.75	0.83	0.33	2.51	0.00	0.00	0.00
31.80	0.83	0.33	2.51	0.00	0.00	0.00
31.85	0.83	0.33	2.51	0.00	0.00	0.00
31.90	0.83	0.33	2.51	0.00	0.00	0.00
31.95	0.83	0.33	2.51	0.00	0.00	0.00
32.00	0.83	0.33	2.51	0.00	0.00	0.00
32.05	0.83	0.33	2.51	0.00	0.00	0.00
32.10	0.83	0.33	2.51	0.00	0.00	0.00
32.15	0.83	0.33	2.52	0.00	0.00	0.00
32.20	0.83	0.33	2.52	0.00	0.00	0.00
32.25	0.83	0.33	2.52	0.00	0.00	0.00
32.30	0.83	0.33	2.52	0.00	0.00	0.00
32.35	0.83	0.33	2.52	0.00	0.00	0.00
32.40	0.83	0.33	2.52	0.00	0.00	0.00
32.45	0.83	0.33	2.52	0.00	0.00	0.00
32.50	0.83	0.33	2.52	0.00	0.00	0.00
32.55	0.83	0.33	2.52	0.00	0.00	0.00
32.60	0.83	0.33	2.52	0.00	0.00	0.00
32.65	0.83	0.33	2.52	0.00	0.00	0.00
32.70	0.83	0.33	2.53	0.00	0.00	0.00
32.75	0.83	0.33	2.53	0.00	0.00	0.00
32.80	0.83	0.33	2.53	0.00	0.00	0.00
32.85	0.83	0.33	2.53	0.00	0.00	0.00
32.90	0.83	0.33	2.53	0.00	0.00	0.00
32.95	0.83	0.33	2.53	0.00	0.00	0.00
33.00	0.83	0.33	2.53	0.00	0.00	0.00
33.05	0.83	0.33	2.53	0.00	0.00	0.00
33.10	0.83	0.33	2.53	0.00	0.00	0.00
33.15	0.83	0.33	2.53	0.00	0.00	0.00
33.20	0.83	0.33	2.54	0.00	0.00	0.00
33.25	0.83	0.33	2.54	0.00	0.00	0.00
33.30	0.83	0.33	2.54	0.00	0.00	0.00
33.35	0.83	0.33	2.54	0.00	0.00	0.00
33.40	0.83	0.33	2.54	0.00	0.00	0.00
33.45	0.83	0.33	2.54	0.00	0.00	0.00
33.50	0.83	0.33	2.54	0.00	0.00	0.00
33.55	0.83	0.33	2.54	0.00	0.00	0.00
33.60	0.83	0.33	2.54	0.00	0.00	0.00
33.65	0.83	0.33	2.54	0.00	0.00	0.00
33.70	0.83	0.33	2.55	0.00	0.00	0.00
33.75	0.83	0.33	2.55	0.00	0.00	0.00
33.80	0.83	0.33	2.55	0.00	0.00	0.00
33.85	0.83	0.33	2.55	0.00	0.00	0.00

33.90	0.83	0.33	2.55	0.00	0.00	0.00
33.95	0.83	0.33	2.55	0.00	0.00	0.00
34.00	0.83	0.33	2.55	0.00	0.00	0.00
34.05	0.83	0.33	2.55	0.00	0.00	0.00
34.10	0.83	0.33	2.55	0.00	0.00	0.00
34.15	0.83	0.33	2.55	0.00	0.00	0.00
34.20	0.83	0.33	2.56	0.00	0.00	0.00
34.25	0.83	0.32	2.56	0.00	0.00	0.00
34.30	0.83	0.32	2.56	0.00	0.00	0.00
34.35	0.83	0.32	2.56	0.00	0.00	0.00
34.40	0.83	0.32	2.56	0.00	0.00	0.00
34.45	0.83	0.32	2.56	0.00	0.00	0.00
34.50	0.83	0.32	2.56	0.00	0.00	0.00
34.55	0.83	0.32	2.56	0.00	0.00	0.00
34.60	0.83	0.32	2.56	0.00	0.00	0.00
34.65	0.83	0.32	2.56	0.00	0.00	0.00
34.70	0.83	0.32	2.57	0.00	0.00	0.00
34.75	0.83	0.32	2.57	0.00	0.00	0.00
34.80	0.83	0.32	2.57	0.00	0.00	0.00
34.85	0.83	0.32	2.57	0.00	0.00	0.00
34.90	0.83	0.32	2.57	0.00	0.00	0.00
34.95	0.83	0.32	2.57	0.00	0.00	0.00
35.00	0.83	0.32	2.57	0.00	0.00	0.00
35.05	0.83	0.32	2.57	0.00	0.00	0.00
35.10	0.83	0.32	2.57	0.00	0.00	0.00
35.15	0.83	0.32	2.57	0.00	0.00	0.00
35.20	0.83	0.32	2.57	0.00	0.00	0.00
35.25	0.83	0.32	2.58	0.00	0.00	0.00
35.30	0.83	0.32	2.58	0.00	0.00	0.00
35.35	0.83	0.32	2.58	0.00	0.00	0.00
35.40	0.83	0.32	2.58	0.00	0.00	0.00
35.45	0.83	0.32	2.58	0.00	0.00	0.00
35.50	0.83	0.32	2.58	0.00	0.00	0.00
35.55	0.83	0.32	2.58	0.00	0.00	0.00
35.60	0.83	0.32	2.58	0.00	0.00	0.00
35.65	0.83	0.32	2.58	0.00	0.00	0.00
35.70	0.83	0.32	2.58	0.00	0.00	0.00
35.75	0.83	0.32	2.58	0.00	0.00	0.00
35.80	0.83	0.32	2.58	0.00	0.00	0.00
35.85	0.83	0.32	2.58	0.00	0.00	0.00
35.90	0.83	0.32	2.58	0.00	0.00	0.00
35.95	0.83	0.32	2.59	0.00	0.00	0.00
36.00	0.83	0.32	2.59	0.00	0.00	0.00
36.05	0.83	0.32	2.59	0.00	0.00	0.00
36.10	0.83	0.32	2.59	0.00	0.00	0.00
36.15	0.83	0.32	2.59	0.00	0.00	0.00
36.20	0.83	0.32	2.59	0.00	0.00	0.00
36.25	0.83	0.32	2.59	0.00	0.00	0.00
36.30	0.83	0.32	2.59	0.00	0.00	0.00
36.35	0.83	0.32	2.59	0.00	0.00	0.00
36.40	0.83	0.32	2.59	0.00	0.00	0.00
36.45	0.83	0.32	2.59	0.00	0.00	0.00
36.50	0.83	0.32	2.59	0.00	0.00	0.00
36.55	0.83	0.32	2.59	0.00	0.00	0.00
36.60	0.83	0.32	2.59	0.00	0.00	0.00
36.65	0.83	0.32	2.60	0.00	0.00	0.00
36.70	0.83	0.32	2.60	0.00	0.00	0.00
36.75	0.83	0.32	2.60	0.00	0.00	0.00
36.80	0.83	0.32	2.60	0.00	0.00	0.00
36.85	0.83	0.32	2.60	0.00	0.00	0.00
36.90	0.83	0.32	2.60	0.00	0.00	0.00
36.95	0.83	0.32	2.60	0.00	0.00	0.00
37.00	0.83	0.32	2.60	0.00	0.00	0.00
37.05	0.83	0.32	2.60	0.00	0.00	0.00
37.10	0.83	0.32	2.60	0.00	0.00	0.00
37.15	0.83	0.32	2.60	0.00	0.00	0.00
37.20	0.83	0.32	2.60	0.00	0.00	0.00
37.25	0.83	0.32	2.60	0.00	0.00	0.00
37.30	0.83	0.32	2.61	0.00	0.00	0.00
37.35	0.83	0.32	2.61	0.00	0.00	0.00
37.40	0.83	0.32	2.61	0.00	0.00	0.00

37.45	0.83	0.32	2.61	0.00	0.00	0.00
37.50	0.83	0.32	2.61	0.00	0.00	0.00
37.55	0.83	0.32	2.61	0.00	0.00	0.00
37.60	0.83	0.32	2.61	0.00	0.00	0.00
37.65	0.83	0.32	2.61	0.00	0.00	0.00
37.70	0.83	0.32	2.61	0.00	0.00	0.00
37.75	0.83	0.32	2.61	0.00	0.00	0.00
37.80	0.83	0.32	2.61	0.00	0.00	0.00
37.85	0.83	0.32	2.61	0.00	0.00	0.00
37.90	0.83	0.32	2.61	0.00	0.00	0.00
37.95	0.83	0.32	2.62	0.00	0.00	0.00
38.00	0.83	0.32	2.62	0.00	0.00	0.00
38.05	0.83	0.32	2.62	0.00	0.00	0.00
38.10	0.83	0.32	2.62	0.00	0.00	0.00
38.15	0.83	0.32	2.62	0.00	0.00	0.00
38.20	0.83	0.32	2.62	0.00	0.00	0.00
38.25	0.83	0.32	2.62	0.00	0.00	0.00
38.30	0.83	0.32	2.62	0.00	0.00	0.00
38.35	0.83	0.32	2.62	0.00	0.00	0.00
38.40	0.83	0.32	2.62	0.00	0.00	0.00
38.45	0.83	0.32	2.62	0.00	0.00	0.00
38.50	0.83	0.32	2.62	0.00	0.00	0.00
38.55	0.83	0.32	2.62	0.00	0.00	0.00
38.60	0.83	0.32	2.63	0.00	0.00	0.00
38.65	0.83	0.32	2.63	0.00	0.00	0.00
38.70	0.83	0.32	2.63	0.00	0.00	0.00
38.75	0.83	0.32	2.63	0.00	0.00	0.00
38.80	0.83	0.32	2.63	0.00	0.00	0.00
38.85	0.83	0.32	2.63	0.00	0.00	0.00
38.90	0.83	0.32	2.63	0.00	0.00	0.00
38.95	0.83	0.32	2.63	0.00	0.00	0.00
39.00	0.83	0.32	2.63	0.00	0.00	0.00
39.05	0.83	0.32	2.63	0.00	0.00	0.00
39.10	0.83	0.32	2.63	0.00	0.00	0.00
39.15	0.83	0.32	2.63	0.00	0.00	0.00
39.20	0.83	0.32	2.64	0.00	0.00	0.00
39.25	0.83	0.32	2.64	0.00	0.00	0.00
39.30	0.83	0.31	2.64	0.00	0.00	0.00
39.35	0.83	0.31	2.64	0.00	0.00	0.00
39.40	0.83	0.31	2.64	0.00	0.00	0.00
39.45	0.83	0.31	2.64	0.00	0.00	0.00
39.50	0.83	0.31	2.64	0.00	0.00	0.00
39.55	0.83	0.31	2.64	0.00	0.00	0.00
39.60	0.83	0.31	2.64	0.00	0.00	0.00
39.65	0.83	0.31	2.64	0.00	0.00	0.00
39.70	0.83	0.31	2.64	0.00	0.00	0.00
39.75	0.83	0.31	2.64	0.00	0.00	0.00
39.80	0.83	0.31	2.65	0.00	0.00	0.00
39.85	0.83	0.31	2.65	0.00	0.00	0.00
39.90	0.83	0.31	2.65	0.00	0.00	0.00
39.95	0.83	0.31	2.65	0.00	0.00	0.00
40.00	0.83	0.31	2.65	0.00	0.00	0.00
40.05	0.83	0.31	2.65	0.00	0.00	0.00
40.10	0.83	0.31	2.65	0.00	0.00	0.00
40.15	0.83	0.31	2.65	0.00	0.00	0.00
40.20	0.83	0.31	2.65	0.00	0.00	0.00
40.25	0.83	0.31	2.65	0.00	0.00	0.00
40.30	0.83	0.31	2.66	0.00	0.00	0.00
40.35	0.83	0.31	2.66	0.00	0.00	0.00
40.40	0.83	0.31	2.66	0.00	0.00	0.00
40.45	0.83	0.31	2.66	0.00	0.00	0.00
40.50	0.83	0.31	2.66	0.00	0.00	0.00
40.55	0.83	0.31	2.66	0.00	0.00	0.00
40.60	0.83	0.31	2.66	0.00	0.00	0.00
40.65	0.83	0.31	2.66	0.00	0.00	0.00
40.70	0.83	0.31	2.66	0.00	0.00	0.00
40.75	0.83	0.31	2.67	0.00	0.00	0.00
40.80	0.83	0.31	2.67	0.00	0.00	0.00
40.85	0.83	0.31	2.67	0.00	0.00	0.00
40.90	0.83	0.31	2.67	0.00	0.00	0.00
40.95	0.83	0.31	2.67	0.00	0.00	0.00

41.00	0.83	0.31	2.67	0.00	0.00	0.00
41.05	0.83	0.31	2.67	0.00	0.00	0.00
41.10	0.83	0.31	2.67	0.00	0.00	0.00
41.15	0.83	0.31	2.67	0.00	0.00	0.00
41.20	0.83	0.31	2.67	0.00	0.00	0.00
41.25	0.83	0.31	2.68	0.00	0.00	0.00
41.30	0.83	0.31	2.68	0.00	0.00	0.00
41.35	0.83	0.31	2.68	0.00	0.00	0.00
41.40	0.83	0.31	2.68	0.00	0.00	0.00
41.45	0.83	0.31	2.68	0.00	0.00	0.00
41.50	0.83	0.31	2.68	0.00	0.00	0.00
41.55	0.83	0.31	2.68	0.00	0.00	0.00
41.60	0.83	0.31	2.68	0.00	0.00	0.00
41.65	0.83	0.31	2.68	0.00	0.00	0.00
41.70	0.83	0.31	2.69	0.00	0.00	0.00
41.75	0.83	0.31	2.69	0.00	0.00	0.00
41.80	0.83	0.31	2.69	0.00	0.00	0.00
41.85	0.83	0.31	2.69	0.00	0.00	0.00
41.90	0.83	0.31	2.69	0.00	0.00	0.00
41.95	0.83	0.31	2.69	0.00	0.00	0.00
42.00	0.83	0.31	2.69	0.00	0.00	0.00
42.05	0.83	0.31	2.69	0.00	0.00	0.00
42.10	0.83	0.31	2.69	0.00	0.00	0.00
42.15	0.83	0.31	2.70	0.00	0.00	0.00
42.20	0.83	0.31	2.70	0.00	0.00	0.00
42.25	0.83	0.31	2.70	0.00	0.00	0.00
42.30	0.83	0.31	2.70	0.00	0.00	0.00
42.35	0.83	0.31	2.70	0.00	0.00	0.00
42.40	0.83	0.31	2.70	0.00	0.00	0.00
42.45	0.83	0.31	2.70	0.00	0.00	0.00
42.50	0.83	0.31	2.70	0.00	0.00	0.00
42.55	0.83	0.31	2.71	0.00	0.00	0.00
42.60	0.83	0.31	2.71	0.00	0.00	0.00
42.65	0.83	0.31	2.71	0.00	0.00	0.00
42.70	0.83	0.31	2.71	0.00	0.00	0.00
42.75	0.83	0.31	2.71	0.00	0.00	0.00
42.80	0.83	0.31	2.71	0.00	0.00	0.00
42.85	0.83	0.31	2.71	0.00	0.00	0.00
42.90	0.83	0.31	2.71	0.00	0.00	0.00
42.95	0.83	0.31	2.71	0.00	0.00	0.00
43.00	0.83	0.31	2.72	0.00	0.00	0.00
43.05	0.83	0.31	2.72	0.00	0.00	0.00
43.10	0.83	0.31	2.72	0.00	0.00	0.00
43.15	0.83	0.31	2.72	0.00	0.00	0.00
43.20	0.83	0.31	2.72	0.00	0.00	0.00
43.25	0.83	0.31	2.72	0.00	0.00	0.00
43.30	0.83	0.31	2.72	0.00	0.00	0.00
43.35	0.83	0.31	2.72	0.00	0.00	0.00
43.40	0.83	0.30	2.72	0.00	0.00	0.00
43.45	0.83	0.30	2.73	0.00	0.00	0.00
43.50	0.83	0.30	2.73	0.00	0.00	0.00
43.55	0.83	0.30	2.73	0.00	0.00	0.00
43.60	0.83	0.30	2.73	0.00	0.00	0.00
43.65	0.83	0.30	2.73	0.00	0.00	0.00
43.70	0.83	0.30	2.73	0.00	0.00	0.00
43.75	0.83	0.30	2.73	0.00	0.00	0.00
43.80	0.83	0.30	2.73	0.00	0.00	0.00
43.85	0.83	0.30	2.74	0.00	0.00	0.00
43.90	0.83	0.30	2.74	0.00	0.00	0.00
43.95	0.83	0.30	2.74	0.00	0.00	0.00
44.00	0.83	0.30	2.74	0.00	0.00	0.00
44.05	0.83	0.30	2.74	0.00	0.00	0.00
44.10	0.83	0.30	2.74	0.00	0.00	0.00
44.15	0.83	0.30	2.74	0.00	0.00	0.00
44.20	0.83	0.30	2.74	0.00	0.00	0.00
44.25	0.83	0.30	2.74	0.00	0.00	0.00
44.30	0.83	0.30	2.75	0.00	0.00	0.00
44.35	0.83	0.30	2.75	0.00	0.00	0.00
44.40	0.83	0.30	2.75	0.00	0.00	0.00
44.45	0.83	0.30	2.75	0.00	0.00	0.00
44.50	0.83	0.30	2.75	0.00	0.00	0.00

44.55	0.83	0.30	2.75	0.00	0.00	0.00
44.60	0.83	0.30	2.75	0.00	0.00	0.00
44.65	0.83	0.30	2.75	0.00	0.00	0.00
44.70	0.83	0.30	2.76	0.00	0.00	0.00
44.75	0.83	0.30	2.76	0.00	0.00	0.00
44.80	0.83	0.30	2.76	0.00	0.00	0.00
44.85	0.83	0.30	2.76	0.00	0.00	0.00
44.90	0.83	0.30	2.76	0.00	0.00	0.00
44.95	0.83	0.30	2.76	0.00	0.00	0.00
45.00	0.83	0.30	2.76	0.00	0.00	0.00
45.05	0.83	0.30	2.76	0.00	0.00	0.00
45.10	0.83	0.30	2.76	0.00	0.00	0.00
45.15	0.83	0.30	2.77	0.00	0.00	0.00
45.20	0.83	0.30	2.77	0.00	0.00	0.00
45.25	0.83	0.30	2.77	0.00	0.00	0.00
45.30	0.83	0.30	2.77	0.00	0.00	0.00
45.35	0.83	0.30	2.77	0.00	0.00	0.00
45.40	0.83	0.30	2.77	0.00	0.00	0.00
45.45	0.83	0.30	2.77	0.00	0.00	0.00
45.50	0.83	0.30	2.77	0.00	0.00	0.00
45.55	0.83	0.30	2.77	0.00	0.00	0.00
45.60	0.83	0.30	2.77	0.00	0.00	0.00
45.65	0.83	0.30	2.78	0.00	0.00	0.00
45.70	0.83	0.30	2.78	0.00	0.00	0.00
45.75	0.83	0.30	2.78	0.00	0.00	0.00
45.80	0.83	0.30	2.78	0.00	0.00	0.00
45.85	0.83	0.30	2.78	0.00	0.00	0.00
45.90	0.83	0.30	2.78	0.00	0.00	0.00
45.95	0.83	0.30	2.78	0.00	0.00	0.00
46.00	0.83	0.30	2.78	0.00	0.00	0.00
46.05	0.83	0.30	2.78	0.00	0.00	0.00
46.10	0.83	0.30	2.78	0.00	0.00	0.00
46.15	0.83	0.30	2.79	0.00	0.00	0.00
46.20	0.83	0.30	2.79	0.00	0.00	0.00
46.25	0.83	0.30	2.79	0.00	0.00	0.00
46.30	0.83	0.30	2.79	0.00	0.00	0.00
46.35	0.83	0.30	2.79	0.00	0.00	0.00
46.40	0.83	0.30	2.79	0.00	0.00	0.00
46.45	0.83	0.30	2.79	0.00	0.00	0.00
46.50	0.83	0.30	2.79	0.00	0.00	0.00
46.55	0.83	0.30	2.79	0.00	0.00	0.00
46.60	0.83	0.30	2.79	0.00	0.00	0.00
46.65	0.83	0.30	2.80	0.00	0.00	0.00
46.70	0.83	0.30	2.80	0.00	0.00	0.00
46.75	0.83	0.30	2.80	0.00	0.00	0.00
46.80	0.83	0.30	2.80	0.00	0.00	0.00
46.85	0.83	0.30	2.80	0.00	0.00	0.00
46.90	0.83	0.30	2.80	0.00	0.00	0.00
46.95	0.83	0.30	2.80	0.00	0.00	0.00
47.00	0.83	0.30	2.80	0.00	0.00	0.00
47.05	0.83	0.30	2.80	0.00	0.00	0.00
47.10	0.83	0.30	2.81	0.00	0.00	0.00
47.15	0.83	0.30	2.81	0.00	0.00	0.00
47.20	0.83	0.30	2.81	0.00	0.00	0.00
47.25	0.83	0.30	2.81	0.00	0.00	0.00
47.30	0.83	0.30	2.81	0.00	0.00	0.00
47.35	0.83	0.30	2.81	0.00	0.00	0.00
47.40	0.83	0.30	2.81	0.00	0.00	0.00
47.45	0.83	0.30	2.81	0.00	0.00	0.00
47.50	0.83	0.30	2.81	0.00	0.00	0.00
47.55	0.83	0.30	2.81	0.00	0.00	0.00
47.60	0.83	0.30	2.82	0.00	0.00	0.00
47.65	0.83	0.29	2.82	0.00	0.00	0.00
47.70	0.83	0.29	2.82	0.00	0.00	0.00
47.75	0.83	0.29	2.82	0.00	0.00	0.00
47.80	0.83	0.29	2.82	0.00	0.00	0.00
47.85	0.83	0.29	2.82	0.00	0.00	0.00
47.90	0.83	0.29	2.82	0.00	0.00	0.00
47.95	0.83	0.29	2.82	0.00	0.00	0.00
48.00	0.84	0.29	2.84	0.00	0.00	0.00
48.05	0.84	0.29	2.84	0.00	0.00	0.00

48.10	0.84	0.29	2.84	0.00	0.00	0.00
48.15	0.84	0.29	2.84	0.00	0.00	0.00
48.20	0.84	0.29	2.84	0.00	0.00	0.00
48.25	0.84	0.29	2.85	0.00	0.00	0.00
48.30	0.84	0.29	2.85	0.00	0.00	0.00
48.35	0.84	0.29	2.85	0.00	0.00	0.00
48.40	0.84	0.29	2.85	0.00	0.00	0.00
48.45	0.83	0.29	2.85	0.00	0.00	0.00
48.50	0.83	0.29	2.85	0.00	0.00	0.00
48.55	0.83	0.29	2.85	0.00	0.00	0.00
48.60	0.83	0.29	2.85	0.00	0.00	0.00
48.65	0.83	0.29	2.85	0.00	0.00	0.00
48.70	0.83	0.29	2.85	0.00	0.00	0.00
48.75	0.83	0.29	2.85	0.00	0.00	0.00
48.80	0.83	0.29	2.85	0.00	0.00	0.00
48.85	0.83	0.29	2.85	0.00	0.00	0.00
48.90	0.83	0.29	2.86	0.00	0.00	0.00
48.95	0.83	0.29	2.86	0.00	0.00	0.00
49.00	0.83	0.29	2.86	0.00	0.00	0.00
49.05	0.83	0.29	2.86	0.00	0.00	0.00
49.10	0.83	0.29	2.86	0.00	0.00	0.00
49.15	0.83	0.29	2.86	0.00	0.00	0.00
49.20	0.83	0.29	2.86	0.00	0.00	0.00
49.25	0.83	0.29	2.86	0.00	0.00	0.00
49.30	0.83	0.29	2.86	0.00	0.00	0.00
49.35	0.83	0.29	2.86	0.00	0.00	0.00
49.40	0.83	0.29	2.86	0.00	0.00	0.00
49.45	0.83	0.29	2.86	0.00	0.00	0.00
49.50	0.83	0.29	2.86	0.00	0.00	0.00
49.55	0.83	0.29	2.87	0.00	0.00	0.00
49.60	0.83	0.29	2.87	0.00	0.00	0.00
49.65	0.83	0.29	2.87	0.00	0.00	0.00
49.70	0.83	0.29	2.87	0.00	0.00	0.00
49.75	0.83	0.29	2.87	0.00	0.00	0.00
49.80	0.83	0.29	2.87	0.00	0.00	0.00
49.85	0.83	0.29	2.87	0.00	0.00	0.00
49.90	0.83	0.29	2.87	0.00	0.00	0.00
49.95	0.83	0.29	2.87	0.00	0.00	0.00
50.00	0.83	0.29	2.87	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

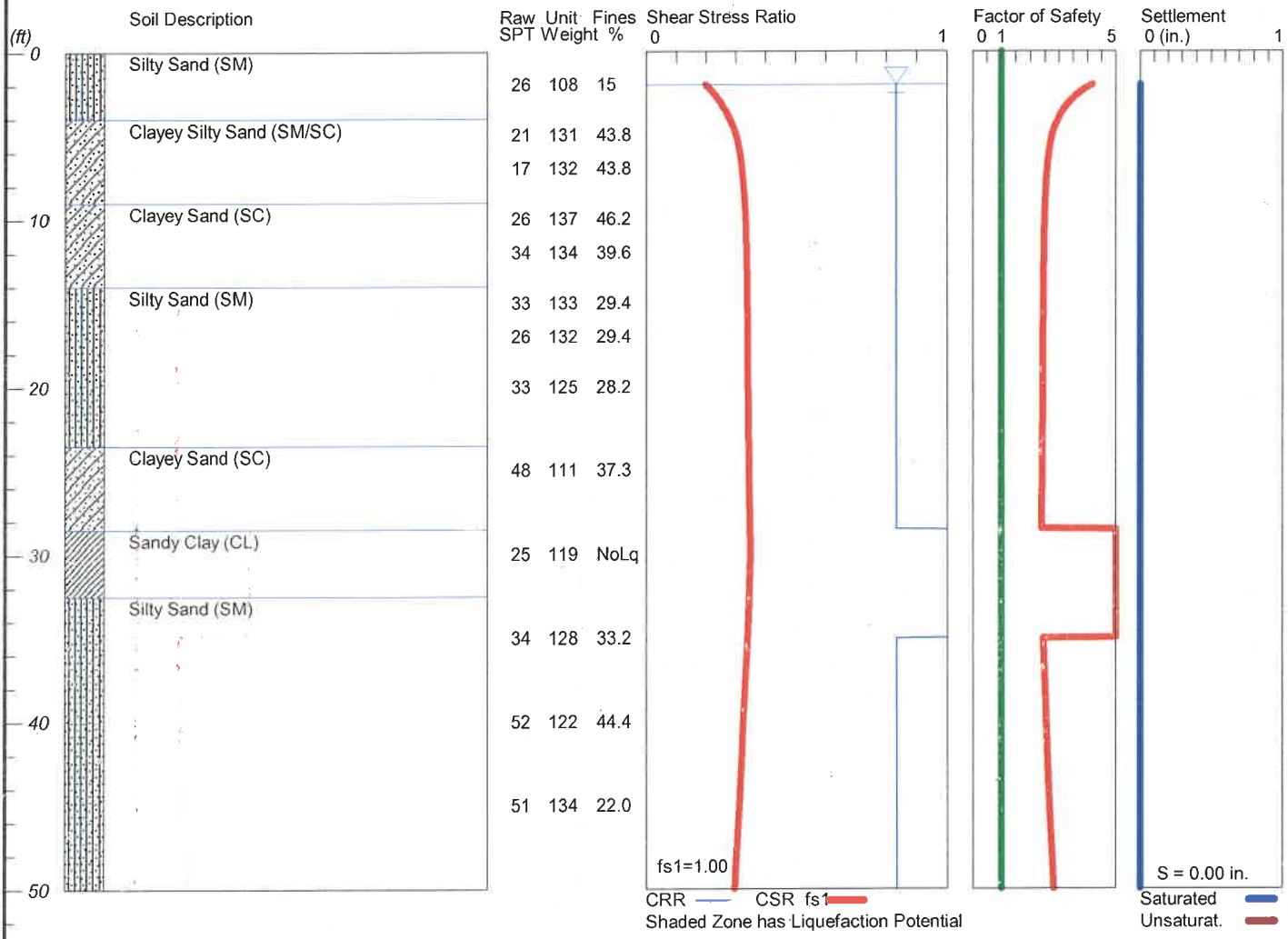
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Triangle Development

Hole No.=B4 Water Depth=2 ft

Magnitude=6.15
Acceleration=0.307g



LiquefyPro CivilTech Software USA www.civiltech.com

Krazan

012-22165

Plate A-1

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*****************************************************************************************************
                                    LIQUEFACTION ANALYSIS SUMMARY
                                  Copyright by CivilTech Software
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      Licensed to ,   10/7/2022       2:31:11 PM

      Input File Name: C:\Users\mweber\Documents\Krazan\Projects\012\22\165 Triangle Development\B4\01222165 B4
Liquefaction.liq
      Title:  Triangle Development
      Subtitle:  012-22165

      Surface Elev.=
      Hole No.=B4
      Depth of Hole= 50.00 ft
      Water Table during Earthquake= 2.00 ft
      Water Table during In-Situ Testing= 2.00 ft
      Max. Acceleration= 0.31 g
      Earthquake Magnitude= 6.15

 Input Data:
      Surface Elev.=
      Hole No.=B4
      Depth of Hole=50.00 ft
      Water Table during Earthquake= 2.00 ft
      Water Table during In-Situ Testing= 2.00 ft
      Max. Acceleration=0.31 g
      Earthquake Magnitude=6.15
      No-Liquefiable Soils:   CL, OL are Non-Liq. Soil

      1. SPT or BPT Calculation.
      2. Settlement Analysis Method: Ishihara / Yoshimine
      3. Fines Correction for Liquefaction: Stark/Olson et al.*
      4. Fine Correction for Settlement: During Liquefaction*
      5. Settlement Calculation in: All zones*
      6. Hammer Energy Ratio,                                    Ce = 1.25
      7. Borehole Diameter,                                          Cb= 1
      8. Sampling Method,                                           Cs= 1
      9. User request factor of safety (apply to CSR) ,   User= 1
         Plot one CSR curve (fs1=User)
      10. Use Curve Smoothing: No
      * Recommended Options

      In-Situ Test Data:
      Depth   SPT     gamma   Fines
      ft              pcf     %
      ____________________________________
      2.00    26.00   108.00  15.00
      5.00    21.00   131.00  43.80
      7.00    17.00   132.00  43.80
      10.00   26.00   137.00  46.20
      12.00   34.00   134.00  39.60
      15.00   33.00   133.00  29.40
      17.00   26.00   132.00  29.40
      20.00   33.00   125.00  28.20
      25.00   48.00   111.00  37.30
      30.00   25.00   119.00  NoLiq
      35.00   34.00   128.00  33.20
      40.00   52.00   122.00  44.40
      45.00   51.00   134.00  22.00
      ____________________________________

Output Results:
      Settlement of Saturated Sands=0.00 in.
      Settlement of Unsaturated Sands=0.00 in.
      Total Settlement of Saturated and Unsaturated Sands=0.00 in.
      Differential Settlement=0.000 to 0.000 in.

      Depth   CRRm    CSRfs   F.S.    S_sat.  S_dry   S_all
      ft                              in.     in.     in.
```

2.00	0.83	0.20	4.18	0.00	0.00	0.00
2.05	0.83	0.20	4.12	0.00	0.00	0.00
2.10	0.83	0.20	4.07	0.00	0.00	0.00
2.15	0.83	0.21	4.02	0.00	0.00	0.00
2.20	0.83	0.21	3.96	0.00	0.00	0.00
2.25	0.83	0.21	3.92	0.00	0.00	0.00
2.30	0.83	0.21	3.87	0.00	0.00	0.00
2.35	0.83	0.22	3.83	0.00	0.00	0.00
2.40	0.83	0.22	3.78	0.00	0.00	0.00
2.45	0.83	0.22	3.74	0.00	0.00	0.00
2.50	0.83	0.22	3.70	0.00	0.00	0.00
2.55	0.83	0.23	3.67	0.00	0.00	0.00
2.60	0.83	0.23	3.63	0.00	0.00	0.00
2.65	0.83	0.23	3.60	0.00	0.00	0.00
2.70	0.83	0.23	3.56	0.00	0.00	0.00
2.75	0.83	0.24	3.53	0.00	0.00	0.00
2.80	0.83	0.24	3.50	0.00	0.00	0.00
2.85	0.83	0.24	3.47	0.00	0.00	0.00
2.90	0.83	0.24	3.44	0.00	0.00	0.00
2.95	0.83	0.24	3.41	0.00	0.00	0.00
3.00	0.83	0.25	3.38	0.00	0.00	0.00
3.05	0.83	0.25	3.36	0.00	0.00	0.00
3.10	0.83	0.25	3.33	0.00	0.00	0.00
3.15	0.83	0.25	3.31	0.00	0.00	0.00
3.20	0.83	0.25	3.29	0.00	0.00	0.00
3.25	0.83	0.25	3.26	0.00	0.00	0.00
3.30	0.83	0.26	3.24	0.00	0.00	0.00
3.35	0.83	0.26	3.22	0.00	0.00	0.00
3.40	0.83	0.26	3.20	0.00	0.00	0.00
3.45	0.83	0.26	3.18	0.00	0.00	0.00
3.50	0.83	0.26	3.16	0.00	0.00	0.00
3.55	0.83	0.26	3.14	0.00	0.00	0.00
3.60	0.83	0.27	3.12	0.00	0.00	0.00
3.65	0.83	0.27	3.10	0.00	0.00	0.00
3.70	0.83	0.27	3.08	0.00	0.00	0.00
3.75	0.83	0.27	3.07	0.00	0.00	0.00
3.80	0.83	0.27	3.05	0.00	0.00	0.00
3.85	0.83	0.27	3.03	0.00	0.00	0.00
3.90	0.83	0.28	3.02	0.00	0.00	0.00
3.95	0.83	0.28	3.00	0.00	0.00	0.00
4.00	0.83	0.28	2.99	0.00	0.00	0.00
4.05	0.83	0.28	2.97	0.00	0.00	0.00
4.10	0.83	0.28	2.96	0.00	0.00	0.00
4.15	0.83	0.28	2.95	0.00	0.00	0.00
4.20	0.83	0.28	2.93	0.00	0.00	0.00
4.25	0.83	0.28	2.92	0.00	0.00	0.00
4.30	0.83	0.29	2.91	0.00	0.00	0.00
4.35	0.83	0.29	2.89	0.00	0.00	0.00
4.40	0.83	0.29	2.88	0.00	0.00	0.00
4.45	0.83	0.29	2.87	0.00	0.00	0.00
4.50	0.83	0.29	2.86	0.00	0.00	0.00
4.55	0.83	0.29	2.85	0.00	0.00	0.00
4.60	0.83	0.29	2.83	0.00	0.00	0.00
4.65	0.83	0.29	2.82	0.00	0.00	0.00
4.70	0.83	0.30	2.81	0.00	0.00	0.00
4.75	0.83	0.30	2.80	0.00	0.00	0.00
4.80	0.83	0.30	2.79	0.00	0.00	0.00
4.85	0.83	0.30	2.78	0.00	0.00	0.00
4.90	0.83	0.30	2.77	0.00	0.00	0.00
4.95	0.83	0.30	2.76	0.00	0.00	0.00
5.00	0.83	0.30	2.75	0.00	0.00	0.00
5.05	0.83	0.30	2.75	0.00	0.00	0.00
5.10	0.83	0.30	2.74	0.00	0.00	0.00
5.15	0.83	0.30	2.73	0.00	0.00	0.00
5.20	0.83	0.30	2.73	0.00	0.00	0.00
5.25	0.83	0.31	2.72	0.00	0.00	0.00
5.30	0.83	0.31	2.72	0.00	0.00	0.00
5.35	0.83	0.31	2.71	0.00	0.00	0.00
5.40	0.83	0.31	2.71	0.00	0.00	0.00
5.45	0.83	0.31	2.70	0.00	0.00	0.00

5.50	0.83	0.31	2.70	0.00	0.00	0.00
5.55	0.83	0.31	2.69	0.00	0.00	0.00
5.60	0.83	0.31	2.69	0.00	0.00	0.00
5.65	0.83	0.31	2.68	0.00	0.00	0.00
5.70	0.83	0.31	2.68	0.00	0.00	0.00
5.75	0.83	0.31	2.67	0.00	0.00	0.00
5.80	0.83	0.31	2.67	0.00	0.00	0.00
5.85	0.83	0.31	2.66	0.00	0.00	0.00
5.90	0.83	0.31	2.66	0.00	0.00	0.00
5.95	0.83	0.31	2.66	0.00	0.00	0.00
6.00	0.83	0.31	2.65	0.00	0.00	0.00
6.05	0.83	0.31	2.65	0.00	0.00	0.00
6.10	0.83	0.31	2.64	0.00	0.00	0.00
6.15	0.83	0.31	2.64	0.00	0.00	0.00
6.20	0.83	0.32	2.64	0.00	0.00	0.00
6.25	0.83	0.32	2.63	0.00	0.00	0.00
6.30	0.83	0.32	2.63	0.00	0.00	0.00
6.35	0.83	0.32	2.63	0.00	0.00	0.00
6.40	0.83	0.32	2.62	0.00	0.00	0.00
6.45	0.83	0.32	2.62	0.00	0.00	0.00
6.50	0.83	0.32	2.62	0.00	0.00	0.00
6.55	0.83	0.32	2.61	0.00	0.00	0.00
6.60	0.83	0.32	2.61	0.00	0.00	0.00
6.65	0.83	0.32	2.61	0.00	0.00	0.00
6.70	0.83	0.32	2.60	0.00	0.00	0.00
6.75	0.83	0.32	2.60	0.00	0.00	0.00
6.80	0.83	0.32	2.60	0.00	0.00	0.00
6.85	0.83	0.32	2.59	0.00	0.00	0.00
6.90	0.83	0.32	2.59	0.00	0.00	0.00
6.95	0.83	0.32	2.59	0.00	0.00	0.00
7.00	0.83	0.32	2.59	0.00	0.00	0.00
7.05	0.83	0.32	2.58	0.00	0.00	0.00
7.10	0.83	0.32	2.58	0.00	0.00	0.00
7.15	0.83	0.32	2.58	0.00	0.00	0.00
7.20	0.83	0.32	2.58	0.00	0.00	0.00
7.25	0.83	0.32	2.57	0.00	0.00	0.00
7.30	0.83	0.32	2.57	0.00	0.00	0.00
7.35	0.83	0.32	2.57	0.00	0.00	0.00
7.40	0.83	0.32	2.57	0.00	0.00	0.00
7.45	0.83	0.32	2.56	0.00	0.00	0.00
7.50	0.83	0.32	2.56	0.00	0.00	0.00
7.55	0.83	0.32	2.56	0.00	0.00	0.00
7.60	0.83	0.32	2.56	0.00	0.00	0.00
7.65	0.83	0.33	2.56	0.00	0.00	0.00
7.70	0.83	0.33	2.55	0.00	0.00	0.00
7.75	0.83	0.33	2.55	0.00	0.00	0.00
7.80	0.83	0.33	2.55	0.00	0.00	0.00
7.85	0.83	0.33	2.55	0.00	0.00	0.00
7.90	0.83	0.33	2.55	0.00	0.00	0.00
7.95	0.83	0.33	2.54	0.00	0.00	0.00
8.00	0.83	0.33	2.54	0.00	0.00	0.00
8.05	0.83	0.33	2.54	0.00	0.00	0.00
8.10	0.83	0.33	2.54	0.00	0.00	0.00
8.15	0.83	0.33	2.54	0.00	0.00	0.00
8.20	0.83	0.33	2.53	0.00	0.00	0.00
8.25	0.83	0.33	2.53	0.00	0.00	0.00
8.30	0.83	0.33	2.53	0.00	0.00	0.00
8.35	0.83	0.33	2.53	0.00	0.00	0.00
8.40	0.83	0.33	2.53	0.00	0.00	0.00
8.45	0.83	0.33	2.53	0.00	0.00	0.00
8.50	0.83	0.33	2.52	0.00	0.00	0.00
8.55	0.83	0.33	2.52	0.00	0.00	0.00
8.60	0.83	0.33	2.52	0.00	0.00	0.00
8.65	0.83	0.33	2.52	0.00	0.00	0.00
8.70	0.83	0.33	2.52	0.00	0.00	0.00
8.75	0.83	0.33	2.52	0.00	0.00	0.00
8.80	0.83	0.33	2.52	0.00	0.00	0.00
8.85	0.83	0.33	2.51	0.00	0.00	0.00
8.90	0.83	0.33	2.51	0.00	0.00	0.00
8.95	0.83	0.33	2.51	0.00	0.00	0.00
9.00	0.83	0.33	2.51	0.00	0.00	0.00

9.05	0.83	0.33	2.51	0.00	0.00	0.00
9.10	0.83	0.33	2.51	0.00	0.00	0.00
9.15	0.83	0.33	2.51	0.00	0.00	0.00
9.20	0.83	0.33	2.50	0.00	0.00	0.00
9.25	0.83	0.33	2.50	0.00	0.00	0.00
9.30	0.83	0.33	2.50	0.00	0.00	0.00
9.35	0.83	0.33	2.50	0.00	0.00	0.00
9.40	0.83	0.33	2.50	0.00	0.00	0.00
9.45	0.83	0.33	2.50	0.00	0.00	0.00
9.50	0.83	0.33	2.50	0.00	0.00	0.00
9.55	0.83	0.33	2.50	0.00	0.00	0.00
9.60	0.83	0.33	2.49	0.00	0.00	0.00
9.65	0.83	0.33	2.49	0.00	0.00	0.00
9.70	0.83	0.33	2.49	0.00	0.00	0.00
9.75	0.83	0.33	2.49	0.00	0.00	0.00
9.80	0.83	0.33	2.49	0.00	0.00	0.00
9.85	0.83	0.33	2.49	0.00	0.00	0.00
9.90	0.83	0.33	2.49	0.00	0.00	0.00
9.95	0.83	0.33	2.49	0.00	0.00	0.00
10.00	0.83	0.33	2.49	0.00	0.00	0.00
10.05	0.83	0.33	2.49	0.00	0.00	0.00
10.10	0.83	0.33	2.48	0.00	0.00	0.00
10.15	0.83	0.33	2.48	0.00	0.00	0.00
10.20	0.83	0.33	2.48	0.00	0.00	0.00
10.25	0.83	0.33	2.48	0.00	0.00	0.00
10.30	0.83	0.33	2.48	0.00	0.00	0.00
10.35	0.83	0.33	2.48	0.00	0.00	0.00
10.40	0.83	0.33	2.48	0.00	0.00	0.00
10.45	0.83	0.33	2.48	0.00	0.00	0.00
10.50	0.83	0.33	2.48	0.00	0.00	0.00
10.55	0.83	0.34	2.48	0.00	0.00	0.00
10.60	0.83	0.34	2.48	0.00	0.00	0.00
10.65	0.83	0.34	2.48	0.00	0.00	0.00
10.70	0.83	0.34	2.48	0.00	0.00	0.00
10.75	0.83	0.34	2.48	0.00	0.00	0.00
10.80	0.83	0.34	2.48	0.00	0.00	0.00
10.85	0.83	0.34	2.48	0.00	0.00	0.00
10.90	0.83	0.34	2.48	0.00	0.00	0.00
10.95	0.83	0.34	2.48	0.00	0.00	0.00
11.00	0.83	0.34	2.48	0.00	0.00	0.00
11.05	0.83	0.34	2.47	0.00	0.00	0.00
11.10	0.83	0.34	2.47	0.00	0.00	0.00
11.15	0.83	0.34	2.47	0.00	0.00	0.00
11.20	0.83	0.34	2.47	0.00	0.00	0.00
11.25	0.83	0.34	2.47	0.00	0.00	0.00
11.30	0.83	0.34	2.47	0.00	0.00	0.00
11.35	0.83	0.34	2.47	0.00	0.00	0.00
11.40	0.83	0.34	2.47	0.00	0.00	0.00
11.45	0.83	0.34	2.47	0.00	0.00	0.00
11.50	0.83	0.34	2.47	0.00	0.00	0.00
11.55	0.83	0.34	2.47	0.00	0.00	0.00
11.60	0.83	0.34	2.47	0.00	0.00	0.00
11.65	0.83	0.34	2.47	0.00	0.00	0.00
11.70	0.83	0.34	2.47	0.00	0.00	0.00
11.75	0.83	0.34	2.47	0.00	0.00	0.00
11.80	0.83	0.34	2.47	0.00	0.00	0.00
11.85	0.83	0.34	2.47	0.00	0.00	0.00
11.90	0.83	0.34	2.47	0.00	0.00	0.00
11.95	0.83	0.34	2.47	0.00	0.00	0.00
12.00	0.83	0.34	2.47	0.00	0.00	0.00
12.05	0.83	0.34	2.47	0.00	0.00	0.00
12.10	0.83	0.34	2.47	0.00	0.00	0.00
12.15	0.83	0.34	2.47	0.00	0.00	0.00
12.20	0.83	0.34	2.47	0.00	0.00	0.00
12.25	0.83	0.34	2.46	0.00	0.00	0.00
12.30	0.83	0.34	2.46	0.00	0.00	0.00
12.35	0.83	0.34	2.46	0.00	0.00	0.00
12.40	0.83	0.34	2.46	0.00	0.00	0.00
12.45	0.83	0.34	2.46	0.00	0.00	0.00
12.50	0.83	0.34	2.46	0.00	0.00	0.00
12.55	0.83	0.34	2.46	0.00	0.00	0.00

12.60	0.83	0.34	2.46	0.00	0.00	0.00
12.65	0.83	0.34	2.46	0.00	0.00	0.00
12.70	0.83	0.34	2.46	0.00	0.00	0.00
12.75	0.83	0.34	2.46	0.00	0.00	0.00
12.80	0.83	0.34	2.46	0.00	0.00	0.00
12.85	0.83	0.34	2.46	0.00	0.00	0.00
12.90	0.83	0.34	2.46	0.00	0.00	0.00
12.95	0.83	0.34	2.46	0.00	0.00	0.00
13.00	0.83	0.34	2.46	0.00	0.00	0.00
13.05	0.83	0.34	2.46	0.00	0.00	0.00
13.10	0.83	0.34	2.46	0.00	0.00	0.00
13.15	0.83	0.34	2.46	0.00	0.00	0.00
13.20	0.83	0.34	2.46	0.00	0.00	0.00
13.25	0.83	0.34	2.46	0.00	0.00	0.00
13.30	0.83	0.34	2.46	0.00	0.00	0.00
13.35	0.83	0.34	2.46	0.00	0.00	0.00
13.40	0.83	0.34	2.46	0.00	0.00	0.00
13.45	0.83	0.34	2.45	0.00	0.00	0.00
13.50	0.83	0.34	2.45	0.00	0.00	0.00
13.55	0.83	0.34	2.45	0.00	0.00	0.00
13.60	0.83	0.34	2.45	0.00	0.00	0.00
13.65	0.83	0.34	2.45	0.00	0.00	0.00
13.70	0.83	0.34	2.45	0.00	0.00	0.00
13.75	0.83	0.34	2.45	0.00	0.00	0.00
13.80	0.83	0.34	2.45	0.00	0.00	0.00
13.85	0.83	0.34	2.45	0.00	0.00	0.00
13.90	0.83	0.34	2.45	0.00	0.00	0.00
13.95	0.83	0.34	2.45	0.00	0.00	0.00
14.00	0.83	0.34	2.45	0.00	0.00	0.00
14.05	0.83	0.34	2.45	0.00	0.00	0.00
14.10	0.83	0.34	2.45	0.00	0.00	0.00
14.15	0.83	0.34	2.45	0.00	0.00	0.00
14.20	0.83	0.34	2.45	0.00	0.00	0.00
14.25	0.83	0.34	2.45	0.00	0.00	0.00
14.30	0.83	0.34	2.45	0.00	0.00	0.00
14.35	0.83	0.34	2.45	0.00	0.00	0.00
14.40	0.83	0.34	2.45	0.00	0.00	0.00
14.45	0.83	0.34	2.45	0.00	0.00	0.00
14.50	0.83	0.34	2.45	0.00	0.00	0.00
14.55	0.83	0.34	2.45	0.00	0.00	0.00
14.60	0.83	0.34	2.45	0.00	0.00	0.00
14.65	0.83	0.34	2.45	0.00	0.00	0.00
14.70	0.83	0.34	2.45	0.00	0.00	0.00
14.75	0.83	0.34	2.45	0.00	0.00	0.00
14.80	0.83	0.34	2.45	0.00	0.00	0.00
14.85	0.83	0.34	2.45	0.00	0.00	0.00
14.90	0.83	0.34	2.45	0.00	0.00	0.00
14.95	0.83	0.34	2.45	0.00	0.00	0.00
15.00	0.83	0.34	2.45	0.00	0.00	0.00
15.05	0.83	0.34	2.45	0.00	0.00	0.00
15.10	0.83	0.34	2.45	0.00	0.00	0.00
15.15	0.83	0.34	2.45	0.00	0.00	0.00
15.20	0.83	0.34	2.45	0.00	0.00	0.00
15.25	0.83	0.34	2.45	0.00	0.00	0.00
15.30	0.83	0.34	2.44	0.00	0.00	0.00
15.35	0.83	0.34	2.44	0.00	0.00	0.00
15.40	0.83	0.34	2.44	0.00	0.00	0.00
15.45	0.83	0.34	2.44	0.00	0.00	0.00
15.50	0.83	0.34	2.44	0.00	0.00	0.00
15.55	0.83	0.34	2.44	0.00	0.00	0.00
15.60	0.83	0.34	2.44	0.00	0.00	0.00
15.65	0.83	0.34	2.44	0.00	0.00	0.00
15.70	0.83	0.34	2.44	0.00	0.00	0.00
15.75	0.83	0.34	2.44	0.00	0.00	0.00
15.80	0.83	0.34	2.44	0.00	0.00	0.00
15.85	0.83	0.34	2.44	0.00	0.00	0.00
15.90	0.83	0.34	2.44	0.00	0.00	0.00
15.95	0.83	0.34	2.44	0.00	0.00	0.00
16.00	0.83	0.34	2.44	0.00	0.00	0.00
16.05	0.83	0.34	2.44	0.00	0.00	0.00
16.10	0.83	0.34	2.44	0.00	0.00	0.00

16.15	0.83	0.34	2.44	0.00	0.00	0.00
16.20	0.83	0.34	2.44	0.00	0.00	0.00
16.25	0.83	0.34	2.44	0.00	0.00	0.00
16.30	0.83	0.34	2.44	0.00	0.00	0.00
16.35	0.83	0.34	2.44	0.00	0.00	0.00
16.40	0.83	0.34	2.44	0.00	0.00	0.00
16.45	0.83	0.34	2.44	0.00	0.00	0.00
16.50	0.83	0.34	2.44	0.00	0.00	0.00
16.55	0.83	0.34	2.44	0.00	0.00	0.00
16.60	0.83	0.34	2.44	0.00	0.00	0.00
16.65	0.83	0.34	2.44	0.00	0.00	0.00
16.70	0.83	0.34	2.44	0.00	0.00	0.00
16.75	0.83	0.34	2.44	0.00	0.00	0.00
16.80	0.83	0.34	2.44	0.00	0.00	0.00
16.85	0.83	0.34	2.44	0.00	0.00	0.00
16.90	0.83	0.34	2.44	0.00	0.00	0.00
16.95	0.83	0.34	2.44	0.00	0.00	0.00
17.00	0.83	0.34	2.44	0.00	0.00	0.00
17.05	0.83	0.34	2.44	0.00	0.00	0.00
17.10	0.83	0.34	2.44	0.00	0.00	0.00
17.15	0.83	0.34	2.44	0.00	0.00	0.00
17.20	0.83	0.34	2.44	0.00	0.00	0.00
17.25	0.83	0.34	2.44	0.00	0.00	0.00
17.30	0.83	0.34	2.44	0.00	0.00	0.00
17.35	0.83	0.34	2.44	0.00	0.00	0.00
17.40	0.83	0.34	2.44	0.00	0.00	0.00
17.45	0.83	0.34	2.44	0.00	0.00	0.00
17.50	0.83	0.34	2.44	0.00	0.00	0.00
17.55	0.83	0.34	2.44	0.00	0.00	0.00
17.60	0.83	0.34	2.44	0.00	0.00	0.00
17.65	0.83	0.34	2.44	0.00	0.00	0.00
17.70	0.83	0.34	2.44	0.00	0.00	0.00
17.75	0.83	0.34	2.44	0.00	0.00	0.00
17.80	0.83	0.34	2.44	0.00	0.00	0.00
17.85	0.83	0.34	2.44	0.00	0.00	0.00
17.90	0.83	0.34	2.44	0.00	0.00	0.00
17.95	0.83	0.34	2.44	0.00	0.00	0.00
18.00	0.83	0.34	2.44	0.00	0.00	0.00
18.05	0.83	0.34	2.44	0.00	0.00	0.00
18.10	0.83	0.34	2.44	0.00	0.00	0.00
18.15	0.83	0.34	2.44	0.00	0.00	0.00
18.20	0.83	0.34	2.44	0.00	0.00	0.00
18.25	0.83	0.34	2.44	0.00	0.00	0.00
18.30	0.83	0.34	2.44	0.00	0.00	0.00
18.35	0.83	0.34	2.43	0.00	0.00	0.00
18.40	0.83	0.34	2.43	0.00	0.00	0.00
18.45	0.83	0.34	2.43	0.00	0.00	0.00
18.50	0.83	0.34	2.43	0.00	0.00	0.00
18.55	0.83	0.34	2.43	0.00	0.00	0.00
18.60	0.83	0.34	2.43	0.00	0.00	0.00
18.65	0.83	0.34	2.43	0.00	0.00	0.00
18.70	0.83	0.34	2.43	0.00	0.00	0.00
18.75	0.83	0.34	2.43	0.00	0.00	0.00
18.80	0.83	0.34	2.43	0.00	0.00	0.00
18.85	0.83	0.34	2.43	0.00	0.00	0.00
18.90	0.83	0.34	2.43	0.00	0.00	0.00
18.95	0.83	0.34	2.43	0.00	0.00	0.00
19.00	0.83	0.34	2.43	0.00	0.00	0.00
19.05	0.83	0.34	2.43	0.00	0.00	0.00
19.10	0.83	0.34	2.43	0.00	0.00	0.00
19.15	0.83	0.34	2.43	0.00	0.00	0.00
19.20	0.83	0.34	2.43	0.00	0.00	0.00
19.25	0.83	0.34	2.43	0.00	0.00	0.00
19.30	0.83	0.34	2.43	0.00	0.00	0.00
19.35	0.83	0.34	2.43	0.00	0.00	0.00
19.40	0.83	0.34	2.43	0.00	0.00	0.00
19.45	0.83	0.34	2.43	0.00	0.00	0.00
19.50	0.83	0.34	2.43	0.00	0.00	0.00
19.55	0.83	0.34	2.43	0.00	0.00	0.00
19.60	0.83	0.34	2.43	0.00	0.00	0.00
19.65	0.83	0.34	2.43	0.00	0.00	0.00

19.70	0.83	0.34	2.43	0.00	0.00	0.00
19.75	0.83	0.34	2.43	0.00	0.00	0.00
19.80	0.83	0.34	2.43	0.00	0.00	0.00
19.85	0.83	0.34	2.43	0.00	0.00	0.00
19.90	0.83	0.34	2.43	0.00	0.00	0.00
19.95	0.83	0.34	2.43	0.00	0.00	0.00
20.00	0.83	0.34	2.43	0.00	0.00	0.00
20.05	0.83	0.34	2.43	0.00	0.00	0.00
20.10	0.83	0.34	2.43	0.00	0.00	0.00
20.15	0.83	0.34	2.43	0.00	0.00	0.00
20.20	0.83	0.34	2.43	0.00	0.00	0.00
20.25	0.83	0.34	2.43	0.00	0.00	0.00
20.30	0.83	0.34	2.43	0.00	0.00	0.00
20.35	0.83	0.34	2.43	0.00	0.00	0.00
20.40	0.83	0.34	2.43	0.00	0.00	0.00
20.45	0.83	0.34	2.43	0.00	0.00	0.00
20.50	0.83	0.34	2.43	0.00	0.00	0.00
20.55	0.83	0.34	2.43	0.00	0.00	0.00
20.60	0.83	0.34	2.43	0.00	0.00	0.00
20.65	0.83	0.34	2.43	0.00	0.00	0.00
20.70	0.83	0.34	2.43	0.00	0.00	0.00
20.75	0.83	0.34	2.43	0.00	0.00	0.00
20.80	0.83	0.34	2.43	0.00	0.00	0.00
20.85	0.83	0.34	2.43	0.00	0.00	0.00
20.90	0.83	0.34	2.43	0.00	0.00	0.00
20.95	0.83	0.34	2.43	0.00	0.00	0.00
21.00	0.83	0.34	2.43	0.00	0.00	0.00
21.05	0.83	0.34	2.43	0.00	0.00	0.00
21.10	0.83	0.34	2.43	0.00	0.00	0.00
21.15	0.83	0.34	2.43	0.00	0.00	0.00
21.20	0.83	0.34	2.43	0.00	0.00	0.00
21.25	0.83	0.34	2.43	0.00	0.00	0.00
21.30	0.83	0.34	2.43	0.00	0.00	0.00
21.35	0.83	0.34	2.43	0.00	0.00	0.00
21.40	0.83	0.34	2.43	0.00	0.00	0.00
21.45	0.83	0.34	2.43	0.00	0.00	0.00
21.50	0.83	0.34	2.42	0.00	0.00	0.00
21.55	0.83	0.34	2.42	0.00	0.00	0.00
21.60	0.83	0.34	2.42	0.00	0.00	0.00
21.65	0.83	0.34	2.42	0.00	0.00	0.00
21.70	0.83	0.34	2.42	0.00	0.00	0.00
21.75	0.83	0.34	2.42	0.00	0.00	0.00
21.80	0.83	0.34	2.42	0.00	0.00	0.00
21.85	0.83	0.34	2.42	0.00	0.00	0.00
21.90	0.83	0.34	2.42	0.00	0.00	0.00
21.95	0.83	0.34	2.42	0.00	0.00	0.00
22.00	0.83	0.34	2.42	0.00	0.00	0.00
22.05	0.83	0.34	2.42	0.00	0.00	0.00
22.10	0.83	0.34	2.42	0.00	0.00	0.00
22.15	0.83	0.34	2.42	0.00	0.00	0.00
22.20	0.83	0.34	2.42	0.00	0.00	0.00
22.25	0.83	0.34	2.42	0.00	0.00	0.00
22.30	0.83	0.34	2.42	0.00	0.00	0.00
22.35	0.83	0.34	2.42	0.00	0.00	0.00
22.40	0.83	0.34	2.42	0.00	0.00	0.00
22.45	0.83	0.34	2.42	0.00	0.00	0.00
22.50	0.83	0.34	2.42	0.00	0.00	0.00
22.55	0.83	0.34	2.42	0.00	0.00	0.00
22.60	0.83	0.34	2.42	0.00	0.00	0.00
22.65	0.83	0.34	2.42	0.00	0.00	0.00
22.70	0.83	0.34	2.42	0.00	0.00	0.00
22.75	0.83	0.34	2.42	0.00	0.00	0.00
22.80	0.83	0.34	2.42	0.00	0.00	0.00
22.85	0.83	0.34	2.42	0.00	0.00	0.00
22.90	0.83	0.34	2.42	0.00	0.00	0.00
22.95	0.83	0.34	2.42	0.00	0.00	0.00
23.00	0.83	0.34	2.42	0.00	0.00	0.00
23.05	0.83	0.34	2.42	0.00	0.00	0.00
23.10	0.83	0.34	2.42	0.00	0.00	0.00
23.15	0.83	0.34	2.42	0.00	0.00	0.00
23.20	0.83	0.34	2.42	0.00	0.00	0.00

23.25	0.83	0.34	2.42	0.00	0.00	0.00
23.30	0.83	0.34	2.42	0.00	0.00	0.00
23.35	0.83	0.34	2.42	0.00	0.00	0.00
23.40	0.83	0.34	2.42	0.00	0.00	0.00
23.45	0.83	0.34	2.42	0.00	0.00	0.00
23.50	0.83	0.34	2.42	0.00	0.00	0.00
23.55	0.83	0.34	2.42	0.00	0.00	0.00
23.60	0.83	0.34	2.42	0.00	0.00	0.00
23.65	0.83	0.34	2.42	0.00	0.00	0.00
23.70	0.83	0.34	2.42	0.00	0.00	0.00
23.75	0.83	0.34	2.42	0.00	0.00	0.00
23.80	0.83	0.34	2.42	0.00	0.00	0.00
23.85	0.83	0.34	2.42	0.00	0.00	0.00
23.90	0.83	0.34	2.42	0.00	0.00	0.00
23.95	0.83	0.34	2.42	0.00	0.00	0.00
24.00	0.83	0.34	2.42	0.00	0.00	0.00
24.05	0.83	0.34	2.42	0.00	0.00	0.00
24.10	0.83	0.34	2.42	0.00	0.00	0.00
24.15	0.83	0.34	2.42	0.00	0.00	0.00
24.20	0.83	0.34	2.42	0.00	0.00	0.00
24.25	0.83	0.34	2.42	0.00	0.00	0.00
24.30	0.83	0.34	2.42	0.00	0.00	0.00
24.35	0.83	0.34	2.42	0.00	0.00	0.00
24.40	0.83	0.34	2.41	0.00	0.00	0.00
24.45	0.83	0.34	2.41	0.00	0.00	0.00
24.50	0.83	0.34	2.41	0.00	0.00	0.00
24.55	0.83	0.34	2.41	0.00	0.00	0.00
24.60	0.83	0.34	2.41	0.00	0.00	0.00
24.65	0.83	0.34	2.41	0.00	0.00	0.00
24.70	0.83	0.34	2.41	0.00	0.00	0.00
24.75	0.83	0.34	2.41	0.00	0.00	0.00
24.80	0.83	0.34	2.41	0.00	0.00	0.00
24.85	0.83	0.34	2.41	0.00	0.00	0.00
24.90	0.83	0.34	2.41	0.00	0.00	0.00
24.95	0.83	0.34	2.41	0.00	0.00	0.00
25.00	0.83	0.34	2.41	0.00	0.00	0.00
25.05	0.83	0.34	2.41	0.00	0.00	0.00
25.10	0.83	0.34	2.41	0.00	0.00	0.00
25.15	0.83	0.34	2.41	0.00	0.00	0.00
25.20	0.83	0.34	2.41	0.00	0.00	0.00
25.25	0.83	0.34	2.41	0.00	0.00	0.00
25.30	0.83	0.34	2.41	0.00	0.00	0.00
25.35	0.83	0.34	2.41	0.00	0.00	0.00
25.40	0.83	0.34	2.41	0.00	0.00	0.00
25.45	0.83	0.34	2.41	0.00	0.00	0.00
25.50	0.83	0.34	2.41	0.00	0.00	0.00
25.55	0.83	0.34	2.41	0.00	0.00	0.00
25.60	0.83	0.34	2.41	0.00	0.00	0.00
25.65	0.83	0.35	2.41	0.00	0.00	0.00
25.70	0.83	0.35	2.41	0.00	0.00	0.00
25.75	0.83	0.35	2.41	0.00	0.00	0.00
25.80	0.83	0.35	2.41	0.00	0.00	0.00
25.85	0.83	0.35	2.41	0.00	0.00	0.00
25.90	0.83	0.35	2.40	0.00	0.00	0.00
25.95	0.83	0.35	2.40	0.00	0.00	0.00
26.00	0.83	0.35	2.40	0.00	0.00	0.00
26.05	0.83	0.35	2.40	0.00	0.00	0.00
26.10	0.83	0.35	2.40	0.00	0.00	0.00
26.15	0.83	0.35	2.40	0.00	0.00	0.00
26.20	0.83	0.35	2.40	0.00	0.00	0.00
26.25	0.83	0.35	2.40	0.00	0.00	0.00
26.30	0.83	0.35	2.40	0.00	0.00	0.00
26.35	0.83	0.35	2.40	0.00	0.00	0.00
26.40	0.83	0.35	2.40	0.00	0.00	0.00
26.45	0.83	0.35	2.40	0.00	0.00	0.00
26.50	0.83	0.35	2.40	0.00	0.00	0.00
26.55	0.83	0.35	2.40	0.00	0.00	0.00
26.60	0.83	0.35	2.40	0.00	0.00	0.00
26.65	0.83	0.35	2.40	0.00	0.00	0.00
26.70	0.83	0.35	2.40	0.00	0.00	0.00
26.75	0.83	0.35	2.40	0.00	0.00	0.00

26.80	0.83	0.35	2.40	0.00	0.00	0.00
26.85	0.83	0.35	2.40	0.00	0.00	0.00
26.90	0.83	0.35	2.40	0.00	0.00	0.00
26.95	0.83	0.35	2.40	0.00	0.00	0.00
27.00	0.83	0.35	2.39	0.00	0.00	0.00
27.05	0.83	0.35	2.39	0.00	0.00	0.00
27.10	0.83	0.35	2.39	0.00	0.00	0.00
27.15	0.83	0.35	2.39	0.00	0.00	0.00
27.20	0.83	0.35	2.39	0.00	0.00	0.00
27.25	0.83	0.35	2.39	0.00	0.00	0.00
27.30	0.83	0.35	2.39	0.00	0.00	0.00
27.35	0.83	0.35	2.39	0.00	0.00	0.00
27.40	0.83	0.35	2.39	0.00	0.00	0.00
27.45	0.83	0.35	2.39	0.00	0.00	0.00
27.50	0.83	0.35	2.39	0.00	0.00	0.00
27.55	0.83	0.35	2.39	0.00	0.00	0.00
27.60	0.83	0.35	2.39	0.00	0.00	0.00
27.65	0.83	0.35	2.39	0.00	0.00	0.00
27.70	0.83	0.35	2.39	0.00	0.00	0.00
27.75	0.83	0.35	2.39	0.00	0.00	0.00
27.80	0.83	0.35	2.39	0.00	0.00	0.00
27.85	0.83	0.35	2.39	0.00	0.00	0.00
27.90	0.83	0.35	2.39	0.00	0.00	0.00
27.95	0.83	0.35	2.39	0.00	0.00	0.00
28.00	0.83	0.35	2.39	0.00	0.00	0.00
28.05	0.83	0.35	2.39	0.00	0.00	0.00
28.10	0.83	0.35	2.39	0.00	0.00	0.00
28.15	0.83	0.35	2.39	0.00	0.00	0.00
28.20	0.83	0.35	2.38	0.00	0.00	0.00
28.25	0.83	0.35	2.38	0.00	0.00	0.00
28.30	0.83	0.35	2.38	0.00	0.00	0.00
28.35	0.83	0.35	2.38	0.00	0.00	0.00
28.40	0.83	0.35	2.38	0.00	0.00	0.00
28.45	0.83	0.35	2.38	0.00	0.00	0.00
28.50	0.83	0.35	2.38	0.00	0.00	0.00
28.55	2.00	0.35	5.00	0.00	0.00	0.00
28.60	2.00	0.35	5.00	0.00	0.00	0.00
28.65	2.00	0.35	5.00	0.00	0.00	0.00
28.70	2.00	0.35	5.00	0.00	0.00	0.00
28.75	2.00	0.35	5.00	0.00	0.00	0.00
28.80	2.00	0.35	5.00	0.00	0.00	0.00
28.85	2.00	0.35	5.00	0.00	0.00	0.00
28.90	2.00	0.35	5.00	0.00	0.00	0.00
28.95	2.00	0.35	5.00	0.00	0.00	0.00
29.00	2.00	0.35	5.00	0.00	0.00	0.00
29.05	2.00	0.35	5.00	0.00	0.00	0.00
29.10	2.00	0.35	5.00	0.00	0.00	0.00
29.15	2.00	0.35	5.00	0.00	0.00	0.00
29.20	2.00	0.35	5.00	0.00	0.00	0.00
29.25	2.00	0.35	5.00	0.00	0.00	0.00
29.30	2.00	0.35	5.00	0.00	0.00	0.00
29.35	2.00	0.35	5.00	0.00	0.00	0.00
29.40	2.00	0.35	5.00	0.00	0.00	0.00
29.45	2.00	0.35	5.00	0.00	0.00	0.00
29.50	2.00	0.35	5.00	0.00	0.00	0.00
29.55	2.00	0.35	5.00	0.00	0.00	0.00
29.60	2.00	0.35	5.00	0.00	0.00	0.00
29.65	2.00	0.35	5.00	0.00	0.00	0.00
29.70	2.00	0.35	5.00	0.00	0.00	0.00
29.75	2.00	0.35	5.00	0.00	0.00	0.00
29.80	2.00	0.35	5.00	0.00	0.00	0.00
29.85	2.00	0.35	5.00	0.00	0.00	0.00
29.90	2.00	0.35	5.00	0.00	0.00	0.00
29.95	2.00	0.35	5.00	0.00	0.00	0.00
30.00	2.00	0.35	5.00	0.00	0.00	0.00
30.05	2.00	0.35	5.00	0.00	0.00	0.00
30.10	2.00	0.35	5.00	0.00	0.00	0.00
30.15	2.00	0.35	5.00	0.00	0.00	0.00
30.20	2.00	0.35	5.00	0.00	0.00	0.00
30.25	2.00	0.35	5.00	0.00	0.00	0.00
30.30	2.00	0.35	5.00	0.00	0.00	0.00

30.35	2.00	0.35	5.00	0.00	0.00	0.00
30.40	2.00	0.35	5.00	0.00	0.00	0.00
30.45	2.00	0.35	5.00	0.00	0.00	0.00
30.50	2.00	0.35	5.00	0.00	0.00	0.00
30.55	2.00	0.35	5.00	0.00	0.00	0.00
30.60	2.00	0.35	5.00	0.00	0.00	0.00
30.65	2.00	0.35	5.00	0.00	0.00	0.00
30.70	2.00	0.35	5.00	0.00	0.00	0.00
30.75	2.00	0.35	5.00	0.00	0.00	0.00
30.80	2.00	0.35	5.00	0.00	0.00	0.00
30.85	2.00	0.35	5.00	0.00	0.00	0.00
30.90	2.00	0.35	5.00	0.00	0.00	0.00
30.95	2.00	0.35	5.00	0.00	0.00	0.00
31.00	2.00	0.35	5.00	0.00	0.00	0.00
31.05	2.00	0.35	5.00	0.00	0.00	0.00
31.10	2.00	0.35	5.00	0.00	0.00	0.00
31.15	2.00	0.35	5.00	0.00	0.00	0.00
31.20	2.00	0.35	5.00	0.00	0.00	0.00
31.25	2.00	0.35	5.00	0.00	0.00	0.00
31.30	2.00	0.35	5.00	0.00	0.00	0.00
31.35	2.00	0.35	5.00	0.00	0.00	0.00
31.40	2.00	0.35	5.00	0.00	0.00	0.00
31.45	2.00	0.35	5.00	0.00	0.00	0.00
31.50	2.00	0.35	5.00	0.00	0.00	0.00
31.55	2.00	0.35	5.00	0.00	0.00	0.00
31.60	2.00	0.35	5.00	0.00	0.00	0.00
31.65	2.00	0.35	5.00	0.00	0.00	0.00
31.70	2.00	0.35	5.00	0.00	0.00	0.00
31.75	2.00	0.35	5.00	0.00	0.00	0.00
31.80	2.00	0.35	5.00	0.00	0.00	0.00
31.85	2.00	0.35	5.00	0.00	0.00	0.00
31.90	2.00	0.35	5.00	0.00	0.00	0.00
31.95	2.00	0.35	5.00	0.00	0.00	0.00
32.00	2.00	0.35	5.00	0.00	0.00	0.00
32.05	2.00	0.35	5.00	0.00	0.00	0.00
32.10	2.00	0.35	5.00	0.00	0.00	0.00
32.15	2.00	0.35	5.00	0.00	0.00	0.00
32.20	2.00	0.35	5.00	0.00	0.00	0.00
32.25	2.00	0.35	5.00	0.00	0.00	0.00
32.30	2.00	0.35	5.00	0.00	0.00	0.00
32.35	2.00	0.35	5.00	0.00	0.00	0.00
32.40	2.00	0.35	5.00	0.00	0.00	0.00
32.45	2.00	0.35	5.00	0.00	0.00	0.00
32.50	2.00	0.35	5.00	0.00	0.00	0.00
32.55	2.00	0.35	5.00	0.00	0.00	0.00
32.60	2.00	0.34	5.00	0.00	0.00	0.00
32.65	2.00	0.34	5.00	0.00	0.00	0.00
32.70	2.00	0.34	5.00	0.00	0.00	0.00
32.75	2.00	0.34	5.00	0.00	0.00	0.00
32.80	2.00	0.34	5.00	0.00	0.00	0.00
32.85	2.00	0.34	5.00	0.00	0.00	0.00
32.90	2.00	0.34	5.00	0.00	0.00	0.00
32.95	2.00	0.34	5.00	0.00	0.00	0.00
33.00	2.00	0.34	5.00	0.00	0.00	0.00
33.05	2.00	0.34	5.00	0.00	0.00	0.00
33.10	2.00	0.34	5.00	0.00	0.00	0.00
33.15	2.00	0.34	5.00	0.00	0.00	0.00
33.20	2.00	0.34	5.00	0.00	0.00	0.00
33.25	2.00	0.34	5.00	0.00	0.00	0.00
33.30	2.00	0.34	5.00	0.00	0.00	0.00
33.35	2.00	0.34	5.00	0.00	0.00	0.00
33.40	2.00	0.34	5.00	0.00	0.00	0.00
33.45	2.00	0.34	5.00	0.00	0.00	0.00
33.50	2.00	0.34	5.00	0.00	0.00	0.00
33.55	2.00	0.34	5.00	0.00	0.00	0.00
33.60	2.00	0.34	5.00	0.00	0.00	0.00
33.65	2.00	0.34	5.00	0.00	0.00	0.00
33.70	2.00	0.34	5.00	0.00	0.00	0.00
33.75	2.00	0.34	5.00	0.00	0.00	0.00
33.80	2.00	0.34	5.00	0.00	0.00	0.00
33.85	2.00	0.34	5.00	0.00	0.00	0.00

33.90	2.00	0.34	5.00	0.00	0.00	0.00
33.95	2.00	0.34	5.00	0.00	0.00	0.00
34.00	2.00	0.34	5.00	0.00	0.00	0.00
34.05	2.00	0.34	5.00	0.00	0.00	0.00
34.10	2.00	0.34	5.00	0.00	0.00	0.00
34.15	2.00	0.34	5.00	0.00	0.00	0.00
34.20	2.00	0.34	5.00	0.00	0.00	0.00
34.25	2.00	0.34	5.00	0.00	0.00	0.00
34.30	2.00	0.34	5.00	0.00	0.00	0.00
34.35	2.00	0.34	5.00	0.00	0.00	0.00
34.40	2.00	0.34	5.00	0.00	0.00	0.00
34.45	2.00	0.34	5.00	0.00	0.00	0.00
34.50	2.00	0.34	5.00	0.00	0.00	0.00
34.55	2.00	0.34	5.00	0.00	0.00	0.00
34.60	2.00	0.34	5.00	0.00	0.00	0.00
34.65	2.00	0.34	5.00	0.00	0.00	0.00
34.70	2.00	0.34	5.00	0.00	0.00	0.00
34.75	2.00	0.34	5.00	0.00	0.00	0.00
34.80	2.00	0.34	5.00	0.00	0.00	0.00
34.85	2.00	0.34	5.00	0.00	0.00	0.00
34.90	2.00	0.34	5.00	0.00	0.00	0.00
34.95	2.00	0.34	5.00	0.00	0.00	0.00
35.00	2.00	0.34	5.00	0.00	0.00	0.00
35.05	0.83	0.34	2.45	0.00	0.00	0.00
35.10	0.83	0.34	2.45	0.00	0.00	0.00
35.15	0.83	0.34	2.45	0.00	0.00	0.00
35.20	0.83	0.34	2.45	0.00	0.00	0.00
35.25	0.83	0.34	2.45	0.00	0.00	0.00
35.30	0.83	0.34	2.45	0.00	0.00	0.00
35.35	0.83	0.34	2.45	0.00	0.00	0.00
35.40	0.83	0.34	2.45	0.00	0.00	0.00
35.45	0.83	0.34	2.46	0.00	0.00	0.00
35.50	0.83	0.34	2.46	0.00	0.00	0.00
35.55	0.83	0.34	2.46	0.00	0.00	0.00
35.60	0.83	0.34	2.46	0.00	0.00	0.00
35.65	0.83	0.34	2.46	0.00	0.00	0.00
35.70	0.83	0.34	2.46	0.00	0.00	0.00
35.75	0.83	0.34	2.46	0.00	0.00	0.00
35.80	0.83	0.34	2.46	0.00	0.00	0.00
35.85	0.83	0.34	2.46	0.00	0.00	0.00
35.90	0.83	0.34	2.46	0.00	0.00	0.00
35.95	0.83	0.34	2.47	0.00	0.00	0.00
36.00	0.83	0.34	2.47	0.00	0.00	0.00
36.05	0.83	0.34	2.47	0.00	0.00	0.00
36.10	0.83	0.34	2.47	0.00	0.00	0.00
36.15	0.83	0.34	2.47	0.00	0.00	0.00
36.20	0.83	0.34	2.47	0.00	0.00	0.00
36.25	0.83	0.34	2.47	0.00	0.00	0.00
36.30	0.83	0.34	2.47	0.00	0.00	0.00
36.35	0.83	0.34	2.47	0.00	0.00	0.00
36.40	0.83	0.34	2.48	0.00	0.00	0.00
36.45	0.83	0.34	2.48	0.00	0.00	0.00
36.50	0.83	0.34	2.48	0.00	0.00	0.00
36.55	0.83	0.34	2.48	0.00	0.00	0.00
36.60	0.83	0.33	2.48	0.00	0.00	0.00
36.65	0.83	0.33	2.48	0.00	0.00	0.00
36.70	0.83	0.33	2.48	0.00	0.00	0.00
36.75	0.83	0.33	2.48	0.00	0.00	0.00
36.80	0.83	0.33	2.48	0.00	0.00	0.00
36.85	0.83	0.33	2.49	0.00	0.00	0.00
36.90	0.83	0.33	2.49	0.00	0.00	0.00
36.95	0.83	0.33	2.49	0.00	0.00	0.00
37.00	0.83	0.33	2.49	0.00	0.00	0.00
37.05	0.83	0.33	2.49	0.00	0.00	0.00
37.10	0.83	0.33	2.49	0.00	0.00	0.00
37.15	0.83	0.33	2.49	0.00	0.00	0.00
37.20	0.83	0.33	2.49	0.00	0.00	0.00
37.25	0.83	0.33	2.49	0.00	0.00	0.00
37.30	0.83	0.33	2.50	0.00	0.00	0.00
37.35	0.83	0.33	2.50	0.00	0.00	0.00
37.40	0.83	0.33	2.50	0.00	0.00	0.00

37.45	0.83	0.33	2.50	0.00	0.00	0.00
37.50	0.83	0.33	2.50	0.00	0.00	0.00
37.55	0.83	0.33	2.50	0.00	0.00	0.00
37.60	0.83	0.33	2.50	0.00	0.00	0.00
37.65	0.83	0.33	2.50	0.00	0.00	0.00
37.70	0.83	0.33	2.50	0.00	0.00	0.00
37.75	0.83	0.33	2.51	0.00	0.00	0.00
37.80	0.83	0.33	2.51	0.00	0.00	0.00
37.85	0.83	0.33	2.51	0.00	0.00	0.00
37.90	0.83	0.33	2.51	0.00	0.00	0.00
37.95	0.83	0.33	2.51	0.00	0.00	0.00
38.00	0.83	0.33	2.51	0.00	0.00	0.00
38.05	0.83	0.33	2.51	0.00	0.00	0.00
38.10	0.83	0.33	2.51	0.00	0.00	0.00
38.15	0.83	0.33	2.51	0.00	0.00	0.00
38.20	0.83	0.33	2.52	0.00	0.00	0.00
38.25	0.83	0.33	2.52	0.00	0.00	0.00
38.30	0.83	0.33	2.52	0.00	0.00	0.00
38.35	0.83	0.33	2.52	0.00	0.00	0.00
38.40	0.83	0.33	2.52	0.00	0.00	0.00
38.45	0.83	0.33	2.52	0.00	0.00	0.00
38.50	0.83	0.33	2.52	0.00	0.00	0.00
38.55	0.83	0.33	2.52	0.00	0.00	0.00
38.60	0.83	0.33	2.52	0.00	0.00	0.00
38.65	0.83	0.33	2.53	0.00	0.00	0.00
38.70	0.83	0.33	2.53	0.00	0.00	0.00
38.75	0.83	0.33	2.53	0.00	0.00	0.00
38.80	0.83	0.33	2.53	0.00	0.00	0.00
38.85	0.83	0.33	2.53	0.00	0.00	0.00
38.90	0.83	0.33	2.53	0.00	0.00	0.00
38.95	0.83	0.33	2.53	0.00	0.00	0.00
39.00	0.83	0.33	2.53	0.00	0.00	0.00
39.05	0.83	0.33	2.53	0.00	0.00	0.00
39.10	0.83	0.33	2.54	0.00	0.00	0.00
39.15	0.83	0.33	2.54	0.00	0.00	0.00
39.20	0.83	0.33	2.54	0.00	0.00	0.00
39.25	0.83	0.33	2.54	0.00	0.00	0.00
39.30	0.83	0.33	2.54	0.00	0.00	0.00
39.35	0.83	0.33	2.54	0.00	0.00	0.00
39.40	0.83	0.33	2.54	0.00	0.00	0.00
39.45	0.83	0.33	2.54	0.00	0.00	0.00
39.50	0.83	0.33	2.54	0.00	0.00	0.00
39.55	0.83	0.33	2.55	0.00	0.00	0.00
39.60	0.83	0.33	2.55	0.00	0.00	0.00
39.65	0.83	0.33	2.55	0.00	0.00	0.00
39.70	0.83	0.33	2.55	0.00	0.00	0.00
39.75	0.83	0.33	2.55	0.00	0.00	0.00
39.80	0.83	0.33	2.55	0.00	0.00	0.00
39.85	0.83	0.33	2.55	0.00	0.00	0.00
39.90	0.83	0.33	2.55	0.00	0.00	0.00
39.95	0.83	0.33	2.56	0.00	0.00	0.00
40.00	0.83	0.32	2.56	0.00	0.00	0.00
40.05	0.83	0.32	2.56	0.00	0.00	0.00
40.10	0.83	0.32	2.56	0.00	0.00	0.00
40.15	0.83	0.32	2.56	0.00	0.00	0.00
40.20	0.83	0.32	2.56	0.00	0.00	0.00
40.25	0.83	0.32	2.56	0.00	0.00	0.00
40.30	0.83	0.32	2.56	0.00	0.00	0.00
40.35	0.83	0.32	2.56	0.00	0.00	0.00
40.40	0.83	0.32	2.56	0.00	0.00	0.00
40.45	0.83	0.32	2.57	0.00	0.00	0.00
40.50	0.83	0.32	2.57	0.00	0.00	0.00
40.55	0.83	0.32	2.57	0.00	0.00	0.00
40.60	0.83	0.32	2.57	0.00	0.00	0.00
40.65	0.83	0.32	2.57	0.00	0.00	0.00
40.70	0.83	0.32	2.57	0.00	0.00	0.00
40.75	0.83	0.32	2.57	0.00	0.00	0.00
40.80	0.83	0.32	2.57	0.00	0.00	0.00
40.85	0.83	0.32	2.57	0.00	0.00	0.00
40.90	0.83	0.32	2.58	0.00	0.00	0.00
40.95	0.83	0.32	2.58	0.00	0.00	0.00

41.00	0.83	0.32	2.58	0.00	0.00	0.00
41.05	0.83	0.32	2.58	0.00	0.00	0.00
41.10	0.83	0.32	2.58	0.00	0.00	0.00
41.15	0.83	0.32	2.58	0.00	0.00	0.00
41.20	0.83	0.32	2.58	0.00	0.00	0.00
41.25	0.83	0.32	2.58	0.00	0.00	0.00
41.30	0.83	0.32	2.58	0.00	0.00	0.00
41.35	0.83	0.32	2.59	0.00	0.00	0.00
41.40	0.83	0.32	2.59	0.00	0.00	0.00
41.45	0.83	0.32	2.59	0.00	0.00	0.00
41.50	0.83	0.32	2.59	0.00	0.00	0.00
41.55	0.83	0.32	2.59	0.00	0.00	0.00
41.60	0.83	0.32	2.59	0.00	0.00	0.00
41.65	0.83	0.32	2.59	0.00	0.00	0.00
41.70	0.83	0.32	2.59	0.00	0.00	0.00
41.75	0.83	0.32	2.59	0.00	0.00	0.00
41.80	0.83	0.32	2.59	0.00	0.00	0.00
41.85	0.83	0.32	2.60	0.00	0.00	0.00
41.90	0.83	0.32	2.60	0.00	0.00	0.00
41.95	0.83	0.32	2.60	0.00	0.00	0.00
42.00	0.83	0.32	2.60	0.00	0.00	0.00
42.05	0.83	0.32	2.60	0.00	0.00	0.00
42.10	0.83	0.32	2.60	0.00	0.00	0.00
42.15	0.83	0.32	2.60	0.00	0.00	0.00
42.20	0.83	0.32	2.60	0.00	0.00	0.00
42.25	0.83	0.32	2.60	0.00	0.00	0.00
42.30	0.83	0.32	2.61	0.00	0.00	0.00
42.35	0.83	0.32	2.61	0.00	0.00	0.00
42.40	0.83	0.32	2.61	0.00	0.00	0.00
42.45	0.83	0.32	2.61	0.00	0.00	0.00
42.50	0.83	0.32	2.61	0.00	0.00	0.00
42.55	0.83	0.32	2.61	0.00	0.00	0.00
42.60	0.83	0.32	2.61	0.00	0.00	0.00
42.65	0.83	0.32	2.61	0.00	0.00	0.00
42.70	0.83	0.32	2.61	0.00	0.00	0.00
42.75	0.83	0.32	2.62	0.00	0.00	0.00
42.80	0.83	0.32	2.62	0.00	0.00	0.00
42.85	0.83	0.32	2.62	0.00	0.00	0.00
42.90	0.83	0.32	2.62	0.00	0.00	0.00
42.95	0.83	0.32	2.62	0.00	0.00	0.00
43.00	0.83	0.32	2.62	0.00	0.00	0.00
43.05	0.83	0.32	2.62	0.00	0.00	0.00
43.10	0.83	0.32	2.62	0.00	0.00	0.00
43.15	0.83	0.32	2.62	0.00	0.00	0.00
43.20	0.83	0.32	2.63	0.00	0.00	0.00
43.25	0.83	0.32	2.63	0.00	0.00	0.00
43.30	0.83	0.32	2.63	0.00	0.00	0.00
43.35	0.83	0.32	2.63	0.00	0.00	0.00
43.40	0.83	0.32	2.63	0.00	0.00	0.00
43.45	0.83	0.32	2.63	0.00	0.00	0.00
43.50	0.83	0.32	2.63	0.00	0.00	0.00
43.55	0.83	0.32	2.63	0.00	0.00	0.00
43.60	0.83	0.32	2.63	0.00	0.00	0.00
43.65	0.83	0.32	2.64	0.00	0.00	0.00
43.70	0.83	0.32	2.64	0.00	0.00	0.00
43.75	0.83	0.31	2.64	0.00	0.00	0.00
43.80	0.83	0.31	2.64	0.00	0.00	0.00
43.85	0.83	0.31	2.64	0.00	0.00	0.00
43.90	0.83	0.31	2.64	0.00	0.00	0.00
43.95	0.83	0.31	2.64	0.00	0.00	0.00
44.00	0.83	0.31	2.64	0.00	0.00	0.00
44.05	0.83	0.31	2.64	0.00	0.00	0.00
44.10	0.83	0.31	2.65	0.00	0.00	0.00
44.15	0.83	0.31	2.65	0.00	0.00	0.00
44.20	0.83	0.31	2.65	0.00	0.00	0.00
44.25	0.83	0.31	2.65	0.00	0.00	0.00
44.30	0.83	0.31	2.65	0.00	0.00	0.00
44.35	0.83	0.31	2.65	0.00	0.00	0.00
44.40	0.83	0.31	2.65	0.00	0.00	0.00
44.45	0.83	0.31	2.65	0.00	0.00	0.00
44.50	0.83	0.31	2.66	0.00	0.00	0.00

44.55	0.83	0.31	2.66	0.00	0.00	0.00
44.60	0.83	0.31	2.66	0.00	0.00	0.00
44.65	0.83	0.31	2.66	0.00	0.00	0.00
44.70	0.83	0.31	2.66	0.00	0.00	0.00
44.75	0.83	0.31	2.66	0.00	0.00	0.00
44.80	0.83	0.31	2.66	0.00	0.00	0.00
44.85	0.83	0.31	2.66	0.00	0.00	0.00
44.90	0.83	0.31	2.66	0.00	0.00	0.00
44.95	0.83	0.31	2.67	0.00	0.00	0.00
45.00	0.83	0.31	2.67	0.00	0.00	0.00
45.05	0.83	0.31	2.67	0.00	0.00	0.00
45.10	0.83	0.31	2.67	0.00	0.00	0.00
45.15	0.83	0.31	2.67	0.00	0.00	0.00
45.20	0.83	0.31	2.67	0.00	0.00	0.00
45.25	0.83	0.31	2.67	0.00	0.00	0.00
45.30	0.83	0.31	2.68	0.00	0.00	0.00
45.35	0.83	0.31	2.68	0.00	0.00	0.00
45.40	0.83	0.31	2.68	0.00	0.00	0.00
45.45	0.83	0.31	2.68	0.00	0.00	0.00
45.50	0.83	0.31	2.68	0.00	0.00	0.00
45.55	0.83	0.31	2.68	0.00	0.00	0.00
45.60	0.83	0.31	2.68	0.00	0.00	0.00
45.65	0.83	0.31	2.69	0.00	0.00	0.00
45.70	0.83	0.31	2.69	0.00	0.00	0.00
45.75	0.83	0.31	2.69	0.00	0.00	0.00
45.80	0.83	0.31	2.69	0.00	0.00	0.00
45.85	0.83	0.31	2.69	0.00	0.00	0.00
45.90	0.83	0.31	2.69	0.00	0.00	0.00
45.95	0.83	0.31	2.69	0.00	0.00	0.00
46.00	0.83	0.31	2.70	0.00	0.00	0.00
46.05	0.83	0.31	2.70	0.00	0.00	0.00
46.10	0.83	0.31	2.70	0.00	0.00	0.00
46.15	0.83	0.31	2.70	0.00	0.00	0.00
46.20	0.83	0.31	2.70	0.00	0.00	0.00
46.25	0.83	0.31	2.70	0.00	0.00	0.00
46.30	0.83	0.31	2.70	0.00	0.00	0.00
46.35	0.83	0.31	2.71	0.00	0.00	0.00
46.40	0.83	0.31	2.71	0.00	0.00	0.00
46.45	0.83	0.31	2.71	0.00	0.00	0.00
46.50	0.83	0.31	2.71	0.00	0.00	0.00
46.55	0.83	0.31	2.71	0.00	0.00	0.00
46.60	0.83	0.31	2.71	0.00	0.00	0.00
46.65	0.83	0.31	2.72	0.00	0.00	0.00
46.70	0.83	0.31	2.72	0.00	0.00	0.00
46.75	0.83	0.31	2.72	0.00	0.00	0.00
46.80	0.83	0.31	2.72	0.00	0.00	0.00
46.85	0.83	0.31	2.72	0.00	0.00	0.00
46.90	0.83	0.31	2.72	0.00	0.00	0.00
46.95	0.83	0.30	2.72	0.00	0.00	0.00
47.00	0.83	0.30	2.73	0.00	0.00	0.00
47.05	0.83	0.30	2.73	0.00	0.00	0.00
47.10	0.83	0.30	2.73	0.00	0.00	0.00
47.15	0.83	0.30	2.73	0.00	0.00	0.00
47.20	0.83	0.30	2.73	0.00	0.00	0.00
47.25	0.83	0.30	2.73	0.00	0.00	0.00
47.30	0.83	0.30	2.73	0.00	0.00	0.00
47.35	0.83	0.30	2.74	0.00	0.00	0.00
47.40	0.83	0.30	2.74	0.00	0.00	0.00
47.45	0.83	0.30	2.74	0.00	0.00	0.00
47.50	0.83	0.30	2.74	0.00	0.00	0.00
47.55	0.83	0.30	2.74	0.00	0.00	0.00
47.60	0.83	0.30	2.74	0.00	0.00	0.00
47.65	0.83	0.30	2.75	0.00	0.00	0.00
47.70	0.83	0.30	2.75	0.00	0.00	0.00
47.75	0.83	0.30	2.75	0.00	0.00	0.00
47.80	0.83	0.30	2.75	0.00	0.00	0.00
47.85	0.83	0.30	2.75	0.00	0.00	0.00
47.90	0.83	0.30	2.75	0.00	0.00	0.00
47.95	0.83	0.30	2.75	0.00	0.00	0.00
48.00	0.83	0.30	2.76	0.00	0.00	0.00
48.05	0.83	0.30	2.76	0.00	0.00	0.00

48.10	0.83	0.30	2.76	0.00	0.00	0.00
48.15	0.83	0.30	2.76	0.00	0.00	0.00
48.20	0.83	0.30	2.76	0.00	0.00	0.00
48.25	0.83	0.30	2.76	0.00	0.00	0.00
48.30	0.83	0.30	2.77	0.00	0.00	0.00
48.35	0.83	0.30	2.77	0.00	0.00	0.00
48.40	0.83	0.30	2.77	0.00	0.00	0.00
48.45	0.83	0.30	2.77	0.00	0.00	0.00
48.50	0.83	0.30	2.77	0.00	0.00	0.00
48.55	0.83	0.30	2.77	0.00	0.00	0.00
48.60	0.83	0.30	2.77	0.00	0.00	0.00
48.65	0.83	0.30	2.78	0.00	0.00	0.00
48.70	0.83	0.30	2.78	0.00	0.00	0.00
48.75	0.83	0.30	2.78	0.00	0.00	0.00
48.80	0.83	0.30	2.78	0.00	0.00	0.00
48.85	0.83	0.30	2.78	0.00	0.00	0.00
48.90	0.83	0.30	2.78	0.00	0.00	0.00
48.95	0.83	0.30	2.79	0.00	0.00	0.00
49.00	0.83	0.30	2.79	0.00	0.00	0.00
49.05	0.83	0.30	2.79	0.00	0.00	0.00
49.10	0.83	0.30	2.79	0.00	0.00	0.00
49.15	0.83	0.30	2.79	0.00	0.00	0.00
49.20	0.83	0.30	2.79	0.00	0.00	0.00
49.25	0.83	0.30	2.79	0.00	0.00	0.00
49.30	0.83	0.30	2.80	0.00	0.00	0.00
49.35	0.83	0.30	2.80	0.00	0.00	0.00
49.40	0.83	0.30	2.80	0.00	0.00	0.00
49.45	0.83	0.30	2.80	0.00	0.00	0.00
49.50	0.83	0.30	2.80	0.00	0.00	0.00
49.55	0.83	0.30	2.80	0.00	0.00	0.00
49.60	0.83	0.30	2.81	0.00	0.00	0.00
49.65	0.83	0.30	2.81	0.00	0.00	0.00
49.70	0.83	0.30	2.81	0.00	0.00	0.00
49.75	0.83	0.30	2.81	0.00	0.00	0.00
49.80	0.83	0.30	2.81	0.00	0.00	0.00
49.85	0.83	0.30	2.81	0.00	0.00	0.00
49.90	0.83	0.30	2.81	0.00	0.00	0.00
49.95	0.83	0.29	2.82	0.00	0.00	0.00
50.00	0.83	0.29	2.82	0.00	0.00	0.00

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* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)

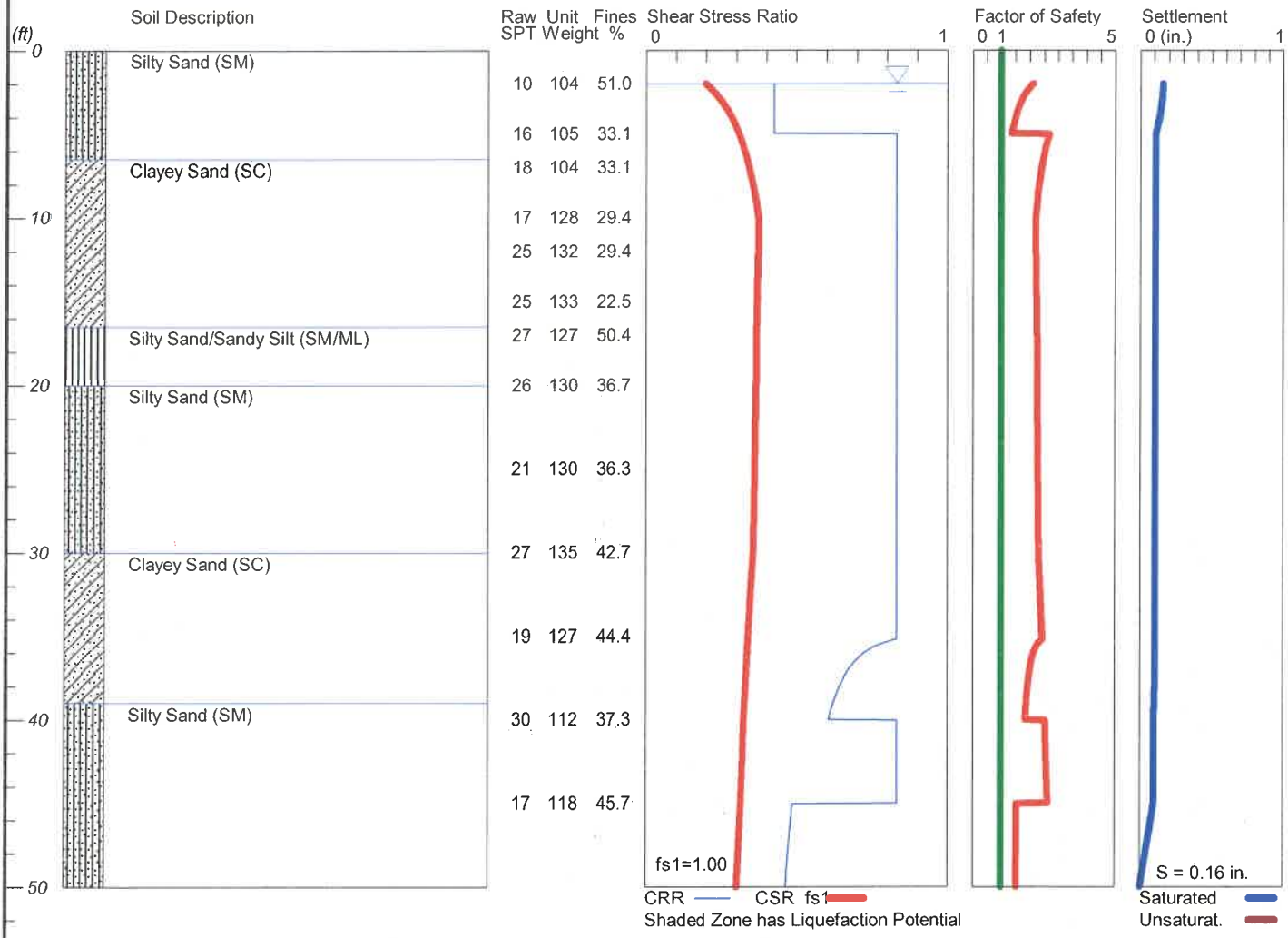
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Triangle Development

Hole No.=B5 Water Depth=2 ft

Magnitude=6.15
Acceleration=0.307g



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LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: C:\Users\mweber\Documents\Krazan\Projects\012\22\165 Triangle Development\B5\01222165 B5 Liquefaction.liq
Title: Triangle Development
Subtitle: 012-22165

Surface Elev.=
Hole No.=B5
Depth of Hole= 50.00 ft
Water Table during Earthquake= 2.00 ft
Water Table during In-Situ Testing= 2.00 ft
Max. Acceleration= 0.31 g
Earthquake Magnitude= 6.15

Input Data:
Surface Elev.=
Hole No.=B5
Depth of Hole=50.00 ft
Water Table during Earthquake= 2.00 ft
Water Table during In-Situ Testing= 2.00 ft
Max. Acceleration=0.31 g
Earthquake Magnitude=6.15
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1
8. Sampling Method, Cs= 1
9. User request factor of safety (apply to CSR) , User= 1
Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: No
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
2.00	10.00	104.00	51.00
5.00	16.00	105.00	33.10
7.00	18.00	104.00	33.10
10.00	17.00	128.00	29.40
12.00	25.00	132.00	29.40
15.00	25.00	133.00	22.50
17.00	27.00	127.00	50.40
20.00	26.00	130.00	36.70
25.00	21.00	130.00	36.30
30.00	27.00	135.00	42.70
35.00	19.00	127.00	44.40
40.00	30.00	112.00	37.30
45.00	17.00	118.00	45.70

Output Results:
Settlement of Saturated Sands=0.16 in.
Settlement of Unsaturated Sands=0.00 in.
Total Settlement of Saturated and Unsaturated Sands=0.16 in.
Differential Settlement=0.078 to 0.102 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.

2.00	0.42	0.20	2.13	0.16	0.00	0.16
2.05	0.42	0.20	2.10	0.16	0.00	0.16
2.10	0.42	0.20	2.07	0.16	0.00	0.16
2.15	0.42	0.21	2.04	0.16	0.00	0.16
2.20	0.42	0.21	2.02	0.16	0.00	0.16
2.25	0.42	0.21	1.99	0.16	0.00	0.16
2.30	0.42	0.22	1.97	0.16	0.00	0.16
2.35	0.42	0.22	1.94	0.16	0.00	0.16
2.40	0.42	0.22	1.92	0.15	0.00	0.15
2.45	0.42	0.22	1.90	0.15	0.00	0.15
2.50	0.42	0.23	1.88	0.15	0.00	0.15
2.55	0.42	0.23	1.86	0.15	0.00	0.15
2.60	0.42	0.23	1.84	0.15	0.00	0.15
2.65	0.42	0.23	1.82	0.15	0.00	0.15
2.70	0.42	0.23	1.80	0.15	0.00	0.15
2.75	0.42	0.24	1.79	0.15	0.00	0.15
2.80	0.42	0.24	1.77	0.15	0.00	0.15
2.85	0.42	0.24	1.75	0.15	0.00	0.15
2.90	0.42	0.24	1.74	0.15	0.00	0.15
2.95	0.42	0.25	1.72	0.15	0.00	0.15
3.00	0.42	0.25	1.71	0.15	0.00	0.15
3.05	0.42	0.25	1.70	0.15	0.00	0.15
3.10	0.42	0.25	1.68	0.15	0.00	0.15
3.15	0.42	0.25	1.67	0.15	0.00	0.15
3.20	0.42	0.26	1.66	0.15	0.00	0.15
3.25	0.42	0.26	1.65	0.15	0.00	0.15
3.30	0.42	0.26	1.63	0.15	0.00	0.15
3.35	0.42	0.26	1.62	0.14	0.00	0.14
3.40	0.42	0.26	1.61	0.14	0.00	0.14
3.45	0.42	0.26	1.60	0.14	0.00	0.14
3.50	0.42	0.27	1.59	0.14	0.00	0.14
3.55	0.42	0.27	1.58	0.14	0.00	0.14
3.60	0.42	0.27	1.57	0.14	0.00	0.14
3.65	0.42	0.27	1.56	0.14	0.00	0.14
3.70	0.42	0.27	1.55	0.14	0.00	0.14
3.75	0.42	0.27	1.54	0.14	0.00	0.14
3.80	0.42	0.28	1.53	0.14	0.00	0.14
3.85	0.42	0.28	1.52	0.13	0.00	0.13
3.90	0.42	0.28	1.52	0.13	0.00	0.13
3.95	0.42	0.28	1.51	0.13	0.00	0.13
4.00	0.42	0.28	1.50	0.13	0.00	0.13
4.05	0.42	0.28	1.49	0.13	0.00	0.13
4.10	0.42	0.29	1.48	0.13	0.00	0.13
4.15	0.42	0.29	1.48	0.13	0.00	0.13
4.20	0.42	0.29	1.47	0.13	0.00	0.13
4.25	0.42	0.29	1.46	0.13	0.00	0.13
4.30	0.42	0.29	1.46	0.12	0.00	0.12
4.35	0.42	0.29	1.45	0.12	0.00	0.12
4.40	0.42	0.29	1.44	0.12	0.00	0.12
4.45	0.42	0.29	1.44	0.12	0.00	0.12
4.50	0.42	0.30	1.43	0.12	0.00	0.12
4.55	0.42	0.30	1.42	0.12	0.00	0.12
4.60	0.42	0.30	1.42	0.12	0.00	0.12
4.65	0.42	0.30	1.41	0.12	0.00	0.12
4.70	0.42	0.30	1.41	0.11	0.00	0.11
4.75	0.42	0.30	1.40	0.11	0.00	0.11
4.80	0.42	0.30	1.40	0.11	0.00	0.11
4.85	0.42	0.30	1.39	0.11	0.00	0.11
4.90	0.42	0.31	1.39	0.11	0.00	0.11
4.95	0.42	0.31	1.38	0.11	0.00	0.11
5.00	0.83	0.31	2.70	0.11	0.00	0.11
5.05	0.83	0.31	2.69	0.11	0.00	0.11
5.10	0.83	0.31	2.68	0.11	0.00	0.11
5.15	0.83	0.31	2.67	0.11	0.00	0.11
5.20	0.83	0.31	2.66	0.11	0.00	0.11
5.25	0.83	0.31	2.65	0.11	0.00	0.11
5.30	0.83	0.31	2.64	0.11	0.00	0.11
5.35	0.83	0.32	2.63	0.11	0.00	0.11
5.40	0.83	0.32	2.62	0.11	0.00	0.11
5.45	0.83	0.32	2.62	0.11	0.00	0.11

5.50	0.83	0.32	2.61	0.11	0.00	0.11
5.55	0.83	0.32	2.60	0.11	0.00	0.11
5.60	0.83	0.32	2.59	0.11	0.00	0.11
5.65	0.83	0.32	2.59	0.11	0.00	0.11
5.70	0.83	0.32	2.58	0.11	0.00	0.11
5.75	0.83	0.32	2.57	0.11	0.00	0.11
5.80	0.83	0.32	2.56	0.11	0.00	0.11
5.85	0.83	0.32	2.56	0.11	0.00	0.11
5.90	0.83	0.33	2.55	0.11	0.00	0.11
5.95	0.83	0.33	2.54	0.11	0.00	0.11
6.00	0.83	0.33	2.54	0.11	0.00	0.11
6.05	0.83	0.33	2.53	0.11	0.00	0.11
6.10	0.83	0.33	2.52	0.11	0.00	0.11
6.15	0.83	0.33	2.52	0.11	0.00	0.11
6.20	0.83	0.33	2.51	0.11	0.00	0.11
6.25	0.83	0.33	2.50	0.11	0.00	0.11
6.30	0.83	0.33	2.50	0.11	0.00	0.11
6.35	0.83	0.33	2.49	0.11	0.00	0.11
6.40	0.83	0.33	2.49	0.11	0.00	0.11
6.45	0.83	0.33	2.48	0.11	0.00	0.11
6.50	0.83	0.34	2.48	0.11	0.00	0.11
6.55	0.83	0.34	2.47	0.11	0.00	0.11
6.60	0.83	0.34	2.46	0.11	0.00	0.11
6.65	0.83	0.34	2.46	0.11	0.00	0.11
6.70	0.83	0.34	2.45	0.11	0.00	0.11
6.75	0.83	0.34	2.45	0.11	0.00	0.11
6.80	0.83	0.34	2.44	0.11	0.00	0.11
6.85	0.83	0.34	2.44	0.11	0.00	0.11
6.90	0.83	0.34	2.43	0.11	0.00	0.11
6.95	0.83	0.34	2.43	0.11	0.00	0.11
7.00	0.83	0.34	2.42	0.11	0.00	0.11
7.05	0.83	0.34	2.42	0.11	0.00	0.11
7.10	0.83	0.34	2.41	0.11	0.00	0.11
7.15	0.83	0.34	2.41	0.11	0.00	0.11
7.20	0.83	0.35	2.40	0.11	0.00	0.11
7.25	0.83	0.35	2.40	0.11	0.00	0.11
7.30	0.83	0.35	2.40	0.11	0.00	0.11
7.35	0.83	0.35	2.39	0.11	0.00	0.11
7.40	0.83	0.35	2.39	0.11	0.00	0.11
7.45	0.83	0.35	2.38	0.11	0.00	0.11
7.50	0.83	0.35	2.38	0.11	0.00	0.11
7.55	0.83	0.35	2.37	0.11	0.00	0.11
7.60	0.83	0.35	2.37	0.11	0.00	0.11
7.65	0.83	0.35	2.36	0.11	0.00	0.11
7.70	0.83	0.35	2.36	0.11	0.00	0.11
7.75	0.83	0.35	2.36	0.11	0.00	0.11
7.80	0.83	0.35	2.35	0.11	0.00	0.11
7.85	0.83	0.35	2.35	0.11	0.00	0.11
7.90	0.83	0.35	2.35	0.11	0.00	0.11
7.95	0.83	0.35	2.34	0.11	0.00	0.11
8.00	0.83	0.36	2.34	0.11	0.00	0.11
8.05	0.83	0.36	2.33	0.11	0.00	0.11
8.10	0.83	0.36	2.33	0.11	0.00	0.11
8.15	0.83	0.36	2.33	0.11	0.00	0.11
8.20	0.83	0.36	2.32	0.11	0.00	0.11
8.25	0.83	0.36	2.32	0.11	0.00	0.11
8.30	0.83	0.36	2.32	0.11	0.00	0.11
8.35	0.83	0.36	2.31	0.11	0.00	0.11
8.40	0.83	0.36	2.31	0.11	0.00	0.11
8.45	0.83	0.36	2.31	0.11	0.00	0.11
8.50	0.83	0.36	2.30	0.11	0.00	0.11
8.55	0.83	0.36	2.30	0.11	0.00	0.11
8.60	0.83	0.36	2.30	0.11	0.00	0.11
8.65	0.83	0.36	2.29	0.11	0.00	0.11
8.70	0.83	0.36	2.29	0.11	0.00	0.11
8.75	0.83	0.36	2.29	0.11	0.00	0.11
8.80	0.83	0.36	2.28	0.11	0.00	0.11
8.85	0.83	0.36	2.28	0.11	0.00	0.11
8.90	0.83	0.36	2.28	0.11	0.00	0.11
8.95	0.83	0.37	2.27	0.11	0.00	0.11
9.00	0.83	0.37	2.27	0.11	0.00	0.11

9.05	0.83	0.37	2.27	0.11	0.00	0.11
9.10	0.83	0.37	2.27	0.11	0.00	0.11
9.15	0.83	0.37	2.26	0.11	0.00	0.11
9.20	0.83	0.37	2.26	0.11	0.00	0.11
9.25	0.83	0.37	2.26	0.11	0.00	0.11
9.30	0.83	0.37	2.26	0.11	0.00	0.11
9.35	0.83	0.37	2.25	0.11	0.00	0.11
9.40	0.83	0.37	2.25	0.11	0.00	0.11
9.45	0.83	0.37	2.25	0.11	0.00	0.11
9.50	0.83	0.37	2.24	0.11	0.00	0.11
9.55	0.83	0.37	2.24	0.11	0.00	0.11
9.60	0.83	0.37	2.24	0.11	0.00	0.11
9.65	0.83	0.37	2.24	0.11	0.00	0.11
9.70	0.83	0.37	2.23	0.11	0.00	0.11
9.75	0.83	0.37	2.23	0.11	0.00	0.11
9.80	0.83	0.37	2.23	0.11	0.00	0.11
9.85	0.83	0.37	2.23	0.11	0.00	0.11
9.90	0.83	0.37	2.22	0.11	0.00	0.11
9.95	0.83	0.37	2.22	0.11	0.00	0.11
10.00	0.83	0.37	2.22	0.11	0.00	0.11
10.05	0.83	0.37	2.22	0.11	0.00	0.11
10.10	0.83	0.37	2.22	0.11	0.00	0.11
10.15	0.83	0.37	2.22	0.11	0.00	0.11
10.20	0.83	0.37	2.22	0.11	0.00	0.11
10.25	0.83	0.37	2.22	0.11	0.00	0.11
10.30	0.83	0.37	2.22	0.11	0.00	0.11
10.35	0.83	0.37	2.22	0.11	0.00	0.11
10.40	0.83	0.37	2.22	0.11	0.00	0.11
10.45	0.83	0.37	2.22	0.11	0.00	0.11
10.50	0.83	0.37	2.22	0.11	0.00	0.11
10.55	0.83	0.37	2.22	0.11	0.00	0.11
10.60	0.83	0.37	2.22	0.11	0.00	0.11
10.65	0.83	0.37	2.22	0.11	0.00	0.11
10.70	0.83	0.37	2.22	0.11	0.00	0.11
10.75	0.83	0.37	2.22	0.11	0.00	0.11
10.80	0.83	0.37	2.22	0.11	0.00	0.11
10.85	0.83	0.37	2.22	0.11	0.00	0.11
10.90	0.83	0.37	2.22	0.11	0.00	0.11
10.95	0.83	0.37	2.22	0.11	0.00	0.11
11.00	0.83	0.37	2.22	0.11	0.00	0.11
11.05	0.83	0.37	2.22	0.11	0.00	0.11
11.10	0.83	0.37	2.22	0.11	0.00	0.11
11.15	0.83	0.37	2.22	0.11	0.00	0.11
11.20	0.83	0.37	2.22	0.11	0.00	0.11
11.25	0.83	0.37	2.22	0.11	0.00	0.11
11.30	0.83	0.37	2.22	0.11	0.00	0.11
11.35	0.83	0.37	2.22	0.11	0.00	0.11
11.40	0.83	0.37	2.22	0.11	0.00	0.11
11.45	0.83	0.37	2.22	0.11	0.00	0.11
11.50	0.83	0.37	2.22	0.11	0.00	0.11
11.55	0.83	0.37	2.22	0.11	0.00	0.11
11.60	0.83	0.37	2.22	0.11	0.00	0.11
11.65	0.83	0.37	2.22	0.11	0.00	0.11
11.70	0.83	0.37	2.22	0.11	0.00	0.11
11.75	0.83	0.37	2.22	0.11	0.00	0.11
11.80	0.83	0.37	2.22	0.11	0.00	0.11
11.85	0.83	0.37	2.22	0.11	0.00	0.11
11.90	0.83	0.37	2.22	0.11	0.00	0.11
11.95	0.83	0.37	2.22	0.11	0.00	0.11
12.00	0.83	0.37	2.22	0.11	0.00	0.11
12.05	0.83	0.37	2.22	0.11	0.00	0.11
12.10	0.83	0.37	2.22	0.11	0.00	0.11
12.15	0.83	0.37	2.23	0.11	0.00	0.11
12.20	0.83	0.37	2.23	0.11	0.00	0.11
12.25	0.83	0.37	2.23	0.11	0.00	0.11
12.30	0.83	0.37	2.23	0.11	0.00	0.11
12.35	0.83	0.37	2.23	0.11	0.00	0.11
12.40	0.83	0.37	2.23	0.11	0.00	0.11
12.45	0.83	0.37	2.23	0.11	0.00	0.11
12.50	0.83	0.37	2.23	0.11	0.00	0.11
12.55	0.83	0.37	2.23	0.11	0.00	0.11

12.60	0.83	0.37	2.23	0.11	0.00	0.11
12.65	0.83	0.37	2.23	0.11	0.00	0.11
12.70	0.83	0.37	2.23	0.11	0.00	0.11
12.75	0.83	0.37	2.23	0.11	0.00	0.11
12.80	0.83	0.37	2.23	0.11	0.00	0.11
12.85	0.83	0.37	2.23	0.11	0.00	0.11
12.90	0.83	0.37	2.23	0.11	0.00	0.11
12.95	0.83	0.37	2.23	0.11	0.00	0.11
13.00	0.83	0.37	2.23	0.11	0.00	0.11
13.05	0.83	0.37	2.23	0.11	0.00	0.11
13.10	0.83	0.37	2.23	0.11	0.00	0.11
13.15	0.83	0.37	2.23	0.11	0.00	0.11
13.20	0.83	0.37	2.23	0.11	0.00	0.11
13.25	0.83	0.37	2.23	0.11	0.00	0.11
13.30	0.83	0.37	2.23	0.11	0.00	0.11
13.35	0.83	0.37	2.24	0.11	0.00	0.11
13.40	0.83	0.37	2.24	0.11	0.00	0.11
13.45	0.83	0.37	2.24	0.11	0.00	0.11
13.50	0.83	0.37	2.24	0.11	0.00	0.11
13.55	0.83	0.37	2.24	0.11	0.00	0.11
13.60	0.83	0.37	2.24	0.11	0.00	0.11
13.65	0.83	0.37	2.24	0.11	0.00	0.11
13.70	0.83	0.37	2.24	0.11	0.00	0.11
13.75	0.83	0.37	2.24	0.11	0.00	0.11
13.80	0.83	0.37	2.24	0.11	0.00	0.11
13.85	0.83	0.37	2.24	0.11	0.00	0.11
13.90	0.83	0.37	2.24	0.11	0.00	0.11
13.95	0.83	0.37	2.24	0.11	0.00	0.11
14.00	0.83	0.37	2.24	0.11	0.00	0.11
14.05	0.83	0.37	2.24	0.11	0.00	0.11
14.10	0.83	0.37	2.24	0.11	0.00	0.11
14.15	0.83	0.37	2.24	0.11	0.00	0.11
14.20	0.83	0.37	2.24	0.11	0.00	0.11
14.25	0.83	0.37	2.24	0.11	0.00	0.11
14.30	0.83	0.37	2.24	0.11	0.00	0.11
14.35	0.83	0.37	2.24	0.11	0.00	0.11
14.40	0.83	0.37	2.24	0.11	0.00	0.11
14.45	0.83	0.37	2.24	0.11	0.00	0.11
14.50	0.83	0.37	2.24	0.11	0.00	0.11
14.55	0.83	0.37	2.24	0.11	0.00	0.11
14.60	0.83	0.37	2.25	0.11	0.00	0.11
14.65	0.83	0.37	2.25	0.11	0.00	0.11
14.70	0.83	0.37	2.25	0.11	0.00	0.11
14.75	0.83	0.37	2.25	0.11	0.00	0.11
14.80	0.83	0.37	2.25	0.11	0.00	0.11
14.85	0.83	0.37	2.25	0.11	0.00	0.11
14.90	0.83	0.37	2.25	0.11	0.00	0.11
14.95	0.83	0.37	2.25	0.11	0.00	0.11
15.00	0.83	0.37	2.25	0.11	0.00	0.11
15.05	0.83	0.37	2.25	0.11	0.00	0.11
15.10	0.83	0.37	2.25	0.11	0.00	0.11
15.15	0.83	0.37	2.25	0.11	0.00	0.11
15.20	0.83	0.37	2.25	0.11	0.00	0.11
15.25	0.83	0.37	2.25	0.11	0.00	0.11
15.30	0.83	0.37	2.25	0.11	0.00	0.11
15.35	0.83	0.37	2.25	0.11	0.00	0.11
15.40	0.83	0.37	2.25	0.11	0.00	0.11
15.45	0.83	0.37	2.25	0.11	0.00	0.11
15.50	0.83	0.37	2.25	0.11	0.00	0.11
15.55	0.83	0.37	2.25	0.11	0.00	0.11
15.60	0.83	0.37	2.25	0.11	0.00	0.11
15.65	0.83	0.37	2.25	0.11	0.00	0.11
15.70	0.83	0.37	2.25	0.11	0.00	0.11
15.75	0.83	0.37	2.25	0.11	0.00	0.11
15.80	0.83	0.37	2.25	0.11	0.00	0.11
15.85	0.83	0.37	2.26	0.11	0.00	0.11
15.90	0.83	0.37	2.26	0.11	0.00	0.11
15.95	0.83	0.37	2.26	0.11	0.00	0.11
16.00	0.83	0.37	2.26	0.11	0.00	0.11
16.05	0.83	0.37	2.26	0.11	0.00	0.11
16.10	0.83	0.37	2.26	0.11	0.00	0.11

16.15	0.83	0.37	2.26	0.11	0.00	0.11
16.20	0.83	0.37	2.26	0.11	0.00	0.11
16.25	0.83	0.37	2.26	0.11	0.00	0.11
16.30	0.83	0.37	2.26	0.11	0.00	0.11
16.35	0.83	0.37	2.26	0.11	0.00	0.11
16.40	0.83	0.37	2.26	0.11	0.00	0.11
16.45	0.83	0.37	2.26	0.11	0.00	0.11
16.50	0.83	0.37	2.26	0.11	0.00	0.11
16.55	0.83	0.37	2.26	0.11	0.00	0.11
16.60	0.83	0.37	2.26	0.11	0.00	0.11
16.65	0.83	0.37	2.26	0.11	0.00	0.11
16.70	0.83	0.37	2.26	0.11	0.00	0.11
16.75	0.83	0.37	2.26	0.11	0.00	0.11
16.80	0.83	0.37	2.26	0.11	0.00	0.11
16.85	0.83	0.37	2.26	0.11	0.00	0.11
16.90	0.83	0.37	2.26	0.11	0.00	0.11
16.95	0.83	0.37	2.26	0.11	0.00	0.11
17.00	0.83	0.37	2.26	0.11	0.00	0.11
17.05	0.83	0.37	2.26	0.11	0.00	0.11
17.10	0.83	0.37	2.26	0.11	0.00	0.11
17.15	0.83	0.37	2.26	0.11	0.00	0.11
17.20	0.83	0.37	2.27	0.11	0.00	0.11
17.25	0.83	0.37	2.27	0.11	0.00	0.11
17.30	0.83	0.37	2.27	0.11	0.00	0.11
17.35	0.83	0.37	2.27	0.11	0.00	0.11
17.40	0.83	0.37	2.27	0.11	0.00	0.11
17.45	0.83	0.37	2.27	0.11	0.00	0.11
17.50	0.83	0.37	2.27	0.11	0.00	0.11
17.55	0.83	0.37	2.27	0.11	0.00	0.11
17.60	0.83	0.37	2.27	0.11	0.00	0.11
17.65	0.83	0.37	2.27	0.11	0.00	0.11
17.70	0.83	0.37	2.27	0.11	0.00	0.11
17.75	0.83	0.37	2.27	0.11	0.00	0.11
17.80	0.83	0.37	2.27	0.11	0.00	0.11
17.85	0.83	0.37	2.27	0.11	0.00	0.11
17.90	0.83	0.37	2.27	0.11	0.00	0.11
17.95	0.83	0.37	2.27	0.11	0.00	0.11
18.00	0.83	0.37	2.27	0.11	0.00	0.11
18.05	0.83	0.37	2.27	0.11	0.00	0.11
18.10	0.83	0.37	2.27	0.11	0.00	0.11
18.15	0.83	0.37	2.27	0.11	0.00	0.11
18.20	0.83	0.37	2.27	0.11	0.00	0.11
18.25	0.83	0.37	2.27	0.11	0.00	0.11
18.30	0.83	0.37	2.27	0.11	0.00	0.11
18.35	0.83	0.37	2.27	0.11	0.00	0.11
18.40	0.83	0.37	2.27	0.11	0.00	0.11
18.45	0.83	0.37	2.27	0.11	0.00	0.11
18.50	0.83	0.37	2.27	0.11	0.00	0.11
18.55	0.83	0.37	2.27	0.11	0.00	0.11
18.60	0.83	0.37	2.27	0.11	0.00	0.11
18.65	0.83	0.37	2.27	0.11	0.00	0.11
18.70	0.83	0.37	2.27	0.11	0.00	0.11
18.75	0.83	0.37	2.27	0.11	0.00	0.11
18.80	0.83	0.37	2.27	0.11	0.00	0.11
18.85	0.83	0.37	2.27	0.11	0.00	0.11
18.90	0.83	0.37	2.27	0.11	0.00	0.11
18.95	0.83	0.37	2.27	0.11	0.00	0.11
19.00	0.83	0.37	2.27	0.11	0.00	0.11
19.05	0.83	0.37	2.27	0.11	0.00	0.11
19.10	0.83	0.37	2.27	0.11	0.00	0.11
19.15	0.83	0.37	2.27	0.11	0.00	0.11
19.20	0.83	0.37	2.27	0.11	0.00	0.11
19.25	0.83	0.37	2.27	0.11	0.00	0.11
19.30	0.83	0.37	2.27	0.11	0.00	0.11
19.35	0.83	0.37	2.27	0.11	0.00	0.11
19.40	0.83	0.37	2.27	0.11	0.00	0.11
19.45	0.83	0.37	2.27	0.11	0.00	0.11
19.50	0.83	0.37	2.27	0.11	0.00	0.11
19.55	0.83	0.37	2.27	0.11	0.00	0.11
19.60	0.83	0.37	2.27	0.11	0.00	0.11
19.65	0.83	0.37	2.27	0.11	0.00	0.11

19.70	0.83	0.37	2.27	0.11	0.00	0.11
19.75	0.83	0.37	2.27	0.11	0.00	0.11
19.80	0.83	0.37	2.27	0.11	0.00	0.11
19.85	0.83	0.37	2.27	0.11	0.00	0.11
19.90	0.83	0.37	2.27	0.11	0.00	0.11
19.95	0.83	0.37	2.27	0.11	0.00	0.11
20.00	0.83	0.37	2.27	0.11	0.00	0.11
20.05	0.83	0.37	2.27	0.11	0.00	0.11
20.10	0.83	0.37	2.27	0.11	0.00	0.11
20.15	0.83	0.37	2.27	0.11	0.00	0.11
20.20	0.83	0.37	2.27	0.11	0.00	0.11
20.25	0.83	0.37	2.27	0.11	0.00	0.11
20.30	0.83	0.37	2.27	0.11	0.00	0.11
20.35	0.83	0.37	2.27	0.11	0.00	0.11
20.40	0.83	0.37	2.27	0.11	0.00	0.11
20.45	0.83	0.37	2.27	0.11	0.00	0.11
20.50	0.83	0.37	2.27	0.11	0.00	0.11
20.55	0.83	0.37	2.27	0.11	0.00	0.11
20.60	0.83	0.37	2.27	0.11	0.00	0.11
20.65	0.83	0.37	2.27	0.11	0.00	0.11
20.70	0.83	0.37	2.28	0.11	0.00	0.11
20.75	0.83	0.37	2.28	0.11	0.00	0.11
20.80	0.83	0.37	2.28	0.11	0.00	0.11
20.85	0.83	0.36	2.28	0.11	0.00	0.11
20.90	0.83	0.36	2.28	0.11	0.00	0.11
20.95	0.83	0.36	2.28	0.11	0.00	0.11
21.00	0.83	0.36	2.28	0.11	0.00	0.11
21.05	0.83	0.36	2.28	0.11	0.00	0.11
21.10	0.83	0.36	2.28	0.11	0.00	0.11
21.15	0.83	0.36	2.28	0.11	0.00	0.11
21.20	0.83	0.36	2.28	0.11	0.00	0.11
21.25	0.83	0.36	2.28	0.11	0.00	0.11
21.30	0.83	0.36	2.28	0.11	0.00	0.11
21.35	0.83	0.36	2.28	0.11	0.00	0.11
21.40	0.83	0.36	2.28	0.11	0.00	0.11
21.45	0.83	0.36	2.28	0.11	0.00	0.11
21.50	0.83	0.36	2.28	0.11	0.00	0.11
21.55	0.83	0.36	2.28	0.11	0.00	0.11
21.60	0.83	0.36	2.28	0.11	0.00	0.11
21.65	0.83	0.36	2.28	0.11	0.00	0.11
21.70	0.83	0.36	2.28	0.11	0.00	0.11
21.75	0.83	0.36	2.28	0.11	0.00	0.11
21.80	0.83	0.36	2.28	0.11	0.00	0.11
21.85	0.83	0.36	2.28	0.11	0.00	0.11
21.90	0.83	0.36	2.28	0.11	0.00	0.11
21.95	0.83	0.36	2.28	0.11	0.00	0.11
22.00	0.83	0.36	2.28	0.11	0.00	0.11
22.05	0.83	0.36	2.28	0.11	0.00	0.11
22.10	0.83	0.36	2.28	0.11	0.00	0.11
22.15	0.83	0.36	2.28	0.11	0.00	0.11
22.20	0.83	0.36	2.28	0.11	0.00	0.11
22.25	0.83	0.36	2.28	0.11	0.00	0.11
22.30	0.83	0.36	2.28	0.11	0.00	0.11
22.35	0.83	0.36	2.28	0.11	0.00	0.11
22.40	0.83	0.36	2.28	0.11	0.00	0.11
22.45	0.83	0.36	2.28	0.11	0.00	0.11
22.50	0.83	0.36	2.29	0.11	0.00	0.11
22.55	0.83	0.36	2.29	0.11	0.00	0.11
22.60	0.83	0.36	2.29	0.11	0.00	0.11
22.65	0.83	0.36	2.29	0.11	0.00	0.11
22.70	0.83	0.36	2.29	0.11	0.00	0.11
22.75	0.83	0.36	2.29	0.11	0.00	0.11
22.80	0.83	0.36	2.29	0.11	0.00	0.11
22.85	0.83	0.36	2.29	0.11	0.00	0.11
22.90	0.83	0.36	2.29	0.11	0.00	0.11
22.95	0.83	0.36	2.29	0.11	0.00	0.11
23.00	0.83	0.36	2.29	0.11	0.00	0.11
23.05	0.83	0.36	2.29	0.11	0.00	0.11
23.10	0.83	0.36	2.29	0.11	0.00	0.11
23.15	0.83	0.36	2.29	0.11	0.00	0.11
23.20	0.83	0.36	2.29	0.11	0.00	0.11

23.25	0.83	0.36	2.29	0.11	0.00	0.11
23.30	0.83	0.36	2.29	0.11	0.00	0.11
23.35	0.83	0.36	2.29	0.11	0.00	0.11
23.40	0.83	0.36	2.29	0.11	0.00	0.11
23.45	0.83	0.36	2.29	0.11	0.00	0.11
23.50	0.83	0.36	2.29	0.11	0.00	0.11
23.55	0.83	0.36	2.29	0.11	0.00	0.11
23.60	0.83	0.36	2.29	0.11	0.00	0.11
23.65	0.83	0.36	2.29	0.11	0.00	0.11
23.70	0.83	0.36	2.29	0.11	0.00	0.11
23.75	0.83	0.36	2.29	0.11	0.00	0.11
23.80	0.83	0.36	2.29	0.11	0.00	0.11
23.85	0.83	0.36	2.29	0.11	0.00	0.11
23.90	0.83	0.36	2.29	0.11	0.00	0.11
23.95	0.83	0.36	2.29	0.11	0.00	0.11
24.00	0.83	0.36	2.29	0.11	0.00	0.11
24.05	0.83	0.36	2.29	0.11	0.00	0.11
24.10	0.83	0.36	2.29	0.11	0.00	0.11
24.15	0.83	0.36	2.29	0.11	0.00	0.11
24.20	0.83	0.36	2.29	0.11	0.00	0.11
24.25	0.83	0.36	2.30	0.11	0.00	0.11
24.30	0.83	0.36	2.30	0.11	0.00	0.11
24.35	0.83	0.36	2.30	0.11	0.00	0.11
24.40	0.83	0.36	2.30	0.11	0.00	0.11
24.45	0.83	0.36	2.30	0.11	0.00	0.11
24.50	0.83	0.36	2.30	0.11	0.00	0.11
24.55	0.83	0.36	2.30	0.11	0.00	0.11
24.60	0.83	0.36	2.30	0.11	0.00	0.11
24.65	0.83	0.36	2.30	0.11	0.00	0.11
24.70	0.83	0.36	2.30	0.11	0.00	0.11
24.75	0.83	0.36	2.30	0.11	0.00	0.11
24.80	0.83	0.36	2.30	0.11	0.00	0.11
24.85	0.83	0.36	2.30	0.11	0.00	0.11
24.90	0.83	0.36	2.30	0.11	0.00	0.11
24.95	0.83	0.36	2.30	0.11	0.00	0.11
25.00	0.83	0.36	2.30	0.11	0.00	0.11
25.05	0.83	0.36	2.30	0.11	0.00	0.11
25.10	0.83	0.36	2.30	0.11	0.00	0.11
25.15	0.83	0.36	2.30	0.11	0.00	0.11
25.20	0.83	0.36	2.30	0.11	0.00	0.11
25.25	0.83	0.36	2.30	0.11	0.00	0.11
25.30	0.83	0.36	2.30	0.11	0.00	0.11
25.35	0.83	0.36	2.30	0.11	0.00	0.11
25.40	0.83	0.36	2.30	0.11	0.00	0.11
25.45	0.83	0.36	2.30	0.11	0.00	0.11
25.50	0.83	0.36	2.30	0.11	0.00	0.11
25.55	0.83	0.36	2.30	0.11	0.00	0.11
25.60	0.83	0.36	2.30	0.11	0.00	0.11
25.65	0.83	0.36	2.30	0.11	0.00	0.11
25.70	0.83	0.36	2.30	0.11	0.00	0.11
25.75	0.83	0.36	2.30	0.11	0.00	0.11
25.80	0.83	0.36	2.30	0.11	0.00	0.11
25.85	0.83	0.36	2.30	0.11	0.00	0.11
25.90	0.83	0.36	2.30	0.11	0.00	0.11
25.95	0.83	0.36	2.30	0.11	0.00	0.11
26.00	0.83	0.36	2.31	0.11	0.00	0.11
26.05	0.83	0.36	2.31	0.11	0.00	0.11
26.10	0.83	0.36	2.31	0.11	0.00	0.11
26.15	0.83	0.36	2.31	0.11	0.00	0.11
26.20	0.83	0.36	2.31	0.11	0.00	0.11
26.25	0.83	0.36	2.31	0.11	0.00	0.11
26.30	0.83	0.36	2.31	0.11	0.00	0.11
26.35	0.83	0.36	2.31	0.11	0.00	0.11
26.40	0.83	0.36	2.31	0.11	0.00	0.11
26.45	0.83	0.36	2.31	0.11	0.00	0.11
26.50	0.83	0.36	2.31	0.11	0.00	0.11
26.55	0.83	0.36	2.31	0.11	0.00	0.11
26.60	0.83	0.36	2.31	0.11	0.00	0.11
26.65	0.83	0.36	2.31	0.11	0.00	0.11
26.70	0.83	0.36	2.31	0.11	0.00	0.11
26.75	0.83	0.36	2.31	0.11	0.00	0.11

26.80	0.83	0.36	2.31	0.11	0.00	0.11
26.85	0.83	0.36	2.31	0.11	0.00	0.11
26.90	0.83	0.36	2.31	0.11	0.00	0.11
26.95	0.83	0.36	2.31	0.11	0.00	0.11
27.00	0.83	0.36	2.31	0.11	0.00	0.11
27.05	0.83	0.36	2.31	0.11	0.00	0.11
27.10	0.83	0.36	2.31	0.11	0.00	0.11
27.15	0.83	0.36	2.31	0.11	0.00	0.11
27.20	0.83	0.36	2.31	0.11	0.00	0.11
27.25	0.83	0.36	2.31	0.11	0.00	0.11
27.30	0.83	0.36	2.31	0.11	0.00	0.11
27.35	0.83	0.36	2.31	0.11	0.00	0.11
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27.60	0.83	0.36	2.31	0.11	0.00	0.11
27.65	0.83	0.36	2.31	0.11	0.00	0.11
27.70	0.83	0.36	2.31	0.11	0.00	0.11
27.75	0.83	0.36	2.32	0.11	0.00	0.11
27.80	0.83	0.36	2.32	0.11	0.00	0.11
27.85	0.83	0.36	2.32	0.11	0.00	0.11
27.90	0.83	0.36	2.32	0.11	0.00	0.11
27.95	0.83	0.36	2.32	0.11	0.00	0.11
28.00	0.83	0.36	2.32	0.11	0.00	0.11
28.05	0.83	0.36	2.32	0.11	0.00	0.11
28.10	0.83	0.36	2.32	0.11	0.00	0.11
28.15	0.83	0.36	2.32	0.11	0.00	0.11
28.20	0.83	0.36	2.32	0.11	0.00	0.11
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28.45	0.83	0.36	2.32	0.11	0.00	0.11
28.50	0.83	0.36	2.32	0.11	0.00	0.11
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28.60	0.83	0.36	2.32	0.11	0.00	0.11
28.65	0.83	0.36	2.32	0.11	0.00	0.11
28.70	0.83	0.36	2.32	0.11	0.00	0.11
28.75	0.83	0.36	2.32	0.11	0.00	0.11
28.80	0.83	0.36	2.32	0.11	0.00	0.11
28.85	0.83	0.36	2.32	0.11	0.00	0.11
28.90	0.83	0.36	2.32	0.11	0.00	0.11
28.95	0.83	0.36	2.32	0.11	0.00	0.11
29.00	0.83	0.36	2.32	0.11	0.00	0.11
29.05	0.83	0.36	2.32	0.11	0.00	0.11
29.10	0.83	0.36	2.32	0.11	0.00	0.11
29.15	0.83	0.36	2.32	0.11	0.00	0.11
29.20	0.83	0.36	2.32	0.11	0.00	0.11
29.25	0.83	0.36	2.32	0.11	0.00	0.11
29.30	0.83	0.36	2.32	0.11	0.00	0.11
29.35	0.83	0.36	2.32	0.11	0.00	0.11
29.40	0.83	0.36	2.32	0.11	0.00	0.11
29.45	0.83	0.36	2.32	0.11	0.00	0.11
29.50	0.83	0.36	2.33	0.11	0.00	0.11
29.55	0.83	0.36	2.33	0.11	0.00	0.11
29.60	0.83	0.36	2.33	0.11	0.00	0.11
29.65	0.83	0.36	2.33	0.11	0.00	0.11
29.70	0.83	0.36	2.33	0.11	0.00	0.11
29.75	0.83	0.36	2.33	0.11	0.00	0.11
29.80	0.83	0.36	2.33	0.11	0.00	0.11
29.85	0.83	0.36	2.33	0.11	0.00	0.11
29.90	0.83	0.36	2.33	0.11	0.00	0.11
29.95	0.83	0.36	2.33	0.11	0.00	0.11
30.00	0.83	0.36	2.33	0.11	0.00	0.11
30.05	0.83	0.36	2.33	0.11	0.00	0.11
30.10	0.83	0.36	2.33	0.11	0.00	0.11
30.15	0.83	0.36	2.33	0.11	0.00	0.11
30.20	0.83	0.36	2.33	0.11	0.00	0.11
30.25	0.83	0.36	2.33	0.11	0.00	0.11
30.30	0.83	0.36	2.34	0.11	0.00	0.11

30.35	0.83	0.36	2.34	0.11	0.00	0.11
30.40	0.83	0.36	2.34	0.11	0.00	0.11
30.45	0.83	0.36	2.34	0.11	0.00	0.11
30.50	0.83	0.35	2.34	0.11	0.00	0.11
30.55	0.83	0.35	2.34	0.11	0.00	0.11
30.60	0.83	0.35	2.34	0.11	0.00	0.11
30.65	0.83	0.35	2.34	0.11	0.00	0.11
30.70	0.83	0.35	2.34	0.11	0.00	0.11
30.75	0.83	0.35	2.35	0.11	0.00	0.11
30.80	0.83	0.35	2.35	0.11	0.00	0.11
30.85	0.83	0.35	2.35	0.11	0.00	0.11
30.90	0.83	0.35	2.35	0.11	0.00	0.11
30.95	0.83	0.35	2.35	0.11	0.00	0.11
31.00	0.83	0.35	2.35	0.11	0.00	0.11
31.05	0.83	0.35	2.35	0.11	0.00	0.11
31.10	0.83	0.35	2.35	0.11	0.00	0.11
31.15	0.83	0.35	2.36	0.11	0.00	0.11
31.20	0.83	0.35	2.36	0.11	0.00	0.11
31.25	0.83	0.35	2.36	0.11	0.00	0.11
31.30	0.83	0.35	2.36	0.11	0.00	0.11
31.35	0.83	0.35	2.36	0.11	0.00	0.11
31.40	0.83	0.35	2.36	0.11	0.00	0.11
31.45	0.83	0.35	2.36	0.11	0.00	0.11
31.50	0.83	0.35	2.36	0.11	0.00	0.11
31.55	0.83	0.35	2.36	0.11	0.00	0.11
31.60	0.83	0.35	2.37	0.11	0.00	0.11
31.65	0.83	0.35	2.37	0.11	0.00	0.11
31.70	0.83	0.35	2.37	0.11	0.00	0.11
31.75	0.83	0.35	2.37	0.11	0.00	0.11
31.80	0.83	0.35	2.37	0.11	0.00	0.11
31.85	0.83	0.35	2.37	0.11	0.00	0.11
31.90	0.83	0.35	2.37	0.11	0.00	0.11
31.95	0.83	0.35	2.37	0.11	0.00	0.11
32.00	0.83	0.35	2.38	0.11	0.00	0.11
32.05	0.83	0.35	2.38	0.11	0.00	0.11
32.10	0.83	0.35	2.38	0.11	0.00	0.11
32.15	0.83	0.35	2.38	0.11	0.00	0.11
32.20	0.83	0.35	2.38	0.11	0.00	0.11
32.25	0.83	0.35	2.38	0.11	0.00	0.11
32.30	0.83	0.35	2.38	0.11	0.00	0.11
32.35	0.83	0.35	2.38	0.11	0.00	0.11
32.40	0.83	0.35	2.38	0.11	0.00	0.11
32.45	0.83	0.35	2.39	0.11	0.00	0.11
32.50	0.83	0.35	2.39	0.11	0.00	0.11
32.55	0.83	0.35	2.39	0.11	0.00	0.11
32.60	0.83	0.35	2.39	0.11	0.00	0.11
32.65	0.83	0.35	2.39	0.11	0.00	0.11
32.70	0.83	0.35	2.39	0.11	0.00	0.11
32.75	0.83	0.35	2.39	0.11	0.00	0.11
32.80	0.83	0.35	2.39	0.11	0.00	0.11
32.85	0.83	0.35	2.40	0.11	0.00	0.11
32.90	0.83	0.35	2.40	0.11	0.00	0.11
32.95	0.83	0.35	2.40	0.11	0.00	0.11
33.00	0.83	0.35	2.40	0.11	0.00	0.11
33.05	0.83	0.35	2.40	0.11	0.00	0.11
33.10	0.83	0.35	2.40	0.11	0.00	0.11
33.15	0.83	0.35	2.40	0.11	0.00	0.11
33.20	0.83	0.35	2.40	0.11	0.00	0.11
33.25	0.83	0.35	2.41	0.11	0.00	0.11
33.30	0.83	0.35	2.41	0.11	0.00	0.11
33.35	0.83	0.35	2.41	0.11	0.00	0.11
33.40	0.83	0.34	2.41	0.11	0.00	0.11
33.45	0.83	0.34	2.41	0.11	0.00	0.11
33.50	0.83	0.34	2.41	0.11	0.00	0.11
33.55	0.83	0.34	2.41	0.11	0.00	0.11
33.60	0.83	0.34	2.41	0.11	0.00	0.11
33.65	0.83	0.34	2.41	0.11	0.00	0.11
33.70	0.83	0.34	2.42	0.11	0.00	0.11
33.75	0.83	0.34	2.42	0.11	0.00	0.11
33.80	0.83	0.34	2.42	0.11	0.00	0.11
33.85	0.83	0.34	2.42	0.11	0.00	0.11

33.90	0.83	0.34	2.42	0.11	0.00	0.11
33.95	0.83	0.34	2.42	0.11	0.00	0.11
34.00	0.83	0.34	2.42	0.11	0.00	0.11
34.05	0.83	0.34	2.42	0.11	0.00	0.11
34.10	0.83	0.34	2.43	0.11	0.00	0.11
34.15	0.83	0.34	2.43	0.11	0.00	0.11
34.20	0.83	0.34	2.43	0.11	0.00	0.11
34.25	0.83	0.34	2.43	0.11	0.00	0.11
34.30	0.83	0.34	2.43	0.11	0.00	0.11
34.35	0.83	0.34	2.43	0.11	0.00	0.11
34.40	0.83	0.34	2.43	0.11	0.00	0.11
34.45	0.83	0.34	2.43	0.11	0.00	0.11
34.50	0.83	0.34	2.44	0.11	0.00	0.11
34.55	0.83	0.34	2.44	0.11	0.00	0.11
34.60	0.83	0.34	2.44	0.11	0.00	0.11
34.65	0.83	0.34	2.44	0.11	0.00	0.11
34.70	0.83	0.34	2.44	0.11	0.00	0.11
34.75	0.83	0.34	2.44	0.11	0.00	0.11
34.80	0.83	0.34	2.44	0.11	0.00	0.11
34.85	0.83	0.34	2.44	0.11	0.00	0.11
34.90	0.83	0.34	2.45	0.11	0.00	0.11
34.95	0.83	0.34	2.45	0.11	0.00	0.11
35.00	0.83	0.34	2.45	0.11	0.00	0.11
35.05	0.83	0.34	2.45	0.11	0.00	0.11
35.10	0.83	0.34	2.45	0.11	0.00	0.11
35.15	0.83	0.34	2.45	0.11	0.00	0.11
35.20	0.83	0.34	2.45	0.11	0.00	0.11
35.25	0.82	0.34	2.43	0.11	0.00	0.11
35.30	0.81	0.34	2.39	0.11	0.00	0.11
35.35	0.80	0.34	2.37	0.11	0.00	0.11
35.40	0.79	0.34	2.34	0.11	0.00	0.11
35.45	0.78	0.34	2.32	0.11	0.00	0.11
35.50	0.78	0.34	2.30	0.11	0.00	0.11
35.55	0.77	0.34	2.28	0.11	0.00	0.11
35.60	0.76	0.34	2.26	0.11	0.00	0.11
35.65	0.76	0.34	2.24	0.11	0.00	0.11
35.70	0.75	0.34	2.23	0.11	0.00	0.11
35.75	0.75	0.34	2.21	0.11	0.00	0.11
35.80	0.74	0.34	2.20	0.11	0.00	0.11
35.85	0.74	0.34	2.19	0.11	0.00	0.11
35.90	0.73	0.34	2.18	0.11	0.00	0.11
35.95	0.73	0.34	2.16	0.11	0.00	0.11
36.00	0.72	0.34	2.15	0.11	0.00	0.11
36.05	0.72	0.34	2.14	0.11	0.00	0.11
36.10	0.72	0.34	2.13	0.11	0.00	0.11
36.15	0.71	0.34	2.13	0.11	0.00	0.11
36.20	0.71	0.34	2.12	0.11	0.00	0.11
36.25	0.71	0.34	2.11	0.11	0.00	0.11
36.30	0.70	0.34	2.10	0.11	0.00	0.11
36.35	0.70	0.34	2.09	0.11	0.00	0.11
36.40	0.70	0.34	2.09	0.11	0.00	0.11
36.45	0.70	0.34	2.08	0.11	0.00	0.11
36.50	0.69	0.34	2.07	0.11	0.00	0.11
36.55	0.69	0.33	2.07	0.11	0.00	0.11
36.60	0.69	0.33	2.06	0.11	0.00	0.11
36.65	0.69	0.33	2.05	0.11	0.00	0.11
36.70	0.68	0.33	2.05	0.11	0.00	0.11
36.75	0.68	0.33	2.04	0.11	0.00	0.11
36.80	0.68	0.33	2.04	0.11	0.00	0.11
36.85	0.68	0.33	2.03	0.11	0.00	0.11
36.90	0.68	0.33	2.03	0.11	0.00	0.11
36.95	0.67	0.33	2.02	0.11	0.00	0.11
37.00	0.67	0.33	2.02	0.11	0.00	0.11
37.05	0.67	0.33	2.01	0.11	0.00	0.11
37.10	0.67	0.33	2.01	0.11	0.00	0.11
37.15	0.67	0.33	2.00	0.11	0.00	0.11
37.20	0.67	0.33	2.00	0.11	0.00	0.11
37.25	0.66	0.33	1.99	0.11	0.00	0.11
37.30	0.66	0.33	1.99	0.11	0.00	0.11
37.35	0.66	0.33	1.99	0.11	0.00	0.11
37.40	0.66	0.33	1.98	0.11	0.00	0.11

37.45	0.66	0.33	1.98	0.11	0.00	0.11
37.50	0.66	0.33	1.98	0.11	0.00	0.11
37.55	0.65	0.33	1.97	0.11	0.00	0.11
37.60	0.65	0.33	1.97	0.11	0.00	0.11
37.65	0.65	0.33	1.97	0.10	0.00	0.10
37.70	0.65	0.33	1.96	0.10	0.00	0.10
37.75	0.65	0.33	1.96	0.10	0.00	0.10
37.80	0.65	0.33	1.96	0.10	0.00	0.10
37.85	0.65	0.33	1.95	0.10	0.00	0.10
37.90	0.65	0.33	1.95	0.10	0.00	0.10
37.95	0.64	0.33	1.95	0.10	0.00	0.10
38.00	0.64	0.33	1.94	0.10	0.00	0.10
38.05	0.64	0.33	1.94	0.10	0.00	0.10
38.10	0.64	0.33	1.94	0.10	0.00	0.10
38.15	0.64	0.33	1.94	0.10	0.00	0.10
38.20	0.64	0.33	1.93	0.10	0.00	0.10
38.25	0.64	0.33	1.93	0.10	0.00	0.10
38.30	0.64	0.33	1.93	0.10	0.00	0.10
38.35	0.63	0.33	1.93	0.10	0.00	0.10
38.40	0.63	0.33	1.92	0.10	0.00	0.10
38.45	0.63	0.33	1.92	0.10	0.00	0.10
38.50	0.63	0.33	1.92	0.10	0.00	0.10
38.55	0.63	0.33	1.92	0.10	0.00	0.10
38.60	0.63	0.33	1.91	0.10	0.00	0.10
38.65	0.63	0.33	1.91	0.10	0.00	0.10
38.70	0.63	0.33	1.91	0.10	0.00	0.10
38.75	0.63	0.33	1.91	0.10	0.00	0.10
38.80	0.63	0.33	1.90	0.10	0.00	0.10
38.85	0.62	0.33	1.90	0.10	0.00	0.10
38.90	0.62	0.33	1.90	0.10	0.00	0.10
38.95	0.62	0.33	1.90	0.10	0.00	0.10
39.00	0.62	0.33	1.90	0.10	0.00	0.10
39.05	0.62	0.33	1.89	0.10	0.00	0.10
39.10	0.62	0.33	1.89	0.10	0.00	0.10
39.15	0.62	0.33	1.89	0.10	0.00	0.10
39.20	0.62	0.33	1.89	0.10	0.00	0.10
39.25	0.62	0.33	1.89	0.10	0.00	0.10
39.30	0.62	0.33	1.89	0.10	0.00	0.10
39.35	0.62	0.33	1.88	0.10	0.00	0.10
39.40	0.61	0.33	1.88	0.10	0.00	0.10
39.45	0.61	0.33	1.88	0.10	0.00	0.10
39.50	0.61	0.33	1.88	0.10	0.00	0.10
39.55	0.61	0.33	1.88	0.10	0.00	0.10
39.60	0.61	0.33	1.87	0.10	0.00	0.10
39.65	0.61	0.33	1.87	0.10	0.00	0.10
39.70	0.61	0.33	1.87	0.10	0.00	0.10
39.75	0.61	0.33	1.87	0.10	0.00	0.10
39.80	0.61	0.33	1.87	0.10	0.00	0.10
39.85	0.61	0.33	1.87	0.10	0.00	0.10
39.90	0.61	0.33	1.86	0.10	0.00	0.10
39.95	0.61	0.33	1.86	0.10	0.00	0.10
40.00	0.60	0.32	1.86	0.10	0.00	0.10
40.05	0.83	0.32	2.56	0.10	0.00	0.10
40.10	0.83	0.32	2.56	0.10	0.00	0.10
40.15	0.83	0.32	2.56	0.10	0.00	0.10
40.20	0.83	0.32	2.56	0.10	0.00	0.10
40.25	0.83	0.32	2.56	0.10	0.00	0.10
40.30	0.83	0.32	2.56	0.10	0.00	0.10
40.35	0.83	0.32	2.56	0.10	0.00	0.10
40.40	0.83	0.32	2.56	0.10	0.00	0.10
40.45	0.83	0.32	2.56	0.10	0.00	0.10
40.50	0.83	0.32	2.56	0.10	0.00	0.10
40.55	0.83	0.32	2.57	0.10	0.00	0.10
40.60	0.83	0.32	2.57	0.10	0.00	0.10
40.65	0.83	0.32	2.57	0.10	0.00	0.10
40.70	0.83	0.32	2.57	0.10	0.00	0.10
40.75	0.83	0.32	2.57	0.10	0.00	0.10
40.80	0.83	0.32	2.57	0.10	0.00	0.10
40.85	0.83	0.32	2.57	0.10	0.00	0.10
40.90	0.83	0.32	2.57	0.10	0.00	0.10
40.95	0.83	0.32	2.57	0.10	0.00	0.10

41.00	0.83	0.32	2.57	0.10	0.00	0.10
41.05	0.83	0.32	2.57	0.10	0.00	0.10
41.10	0.83	0.32	2.57	0.10	0.00	0.10
41.15	0.83	0.32	2.58	0.10	0.00	0.10
41.20	0.83	0.32	2.58	0.10	0.00	0.10
41.25	0.83	0.32	2.58	0.10	0.00	0.10
41.30	0.83	0.32	2.58	0.10	0.00	0.10
41.35	0.83	0.32	2.58	0.10	0.00	0.10
41.40	0.83	0.32	2.58	0.10	0.00	0.10
41.45	0.83	0.32	2.58	0.10	0.00	0.10
41.50	0.83	0.32	2.58	0.10	0.00	0.10
41.55	0.83	0.32	2.58	0.10	0.00	0.10
41.60	0.83	0.32	2.58	0.10	0.00	0.10
41.65	0.83	0.32	2.58	0.10	0.00	0.10
41.70	0.83	0.32	2.58	0.10	0.00	0.10
41.75	0.83	0.32	2.59	0.10	0.00	0.10
41.80	0.83	0.32	2.59	0.10	0.00	0.10
41.85	0.83	0.32	2.59	0.10	0.00	0.10
41.90	0.83	0.32	2.59	0.10	0.00	0.10
41.95	0.83	0.32	2.59	0.10	0.00	0.10
42.00	0.83	0.32	2.59	0.10	0.00	0.10
42.05	0.83	0.32	2.59	0.10	0.00	0.10
42.10	0.83	0.32	2.59	0.10	0.00	0.10
42.15	0.83	0.32	2.59	0.10	0.00	0.10
42.20	0.83	0.32	2.59	0.10	0.00	0.10
42.25	0.83	0.32	2.59	0.10	0.00	0.10
42.30	0.83	0.32	2.60	0.10	0.00	0.10
42.35	0.83	0.32	2.60	0.10	0.00	0.10
42.40	0.83	0.32	2.60	0.10	0.00	0.10
42.45	0.83	0.32	2.60	0.10	0.00	0.10
42.50	0.83	0.32	2.60	0.10	0.00	0.10
42.55	0.83	0.32	2.60	0.10	0.00	0.10
42.60	0.83	0.32	2.60	0.10	0.00	0.10
42.65	0.83	0.32	2.60	0.10	0.00	0.10
42.70	0.83	0.32	2.60	0.10	0.00	0.10
42.75	0.83	0.32	2.60	0.10	0.00	0.10
42.80	0.83	0.32	2.60	0.10	0.00	0.10
42.85	0.83	0.32	2.60	0.10	0.00	0.10
42.90	0.83	0.32	2.61	0.10	0.00	0.10
42.95	0.83	0.32	2.61	0.10	0.00	0.10
43.00	0.83	0.32	2.61	0.10	0.00	0.10
43.05	0.83	0.32	2.61	0.10	0.00	0.10
43.10	0.83	0.32	2.61	0.10	0.00	0.10
43.15	0.83	0.32	2.61	0.10	0.00	0.10
43.20	0.83	0.32	2.61	0.10	0.00	0.10
43.25	0.83	0.32	2.61	0.10	0.00	0.10
43.30	0.83	0.32	2.61	0.10	0.00	0.10
43.35	0.83	0.32	2.61	0.10	0.00	0.10
43.40	0.83	0.32	2.61	0.10	0.00	0.10
43.45	0.83	0.32	2.62	0.10	0.00	0.10
43.50	0.83	0.32	2.62	0.10	0.00	0.10
43.55	0.83	0.32	2.62	0.10	0.00	0.10
43.60	0.83	0.32	2.62	0.10	0.00	0.10
43.65	0.83	0.32	2.62	0.10	0.00	0.10
43.70	0.83	0.32	2.62	0.10	0.00	0.10
43.75	0.83	0.32	2.62	0.10	0.00	0.10
43.80	0.83	0.32	2.62	0.10	0.00	0.10
43.85	0.83	0.32	2.62	0.10	0.00	0.10
43.90	0.83	0.32	2.62	0.10	0.00	0.10
43.95	0.83	0.32	2.62	0.10	0.00	0.10
44.00	0.83	0.32	2.63	0.10	0.00	0.10
44.05	0.83	0.32	2.63	0.10	0.00	0.10
44.10	0.83	0.32	2.63	0.10	0.00	0.10
44.15	0.83	0.32	2.63	0.10	0.00	0.10
44.20	0.83	0.32	2.63	0.10	0.00	0.10
44.25	0.83	0.32	2.63	0.10	0.00	0.10
44.30	0.83	0.32	2.63	0.10	0.00	0.10
44.35	0.83	0.32	2.63	0.10	0.00	0.10
44.40	0.83	0.32	2.63	0.10	0.00	0.10
44.45	0.83	0.32	2.63	0.10	0.00	0.10
44.50	0.83	0.32	2.64	0.10	0.00	0.10

44.55	0.83	0.32	2.64	0.10	0.00	0.10
44.60	0.83	0.32	2.64	0.10	0.00	0.10
44.65	0.83	0.31	2.64	0.10	0.00	0.10
44.70	0.83	0.31	2.64	0.10	0.00	0.10
44.75	0.83	0.31	2.64	0.10	0.00	0.10
44.80	0.83	0.31	2.64	0.10	0.00	0.10
44.85	0.83	0.31	2.64	0.10	0.00	0.10
44.90	0.83	0.31	2.64	0.10	0.00	0.10
44.95	0.83	0.31	2.64	0.10	0.00	0.10
45.00	0.83	0.31	2.64	0.10	0.00	0.10
45.05	0.49	0.31	1.55	0.10	0.00	0.10
45.10	0.49	0.31	1.55	0.10	0.00	0.10
45.15	0.49	0.31	1.55	0.09	0.00	0.09
45.20	0.48	0.31	1.55	0.09	0.00	0.09
45.25	0.48	0.31	1.55	0.09	0.00	0.09
45.30	0.48	0.31	1.55	0.09	0.00	0.09
45.35	0.48	0.31	1.55	0.09	0.00	0.09
45.40	0.48	0.31	1.55	0.09	0.00	0.09
45.45	0.48	0.31	1.54	0.09	0.00	0.09
45.50	0.48	0.31	1.54	0.09	0.00	0.09
45.55	0.48	0.31	1.54	0.09	0.00	0.09
45.60	0.48	0.31	1.54	0.09	0.00	0.09
45.65	0.48	0.31	1.54	0.08	0.00	0.08
45.70	0.48	0.31	1.54	0.08	0.00	0.08
45.75	0.48	0.31	1.54	0.08	0.00	0.08
45.80	0.48	0.31	1.54	0.08	0.00	0.08
45.85	0.48	0.31	1.54	0.08	0.00	0.08
45.90	0.48	0.31	1.54	0.08	0.00	0.08
45.95	0.48	0.31	1.54	0.08	0.00	0.08
46.00	0.48	0.31	1.54	0.08	0.00	0.08
46.05	0.48	0.31	1.54	0.08	0.00	0.08
46.10	0.48	0.31	1.54	0.08	0.00	0.08
46.15	0.48	0.31	1.54	0.08	0.00	0.08
46.20	0.48	0.31	1.54	0.07	0.00	0.07
46.25	0.48	0.31	1.54	0.07	0.00	0.07
46.30	0.48	0.31	1.54	0.07	0.00	0.07
46.35	0.48	0.31	1.54	0.07	0.00	0.07
46.40	0.48	0.31	1.54	0.07	0.00	0.07
46.45	0.48	0.31	1.54	0.07	0.00	0.07
46.50	0.48	0.31	1.54	0.07	0.00	0.07
46.55	0.48	0.31	1.54	0.07	0.00	0.07
46.60	0.48	0.31	1.54	0.07	0.00	0.07
46.65	0.48	0.31	1.54	0.07	0.00	0.07
46.70	0.48	0.31	1.54	0.06	0.00	0.06
46.75	0.48	0.31	1.54	0.06	0.00	0.06
46.80	0.48	0.31	1.54	0.06	0.00	0.06
46.85	0.48	0.31	1.54	0.06	0.00	0.06
46.90	0.48	0.31	1.54	0.06	0.00	0.06
46.95	0.48	0.31	1.54	0.06	0.00	0.06
47.00	0.48	0.31	1.54	0.06	0.00	0.06
47.05	0.48	0.31	1.54	0.06	0.00	0.06
47.10	0.48	0.31	1.54	0.06	0.00	0.06
47.15	0.48	0.31	1.54	0.06	0.00	0.06
47.20	0.47	0.31	1.54	0.06	0.00	0.06
47.25	0.47	0.31	1.54	0.05	0.00	0.05
47.30	0.47	0.31	1.54	0.05	0.00	0.05
47.35	0.47	0.31	1.54	0.05	0.00	0.05
47.40	0.47	0.31	1.54	0.05	0.00	0.05
47.45	0.47	0.31	1.54	0.05	0.00	0.05
47.50	0.47	0.31	1.54	0.05	0.00	0.05
47.55	0.47	0.31	1.54	0.05	0.00	0.05
47.60	0.47	0.31	1.54	0.05	0.00	0.05
47.65	0.47	0.31	1.54	0.05	0.00	0.05
47.70	0.47	0.31	1.54	0.05	0.00	0.05
47.75	0.47	0.31	1.54	0.04	0.00	0.04
47.80	0.47	0.31	1.54	0.04	0.00	0.04
47.85	0.47	0.31	1.54	0.04	0.00	0.04
47.90	0.47	0.31	1.54	0.04	0.00	0.04
47.95	0.47	0.31	1.54	0.04	0.00	0.04
48.00	0.47	0.31	1.54	0.04	0.00	0.04
48.05	0.47	0.31	1.54	0.04	0.00	0.04

48.10	0.47	0.31	1.54	0.04	0.00	0.04
48.15	0.47	0.31	1.54	0.04	0.00	0.04
48.20	0.47	0.31	1.54	0.04	0.00	0.04
48.25	0.47	0.31	1.54	0.03	0.00	0.03
48.30	0.47	0.31	1.54	0.03	0.00	0.03
48.35	0.47	0.31	1.54	0.03	0.00	0.03
48.40	0.47	0.31	1.54	0.03	0.00	0.03
48.45	0.47	0.30	1.54	0.03	0.00	0.03
48.50	0.47	0.30	1.54	0.03	0.00	0.03
48.55	0.47	0.30	1.54	0.03	0.00	0.03
48.60	0.47	0.30	1.54	0.03	0.00	0.03
48.65	0.47	0.30	1.54	0.03	0.00	0.03
48.70	0.47	0.30	1.54	0.03	0.00	0.03
48.75	0.47	0.30	1.54	0.02	0.00	0.02
48.80	0.47	0.30	1.54	0.02	0.00	0.02
48.85	0.47	0.30	1.54	0.02	0.00	0.02
48.90	0.47	0.30	1.54	0.02	0.00	0.02
48.95	0.47	0.30	1.54	0.02	0.00	0.02
49.00	0.47	0.30	1.54	0.02	0.00	0.02
49.05	0.47	0.30	1.54	0.02	0.00	0.02
49.10	0.47	0.30	1.54	0.02	0.00	0.02
49.15	0.47	0.30	1.54	0.02	0.00	0.02
49.20	0.47	0.30	1.54	0.02	0.00	0.02
49.25	0.47	0.30	1.54	0.01	0.00	0.01
49.30	0.47	0.30	1.54	0.01	0.00	0.01
49.35	0.47	0.30	1.54	0.01	0.00	0.01
49.40	0.47	0.30	1.54	0.01	0.00	0.01
49.45	0.46	0.30	1.54	0.01	0.00	0.01
49.50	0.46	0.30	1.54	0.01	0.00	0.01
49.55	0.46	0.30	1.54	0.01	0.00	0.01
49.60	0.46	0.30	1.54	0.01	0.00	0.01
49.65	0.46	0.30	1.54	0.01	0.00	0.01
49.70	0.46	0.30	1.54	0.01	0.00	0.01
49.75	0.46	0.30	1.54	0.00	0.00	0.00
49.80	0.46	0.30	1.54	0.00	0.00	0.00
49.85	0.46	0.30	1.54	0.00	0.00	0.00
49.90	0.46	0.30	1.54	0.00	0.00	0.00
49.95	0.46	0.30	1.54	0.00	0.00	0.00
50.00	0.46	0.30	1.54	0.00	0.00	0.00

---

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

---

1 atm (atmosphere) = 1 tsf (ton/ft2)

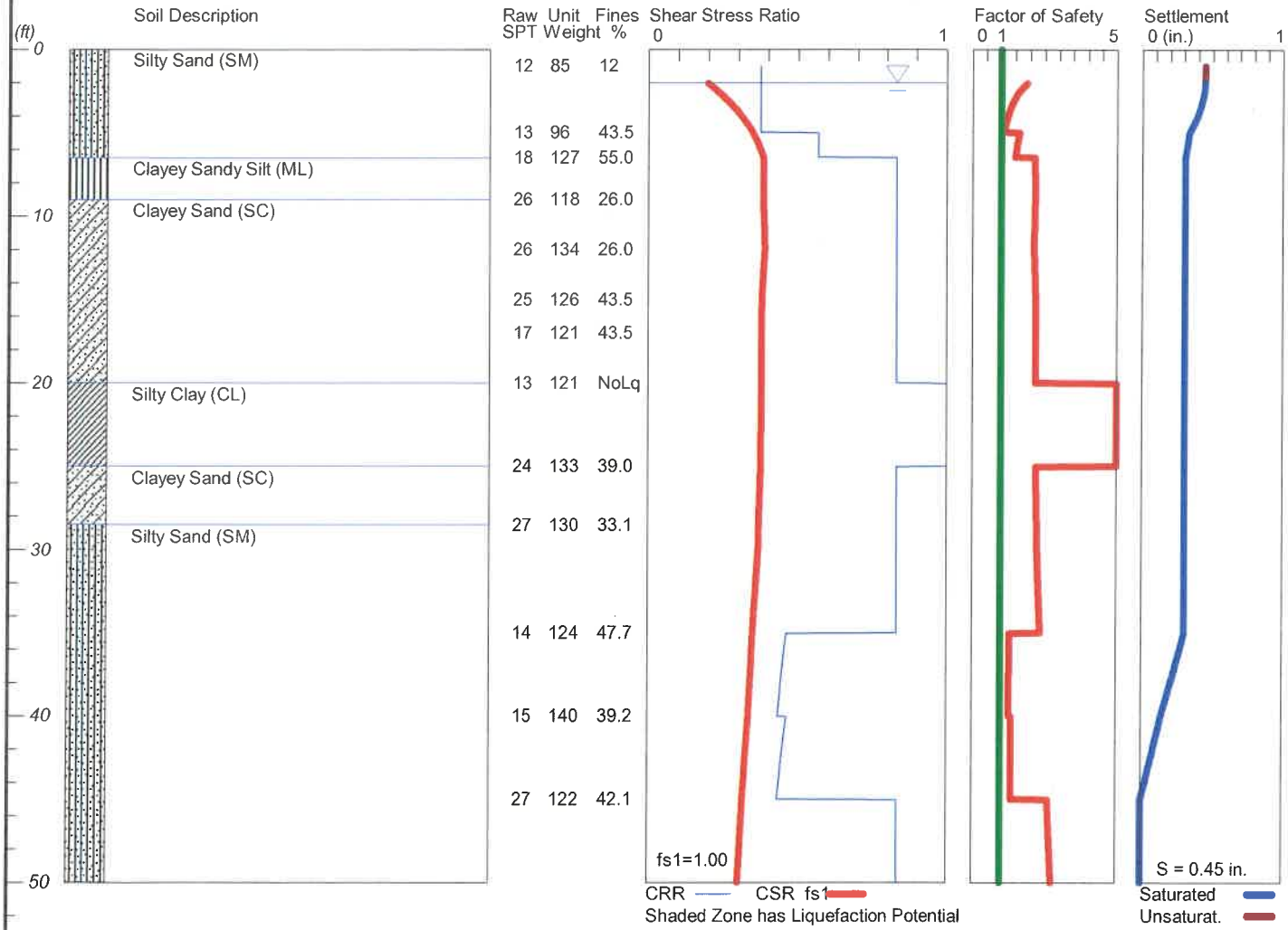
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Triangle Development

Hole No.=B6 Water Depth=2 ft

Magnitude=6.15
Acceleration=0.307g



LiquefyPro CivilTech Software USA www.civiltech.com

Krazan

012-22165

Plate A-1

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*****************************************************************************************************
                                    LIQUEFACTION ANALYSIS SUMMARY
                                  Copyright by CivilTech Software
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      Font: Courier New, Regular, Size 8 is recommended for this report.
      Licensed to ,   10/10/2022      3:01:28 PM

      Input File Name: C:\Users\mweber\Documents\Krazan\Projects\012\22\165 Triangle Development\B6\01222165 B6
Liquefaction.liq
      Title:  Triangle Development
      Subtitle:  012-22165

      Surface Elev.=
      Hole No.=B6
      Depth of Hole= 50.00 ft
      Water Table during Earthquake= 2.00 ft
      Water Table during In-Situ Testing= 2.00 ft
      Max. Acceleration= 0.31 g
      Earthquake Magnitude= 6.15

 Input Data:
      Surface Elev.=
      Hole No.=B6
      Depth of Hole=50.00 ft
      Water Table during Earthquake= 2.00 ft
      Water Table during In-Situ Testing= 2.00 ft
      Max. Acceleration=0.31 g
      Earthquake Magnitude=6.15
      No-Liquefiable Soils:   CL, OL are Non-Liq. Soil

      1. SPT or BPT Calculation.
      2. Settlement Analysis Method: Ishihara / Yoshimine
      3. Fines Correction for Liquefaction: Stark/Olson et al.*
      4. Fine Correction for Settlement: During Liquefaction*
      5. Settlement Calculation in: All zones*
      6. Hammer Energy Ratio,                                    Ce = 1.25
      7. Borehole Diameter,                                          Cb= 1
      8. Sampling Method,                                           Cs= 1
      9. User request factor of safety (apply to CSR) ,   User= 1
         Plot one CSR curve (fs1=User)
      10. Use Curve Smoothing: No
      * Recommended Options

      In-Situ Test Data:
      Depth   SPT     gamma   Fines
      ft              pcf     %
      ____________________________________
      1.00    12.00   85.00   12.00
      5.00    13.00   96.00   43.50
      6.50    18.00   127.00  55.00
      9.00    26.00   118.00  26.00
      12.00   26.00   134.00  26.00
      15.00   25.00   126.00  43.50
      17.00   17.00   121.00  43.50
      20.00   13.00   121.00  NoLiq
      25.00   24.00   133.00  39.00
      28.50   27.00   130.00  33.10
      35.00   14.00   124.00  47.70
      40.00   15.00   140.00  39.20
      45.00   27.00   122.00  42.10
      ____________________________________

Output Results:
      Settlement of Saturated Sands=0.44 in.
      Settlement of Unsaturated Sands=0.00 in.
      Total Settlement of Saturated and Unsaturated Sands=0.45 in.
      Differential Settlement=0.223 to 0.294 in.

      Depth   CRRm    CSRfs   F.S.    S_sat.  S_dry   S_all
      ft                              in.     in.     in.
```

1.00	0.37	0.20	5.00	0.44	0.00	0.45
1.05	0.37	0.20	5.00	0.44	0.00	0.45
1.10	0.37	0.20	5.00	0.44	0.00	0.45
1.15	0.37	0.20	5.00	0.44	0.00	0.45
1.20	0.37	0.20	5.00	0.44	0.00	0.45
1.25	0.37	0.20	5.00	0.44	0.00	0.45
1.30	0.37	0.20	5.00	0.44	0.00	0.45
1.35	0.37	0.20	5.00	0.44	0.00	0.45
1.40	0.37	0.20	5.00	0.44	0.00	0.45
1.45	0.37	0.20	5.00	0.44	0.00	0.45
1.50	0.37	0.20	5.00	0.44	0.00	0.45
1.55	0.37	0.20	5.00	0.44	0.00	0.45
1.60	0.37	0.20	5.00	0.44	0.00	0.45
1.65	0.37	0.20	5.00	0.44	0.00	0.45
1.70	0.37	0.20	5.00	0.44	0.00	0.45
1.75	0.37	0.20	5.00	0.44	0.00	0.44
1.80	0.37	0.20	5.00	0.44	0.00	0.44
1.85	0.37	0.20	5.00	0.44	0.00	0.44
1.90	0.37	0.20	5.00	0.44	0.00	0.44
1.95	0.37	0.20	5.00	0.44	0.00	0.44
2.00	0.37	0.20	5.00	0.44	0.00	0.44
2.05	0.37	0.20	1.89	0.44	0.00	0.44
2.10	0.37	0.20	1.85	0.44	0.00	0.44
2.15	0.37	0.21	1.82	0.44	0.00	0.44
2.20	0.37	0.21	1.79	0.44	0.00	0.44
2.25	0.37	0.21	1.76	0.44	0.00	0.44
2.30	0.37	0.22	1.74	0.44	0.00	0.44
2.35	0.37	0.22	1.71	0.44	0.00	0.44
2.40	0.37	0.22	1.69	0.44	0.00	0.44
2.45	0.37	0.23	1.66	0.44	0.00	0.44
2.50	0.37	0.23	1.64	0.44	0.00	0.44
2.55	0.37	0.23	1.62	0.44	0.00	0.44
2.60	0.37	0.23	1.60	0.44	0.00	0.44
2.65	0.37	0.24	1.58	0.44	0.00	0.44
2.70	0.37	0.24	1.56	0.44	0.00	0.44
2.75	0.37	0.24	1.54	0.43	0.00	0.43
2.80	0.37	0.25	1.52	0.43	0.00	0.43
2.85	0.37	0.25	1.50	0.43	0.00	0.43
2.90	0.37	0.25	1.48	0.43	0.00	0.43
2.95	0.37	0.26	1.47	0.43	0.00	0.43
3.00	0.37	0.26	1.45	0.43	0.00	0.43
3.05	0.37	0.26	1.44	0.43	0.00	0.43
3.10	0.37	0.26	1.42	0.43	0.00	0.43
3.15	0.37	0.27	1.41	0.42	0.00	0.42
3.20	0.37	0.27	1.39	0.42	0.00	0.42
3.25	0.37	0.27	1.38	0.42	0.00	0.42
3.30	0.37	0.27	1.37	0.42	0.00	0.42
3.35	0.37	0.28	1.35	0.42	0.00	0.42
3.40	0.37	0.28	1.34	0.42	0.00	0.42
3.45	0.37	0.28	1.33	0.41	0.00	0.41
3.50	0.37	0.28	1.32	0.41	0.00	0.41
3.55	0.37	0.29	1.31	0.41	0.00	0.41
3.60	0.37	0.29	1.30	0.41	0.00	0.41
3.65	0.37	0.29	1.28	0.41	0.00	0.41
3.70	0.37	0.29	1.27	0.40	0.00	0.40
3.75	0.37	0.30	1.26	0.40	0.00	0.40
3.80	0.37	0.30	1.25	0.40	0.00	0.40
3.85	0.37	0.30	1.24	0.40	0.00	0.40
3.90	0.37	0.30	1.24	0.40	0.00	0.40
3.95	0.37	0.31	1.23	0.39	0.00	0.39
4.00	0.37	0.31	1.22	0.39	0.00	0.39
4.05	0.37	0.31	1.21	0.39	0.00	0.39
4.10	0.37	0.31	1.20	0.39	0.00	0.39
4.15	0.37	0.31	1.19	0.38	0.00	0.38
4.20	0.37	0.32	1.18	0.38	0.00	0.38
4.25	0.37	0.32	1.18	0.38	0.00	0.38
4.30	0.37	0.32	1.17	0.38	0.00	0.38
4.35	0.37	0.32	1.16	0.37	0.00	0.37
4.40	0.37	0.32	1.15	0.37	0.00	0.37
4.45	0.37	0.33	1.15	0.37	0.00	0.37

4.50	0.37	0.33	1.14	0.37	0.00	0.37
4.55	0.37	0.33	1.13	0.36	0.00	0.36
4.60	0.37	0.33	1.13	0.36	0.00	0.36
4.65	0.37	0.33	1.12	0.36	0.00	0.36
4.70	0.37	0.34	1.11	0.35	0.00	0.35
4.75	0.37	0.34	1.11	0.35	0.00	0.35
4.80	0.37	0.34	1.10	0.35	0.00	0.35
4.85	0.37	0.34	1.09	0.34	0.00	0.34
4.90	0.37	0.34	1.09	0.34	0.00	0.34
4.95	0.37	0.35	1.08	0.34	0.00	0.34
5.00	0.57	0.35	1.63	0.33	0.00	0.33
5.05	0.57	0.35	1.62	0.33	0.00	0.33
5.10	0.57	0.35	1.61	0.33	0.00	0.33
5.15	0.57	0.35	1.61	0.33	0.00	0.33
5.20	0.57	0.35	1.60	0.33	0.00	0.33
5.25	0.57	0.35	1.60	0.33	0.00	0.33
5.30	0.57	0.36	1.59	0.33	0.00	0.33
5.35	0.57	0.36	1.58	0.33	0.00	0.33
5.40	0.57	0.36	1.58	0.33	0.00	0.33
5.45	0.57	0.36	1.57	0.33	0.00	0.33
5.50	0.57	0.36	1.57	0.32	0.00	0.32
5.55	0.57	0.36	1.56	0.32	0.00	0.32
5.60	0.57	0.36	1.56	0.32	0.00	0.32
5.65	0.57	0.37	1.55	0.32	0.00	0.32
5.70	0.57	0.37	1.55	0.32	0.00	0.32
5.75	0.57	0.37	1.54	0.32	0.00	0.32
5.80	0.57	0.37	1.54	0.32	0.00	0.32
5.85	0.57	0.37	1.53	0.32	0.00	0.32
5.90	0.57	0.37	1.53	0.32	0.00	0.32
5.95	0.57	0.37	1.52	0.32	0.00	0.32
6.00	0.57	0.37	1.52	0.32	0.00	0.32
6.05	0.57	0.37	1.51	0.31	0.00	0.31
6.10	0.57	0.38	1.51	0.31	0.00	0.31
6.15	0.57	0.38	1.50	0.31	0.00	0.31
6.20	0.57	0.38	1.50	0.31	0.00	0.31
6.25	0.57	0.38	1.50	0.31	0.00	0.31
6.30	0.57	0.38	1.49	0.31	0.00	0.31
6.35	0.57	0.38	1.49	0.31	0.00	0.31
6.40	0.57	0.38	1.48	0.31	0.00	0.31
6.45	0.57	0.38	1.48	0.31	0.00	0.31
6.50	0.83	0.38	2.16	0.31	0.00	0.31
6.55	0.83	0.38	2.16	0.31	0.00	0.31
6.60	0.83	0.38	2.16	0.31	0.00	0.31
6.65	0.83	0.38	2.16	0.31	0.00	0.31
6.70	0.83	0.38	2.16	0.31	0.00	0.31
6.75	0.83	0.38	2.16	0.31	0.00	0.31
6.80	0.83	0.38	2.16	0.31	0.00	0.31
6.85	0.83	0.38	2.16	0.31	0.00	0.31
6.90	0.83	0.38	2.17	0.31	0.00	0.31
6.95	0.83	0.38	2.17	0.31	0.00	0.31
7.00	0.83	0.38	2.17	0.31	0.00	0.31
7.05	0.83	0.38	2.17	0.31	0.00	0.31
7.10	0.83	0.38	2.17	0.31	0.00	0.31
7.15	0.83	0.38	2.17	0.31	0.00	0.31
7.20	0.83	0.38	2.17	0.31	0.00	0.31
7.25	0.83	0.38	2.17	0.31	0.00	0.31
7.30	0.83	0.38	2.17	0.31	0.00	0.31
7.35	0.83	0.38	2.17	0.31	0.00	0.31
7.40	0.83	0.38	2.17	0.31	0.00	0.31
7.45	0.83	0.38	2.17	0.31	0.00	0.31
7.50	0.83	0.38	2.17	0.31	0.00	0.31
7.55	0.83	0.38	2.17	0.31	0.00	0.31
7.60	0.83	0.38	2.17	0.31	0.00	0.31
7.65	0.83	0.38	2.17	0.31	0.00	0.31
7.70	0.83	0.38	2.17	0.31	0.00	0.31
7.75	0.83	0.38	2.17	0.31	0.00	0.31
7.80	0.83	0.38	2.17	0.31	0.00	0.31
7.85	0.83	0.38	2.17	0.31	0.00	0.31
7.90	0.83	0.38	2.17	0.31	0.00	0.31
7.95	0.83	0.38	2.17	0.31	0.00	0.31
8.00	0.83	0.38	2.17	0.31	0.00	0.31

8.05	0.83	0.38	2.17	0.31	0.00	0.31
8.10	0.83	0.38	2.17	0.31	0.00	0.31
8.15	0.83	0.38	2.17	0.31	0.00	0.31
8.20	0.83	0.38	2.17	0.31	0.00	0.31
8.25	0.83	0.38	2.17	0.31	0.00	0.31
8.30	0.83	0.38	2.17	0.31	0.00	0.31
8.35	0.83	0.38	2.17	0.31	0.00	0.31
8.40	0.83	0.38	2.17	0.31	0.00	0.31
8.45	0.83	0.38	2.17	0.31	0.00	0.31
8.50	0.83	0.38	2.17	0.31	0.00	0.31
8.55	0.83	0.38	2.17	0.31	0.00	0.31
8.60	0.83	0.38	2.17	0.31	0.00	0.31
8.65	0.83	0.38	2.17	0.31	0.00	0.31
8.70	0.83	0.38	2.17	0.31	0.00	0.31
8.75	0.83	0.38	2.17	0.31	0.00	0.31
8.80	0.83	0.38	2.17	0.31	0.00	0.31
8.85	0.83	0.38	2.17	0.31	0.00	0.31
8.90	0.83	0.38	2.17	0.31	0.00	0.31
8.95	0.83	0.38	2.17	0.31	0.00	0.31
9.00	0.83	0.38	2.17	0.31	0.00	0.31
9.05	0.83	0.38	2.17	0.31	0.00	0.31
9.10	0.83	0.38	2.17	0.31	0.00	0.31
9.15	0.83	0.38	2.17	0.31	0.00	0.31
9.20	0.83	0.38	2.17	0.31	0.00	0.31
9.25	0.83	0.38	2.17	0.31	0.00	0.31
9.30	0.83	0.38	2.17	0.31	0.00	0.31
9.35	0.83	0.38	2.17	0.31	0.00	0.31
9.40	0.83	0.38	2.17	0.31	0.00	0.31
9.45	0.83	0.38	2.16	0.31	0.00	0.31
9.50	0.83	0.38	2.16	0.31	0.00	0.31
9.55	0.83	0.38	2.16	0.31	0.00	0.31
9.60	0.83	0.38	2.16	0.31	0.00	0.31
9.65	0.83	0.38	2.16	0.31	0.00	0.31
9.70	0.83	0.38	2.16	0.31	0.00	0.31
9.75	0.83	0.38	2.16	0.31	0.00	0.31
9.80	0.83	0.38	2.16	0.31	0.00	0.31
9.85	0.83	0.38	2.16	0.31	0.00	0.31
9.90	0.83	0.38	2.16	0.31	0.00	0.31
9.95	0.83	0.38	2.16	0.31	0.00	0.31
10.00	0.83	0.39	2.16	0.31	0.00	0.31
10.05	0.83	0.39	2.16	0.31	0.00	0.31
10.10	0.83	0.39	2.16	0.31	0.00	0.31
10.15	0.83	0.39	2.16	0.31	0.00	0.31
10.20	0.83	0.39	2.15	0.31	0.00	0.31
10.25	0.83	0.39	2.15	0.31	0.00	0.31
10.30	0.83	0.39	2.15	0.31	0.00	0.31
10.35	0.83	0.39	2.15	0.31	0.00	0.31
10.40	0.83	0.39	2.15	0.31	0.00	0.31
10.45	0.83	0.39	2.15	0.31	0.00	0.31
10.50	0.83	0.39	2.15	0.31	0.00	0.31
10.55	0.83	0.39	2.15	0.31	0.00	0.31
10.60	0.83	0.39	2.15	0.31	0.00	0.31
10.65	0.83	0.39	2.15	0.31	0.00	0.31
10.70	0.83	0.39	2.15	0.31	0.00	0.31
10.75	0.83	0.39	2.15	0.31	0.00	0.31
10.80	0.83	0.39	2.15	0.31	0.00	0.31
10.85	0.83	0.39	2.15	0.31	0.00	0.31
10.90	0.83	0.39	2.15	0.31	0.00	0.31
10.95	0.83	0.39	2.15	0.31	0.00	0.31
11.00	0.83	0.39	2.15	0.31	0.00	0.31
11.05	0.83	0.39	2.15	0.31	0.00	0.31
11.10	0.83	0.39	2.15	0.31	0.00	0.31
11.15	0.83	0.39	2.15	0.31	0.00	0.31
11.20	0.83	0.39	2.15	0.31	0.00	0.31
11.25	0.83	0.39	2.14	0.31	0.00	0.31
11.30	0.83	0.39	2.14	0.31	0.00	0.31
11.35	0.83	0.39	2.14	0.31	0.00	0.31
11.40	0.83	0.39	2.14	0.31	0.00	0.31
11.45	0.83	0.39	2.14	0.31	0.00	0.31
11.50	0.83	0.39	2.14	0.31	0.00	0.31
11.55	0.83	0.39	2.14	0.31	0.00	0.31

11.60	0.83	0.39	2.14	0.31	0.00	0.31
11.65	0.83	0.39	2.14	0.31	0.00	0.31
11.70	0.83	0.39	2.14	0.31	0.00	0.31
11.75	0.83	0.39	2.14	0.31	0.00	0.31
11.80	0.83	0.39	2.14	0.31	0.00	0.31
11.85	0.83	0.39	2.14	0.31	0.00	0.31
11.90	0.83	0.39	2.14	0.31	0.00	0.31
11.95	0.83	0.39	2.14	0.31	0.00	0.31
12.00	0.83	0.39	2.14	0.31	0.00	0.31
12.05	0.83	0.39	2.14	0.31	0.00	0.31
12.10	0.83	0.39	2.14	0.31	0.00	0.31
12.15	0.83	0.39	2.14	0.31	0.00	0.31
12.20	0.83	0.39	2.14	0.31	0.00	0.31
12.25	0.83	0.39	2.14	0.31	0.00	0.31
12.30	0.83	0.39	2.15	0.31	0.00	0.31
12.35	0.83	0.39	2.15	0.31	0.00	0.31
12.40	0.83	0.39	2.15	0.31	0.00	0.31
12.45	0.83	0.39	2.15	0.31	0.00	0.31
12.50	0.83	0.39	2.15	0.31	0.00	0.31
12.55	0.83	0.39	2.15	0.31	0.00	0.31
12.60	0.83	0.39	2.15	0.31	0.00	0.31
12.65	0.83	0.39	2.15	0.31	0.00	0.31
12.70	0.83	0.39	2.15	0.31	0.00	0.31
12.75	0.83	0.39	2.15	0.31	0.00	0.31
12.80	0.83	0.39	2.16	0.31	0.00	0.31
12.85	0.83	0.39	2.16	0.31	0.00	0.31
12.90	0.83	0.39	2.16	0.31	0.00	0.31
12.95	0.83	0.38	2.16	0.31	0.00	0.31
13.00	0.83	0.38	2.16	0.31	0.00	0.31
13.05	0.83	0.38	2.16	0.31	0.00	0.31
13.10	0.83	0.38	2.16	0.31	0.00	0.31
13.15	0.83	0.38	2.16	0.31	0.00	0.31
13.20	0.83	0.38	2.16	0.31	0.00	0.31
13.25	0.83	0.38	2.16	0.31	0.00	0.31
13.30	0.83	0.38	2.16	0.31	0.00	0.31
13.35	0.83	0.38	2.17	0.31	0.00	0.31
13.40	0.83	0.38	2.17	0.31	0.00	0.31
13.45	0.83	0.38	2.17	0.31	0.00	0.31
13.50	0.83	0.38	2.17	0.31	0.00	0.31
13.55	0.83	0.38	2.17	0.31	0.00	0.31
13.60	0.83	0.38	2.17	0.31	0.00	0.31
13.65	0.83	0.38	2.17	0.31	0.00	0.31
13.70	0.83	0.38	2.17	0.31	0.00	0.31
13.75	0.83	0.38	2.17	0.31	0.00	0.31
13.80	0.83	0.38	2.17	0.31	0.00	0.31
13.85	0.83	0.38	2.17	0.31	0.00	0.31
13.90	0.83	0.38	2.17	0.31	0.00	0.31
13.95	0.83	0.38	2.18	0.31	0.00	0.31
14.00	0.83	0.38	2.18	0.31	0.00	0.31
14.05	0.83	0.38	2.18	0.31	0.00	0.31
14.10	0.83	0.38	2.18	0.31	0.00	0.31
14.15	0.83	0.38	2.18	0.31	0.00	0.31
14.20	0.83	0.38	2.18	0.31	0.00	0.31
14.25	0.83	0.38	2.18	0.31	0.00	0.31
14.30	0.83	0.38	2.18	0.31	0.00	0.31
14.35	0.83	0.38	2.18	0.31	0.00	0.31
14.40	0.83	0.38	2.18	0.31	0.00	0.31
14.45	0.83	0.38	2.18	0.31	0.00	0.31
14.50	0.83	0.38	2.18	0.31	0.00	0.31
14.55	0.83	0.38	2.18	0.31	0.00	0.31
14.60	0.83	0.38	2.19	0.31	0.00	0.31
14.65	0.83	0.38	2.19	0.31	0.00	0.31
14.70	0.83	0.38	2.19	0.31	0.00	0.31
14.75	0.83	0.38	2.19	0.31	0.00	0.31
14.80	0.83	0.38	2.19	0.31	0.00	0.31
14.85	0.83	0.38	2.19	0.31	0.00	0.31
14.90	0.83	0.38	2.19	0.31	0.00	0.31
14.95	0.83	0.38	2.19	0.31	0.00	0.31
15.00	0.83	0.38	2.19	0.31	0.00	0.31
15.05	0.83	0.38	2.19	0.31	0.00	0.31
15.10	0.83	0.38	2.19	0.31	0.00	0.31

15.15	0.83	0.38	2.19	0.31	0.00	0.31
15.20	0.83	0.38	2.19	0.31	0.00	0.31
15.25	0.83	0.38	2.19	0.31	0.00	0.31
15.30	0.83	0.38	2.19	0.31	0.00	0.31
15.35	0.83	0.38	2.19	0.31	0.00	0.31
15.40	0.83	0.38	2.19	0.31	0.00	0.31
15.45	0.83	0.38	2.19	0.31	0.00	0.31
15.50	0.83	0.38	2.19	0.31	0.00	0.31
15.55	0.83	0.38	2.19	0.31	0.00	0.31
15.60	0.83	0.38	2.19	0.31	0.00	0.31
15.65	0.83	0.38	2.19	0.31	0.00	0.31
15.70	0.83	0.38	2.19	0.31	0.00	0.31
15.75	0.83	0.38	2.19	0.31	0.00	0.31
15.80	0.83	0.38	2.19	0.31	0.00	0.31
15.85	0.83	0.38	2.20	0.31	0.00	0.31
15.90	0.83	0.38	2.20	0.31	0.00	0.31
15.95	0.83	0.38	2.20	0.31	0.00	0.31
16.00	0.83	0.38	2.20	0.31	0.00	0.31
16.05	0.83	0.38	2.20	0.31	0.00	0.31
16.10	0.83	0.38	2.20	0.31	0.00	0.31
16.15	0.83	0.38	2.20	0.31	0.00	0.31
16.20	0.83	0.38	2.20	0.31	0.00	0.31
16.25	0.83	0.38	2.20	0.31	0.00	0.31
16.30	0.83	0.38	2.20	0.31	0.00	0.31
16.35	0.83	0.38	2.20	0.31	0.00	0.31
16.40	0.83	0.38	2.20	0.31	0.00	0.31
16.45	0.83	0.38	2.20	0.31	0.00	0.31
16.50	0.83	0.38	2.20	0.31	0.00	0.31
16.55	0.83	0.38	2.20	0.31	0.00	0.31
16.60	0.83	0.38	2.20	0.31	0.00	0.31
16.65	0.83	0.38	2.20	0.31	0.00	0.31
16.70	0.83	0.38	2.20	0.31	0.00	0.31
16.75	0.83	0.38	2.20	0.31	0.00	0.31
16.80	0.83	0.38	2.20	0.31	0.00	0.31
16.85	0.83	0.38	2.20	0.31	0.00	0.31
16.90	0.83	0.38	2.20	0.31	0.00	0.31
16.95	0.83	0.38	2.20	0.31	0.00	0.31
17.00	0.83	0.38	2.20	0.31	0.00	0.31
17.05	0.83	0.38	2.20	0.31	0.00	0.31
17.10	0.83	0.38	2.20	0.31	0.00	0.31
17.15	0.83	0.38	2.20	0.31	0.00	0.31
17.20	0.83	0.38	2.20	0.31	0.00	0.31
17.25	0.83	0.38	2.20	0.31	0.00	0.31
17.30	0.83	0.38	2.20	0.31	0.00	0.31
17.35	0.83	0.38	2.20	0.31	0.00	0.31
17.40	0.83	0.38	2.20	0.31	0.00	0.31
17.45	0.83	0.38	2.20	0.31	0.00	0.31
17.50	0.83	0.38	2.20	0.31	0.00	0.31
17.55	0.83	0.38	2.20	0.31	0.00	0.31
17.60	0.83	0.38	2.20	0.31	0.00	0.31
17.65	0.83	0.38	2.20	0.31	0.00	0.31
17.70	0.83	0.38	2.20	0.31	0.00	0.31
17.75	0.83	0.38	2.20	0.31	0.00	0.31
17.80	0.83	0.38	2.20	0.31	0.00	0.31
17.85	0.83	0.38	2.20	0.31	0.00	0.31
17.90	0.83	0.38	2.20	0.31	0.00	0.31
17.95	0.83	0.38	2.20	0.31	0.00	0.31
18.00	0.83	0.38	2.20	0.31	0.00	0.31
18.05	0.83	0.38	2.20	0.31	0.00	0.31
18.10	0.83	0.38	2.20	0.31	0.00	0.31
18.15	0.83	0.38	2.20	0.31	0.00	0.31
18.20	0.83	0.38	2.20	0.31	0.00	0.31
18.25	0.83	0.38	2.20	0.31	0.00	0.31
18.30	0.83	0.38	2.20	0.31	0.00	0.31
18.35	0.83	0.38	2.20	0.31	0.00	0.31
18.40	0.83	0.38	2.20	0.31	0.00	0.31
18.45	0.83	0.38	2.20	0.31	0.00	0.31
18.50	0.83	0.38	2.20	0.31	0.00	0.31
18.55	0.83	0.38	2.20	0.31	0.00	0.31
18.60	0.83	0.38	2.20	0.31	0.00	0.31
18.65	0.83	0.38	2.20	0.31	0.00	0.31

18.70	0.83	0.38	2.20	0.31	0.00	0.31
18.75	0.83	0.38	2.20	0.31	0.00	0.31
18.80	0.83	0.38	2.20	0.31	0.00	0.31
18.85	0.83	0.38	2.20	0.31	0.00	0.31
18.90	0.83	0.38	2.20	0.31	0.00	0.31
18.95	0.83	0.38	2.20	0.31	0.00	0.31
19.00	0.83	0.38	2.20	0.31	0.00	0.31
19.05	0.83	0.38	2.20	0.31	0.00	0.31
19.10	0.83	0.38	2.20	0.31	0.00	0.31
19.15	0.83	0.38	2.20	0.31	0.00	0.31
19.20	0.83	0.38	2.20	0.31	0.00	0.31
19.25	0.83	0.38	2.20	0.31	0.00	0.31
19.30	0.83	0.38	2.20	0.31	0.00	0.31
19.35	0.83	0.38	2.20	0.31	0.00	0.31
19.40	0.83	0.38	2.20	0.31	0.00	0.31
19.45	0.83	0.38	2.20	0.31	0.00	0.31
19.50	0.83	0.38	2.20	0.31	0.00	0.31
19.55	0.83	0.38	2.20	0.31	0.00	0.31
19.60	0.83	0.38	2.20	0.31	0.00	0.31
19.65	0.83	0.38	2.20	0.31	0.00	0.31
19.70	0.83	0.38	2.20	0.31	0.00	0.31
19.75	0.83	0.38	2.20	0.31	0.00	0.31
19.80	0.83	0.38	2.20	0.31	0.00	0.31
19.85	0.83	0.38	2.20	0.31	0.00	0.31
19.90	0.83	0.38	2.20	0.31	0.00	0.31
19.95	0.83	0.38	2.20	0.31	0.00	0.31
20.00	0.83	0.38	2.20	0.31	0.00	0.31
20.05	2.00	0.38	5.00	0.31	0.00	0.31
20.10	2.00	0.38	5.00	0.31	0.00	0.31
20.15	2.00	0.38	5.00	0.31	0.00	0.31
20.20	2.00	0.38	5.00	0.31	0.00	0.31
20.25	2.00	0.38	5.00	0.31	0.00	0.31
20.30	2.00	0.38	5.00	0.31	0.00	0.31
20.35	2.00	0.38	5.00	0.31	0.00	0.31
20.40	2.00	0.38	5.00	0.31	0.00	0.31
20.45	2.00	0.38	5.00	0.31	0.00	0.31
20.50	2.00	0.38	5.00	0.31	0.00	0.31
20.55	2.00	0.38	5.00	0.31	0.00	0.31
20.60	2.00	0.38	5.00	0.31	0.00	0.31
20.65	2.00	0.38	5.00	0.31	0.00	0.31
20.70	2.00	0.38	5.00	0.31	0.00	0.31
20.75	2.00	0.38	5.00	0.31	0.00	0.31
20.80	2.00	0.38	5.00	0.31	0.00	0.31
20.85	2.00	0.38	5.00	0.31	0.00	0.31
20.90	2.00	0.38	5.00	0.31	0.00	0.31
20.95	2.00	0.38	5.00	0.31	0.00	0.31
21.00	2.00	0.38	5.00	0.31	0.00	0.31
21.05	2.00	0.38	5.00	0.31	0.00	0.31
21.10	2.00	0.38	5.00	0.31	0.00	0.31
21.15	2.00	0.38	5.00	0.31	0.00	0.31
21.20	2.00	0.38	5.00	0.31	0.00	0.31
21.25	2.00	0.38	5.00	0.31	0.00	0.31
21.30	2.00	0.38	5.00	0.31	0.00	0.31
21.35	2.00	0.38	5.00	0.31	0.00	0.31
21.40	2.00	0.38	5.00	0.31	0.00	0.31
21.45	2.00	0.38	5.00	0.31	0.00	0.31
21.50	2.00	0.38	5.00	0.31	0.00	0.31
21.55	2.00	0.38	5.00	0.31	0.00	0.31
21.60	2.00	0.38	5.00	0.31	0.00	0.31
21.65	2.00	0.38	5.00	0.31	0.00	0.31
21.70	2.00	0.38	5.00	0.31	0.00	0.31
21.75	2.00	0.38	5.00	0.31	0.00	0.31
21.80	2.00	0.38	5.00	0.31	0.00	0.31
21.85	2.00	0.38	5.00	0.31	0.00	0.31
21.90	2.00	0.38	5.00	0.31	0.00	0.31
21.95	2.00	0.38	5.00	0.31	0.00	0.31
22.00	2.00	0.38	5.00	0.31	0.00	0.31
22.05	2.00	0.38	5.00	0.31	0.00	0.31
22.10	2.00	0.38	5.00	0.31	0.00	0.31
22.15	2.00	0.38	5.00	0.31	0.00	0.31
22.20	2.00	0.38	5.00	0.31	0.00	0.31

22.25	2.00	0.38	5.00	0.31	0.00	0.31
22.30	2.00	0.38	5.00	0.31	0.00	0.31
22.35	2.00	0.38	5.00	0.31	0.00	0.31
22.40	2.00	0.38	5.00	0.31	0.00	0.31
22.45	2.00	0.38	5.00	0.31	0.00	0.31
22.50	2.00	0.38	5.00	0.31	0.00	0.31
22.55	2.00	0.38	5.00	0.31	0.00	0.31
22.60	2.00	0.38	5.00	0.31	0.00	0.31
22.65	2.00	0.38	5.00	0.31	0.00	0.31
22.70	2.00	0.38	5.00	0.31	0.00	0.31
22.75	2.00	0.38	5.00	0.31	0.00	0.31
22.80	2.00	0.38	5.00	0.31	0.00	0.31
22.85	2.00	0.38	5.00	0.31	0.00	0.31
22.90	2.00	0.38	5.00	0.31	0.00	0.31
22.95	2.00	0.38	5.00	0.31	0.00	0.31
23.00	2.00	0.38	5.00	0.31	0.00	0.31
23.05	2.00	0.38	5.00	0.31	0.00	0.31
23.10	2.00	0.38	5.00	0.31	0.00	0.31
23.15	2.00	0.38	5.00	0.31	0.00	0.31
23.20	2.00	0.38	5.00	0.31	0.00	0.31
23.25	2.00	0.38	5.00	0.31	0.00	0.31
23.30	2.00	0.38	5.00	0.31	0.00	0.31
23.35	2.00	0.38	5.00	0.31	0.00	0.31
23.40	2.00	0.38	5.00	0.31	0.00	0.31
23.45	2.00	0.38	5.00	0.31	0.00	0.31
23.50	2.00	0.38	5.00	0.31	0.00	0.31
23.55	2.00	0.38	5.00	0.31	0.00	0.31
23.60	2.00	0.38	5.00	0.31	0.00	0.31
23.65	2.00	0.38	5.00	0.31	0.00	0.31
23.70	2.00	0.38	5.00	0.31	0.00	0.31
23.75	2.00	0.38	5.00	0.31	0.00	0.31
23.80	2.00	0.38	5.00	0.31	0.00	0.31
23.85	2.00	0.38	5.00	0.31	0.00	0.31
23.90	2.00	0.38	5.00	0.31	0.00	0.31
23.95	2.00	0.38	5.00	0.31	0.00	0.31
24.00	2.00	0.38	5.00	0.31	0.00	0.31
24.05	2.00	0.38	5.00	0.31	0.00	0.31
24.10	2.00	0.38	5.00	0.31	0.00	0.31
24.15	2.00	0.38	5.00	0.31	0.00	0.31
24.20	2.00	0.38	5.00	0.31	0.00	0.31
24.25	2.00	0.38	5.00	0.31	0.00	0.31
24.30	2.00	0.38	5.00	0.31	0.00	0.31
24.35	2.00	0.38	5.00	0.31	0.00	0.31
24.40	2.00	0.38	5.00	0.31	0.00	0.31
24.45	2.00	0.38	5.00	0.31	0.00	0.31
24.50	2.00	0.38	5.00	0.31	0.00	0.31
24.55	2.00	0.38	5.00	0.31	0.00	0.31
24.60	2.00	0.38	5.00	0.31	0.00	0.31
24.65	2.00	0.38	5.00	0.31	0.00	0.31
24.70	2.00	0.38	5.00	0.31	0.00	0.31
24.75	2.00	0.38	5.00	0.31	0.00	0.31
24.80	2.00	0.38	5.00	0.31	0.00	0.31
24.85	2.00	0.38	5.00	0.31	0.00	0.31
24.90	2.00	0.38	5.00	0.31	0.00	0.31
24.95	2.00	0.38	5.00	0.31	0.00	0.31
25.00	2.00	0.38	5.00	0.31	0.00	0.31
25.05	0.83	0.38	2.21	0.31	0.00	0.31
25.10	0.83	0.38	2.21	0.31	0.00	0.31
25.15	0.83	0.38	2.21	0.31	0.00	0.31
25.20	0.83	0.38	2.21	0.31	0.00	0.31
25.25	0.83	0.38	2.21	0.31	0.00	0.31
25.30	0.83	0.38	2.21	0.31	0.00	0.31
25.35	0.83	0.38	2.21	0.31	0.00	0.31
25.40	0.83	0.38	2.21	0.31	0.00	0.31
25.45	0.83	0.38	2.21	0.31	0.00	0.31
25.50	0.83	0.38	2.21	0.31	0.00	0.31
25.55	0.83	0.38	2.22	0.31	0.00	0.31
25.60	0.83	0.37	2.22	0.31	0.00	0.31
25.65	0.83	0.37	2.22	0.31	0.00	0.31
25.70	0.83	0.37	2.22	0.31	0.00	0.31
25.75	0.83	0.37	2.22	0.31	0.00	0.31

25.80	0.83	0.37	2.22	0.31	0.00	0.31
25.85	0.83	0.37	2.22	0.31	0.00	0.31
25.90	0.83	0.37	2.22	0.31	0.00	0.31
25.95	0.83	0.37	2.22	0.31	0.00	0.31
26.00	0.83	0.37	2.22	0.31	0.00	0.31
26.05	0.83	0.37	2.22	0.31	0.00	0.31
26.10	0.83	0.37	2.22	0.31	0.00	0.31
26.15	0.83	0.37	2.22	0.31	0.00	0.31
26.20	0.83	0.37	2.22	0.31	0.00	0.31
26.25	0.83	0.37	2.22	0.31	0.00	0.31
26.30	0.83	0.37	2.22	0.31	0.00	0.31
26.35	0.83	0.37	2.22	0.31	0.00	0.31
26.40	0.83	0.37	2.22	0.31	0.00	0.31
26.45	0.83	0.37	2.23	0.31	0.00	0.31
26.50	0.83	0.37	2.23	0.31	0.00	0.31
26.55	0.83	0.37	2.23	0.31	0.00	0.31
26.60	0.83	0.37	2.23	0.31	0.00	0.31
26.65	0.83	0.37	2.23	0.31	0.00	0.31
26.70	0.83	0.37	2.23	0.31	0.00	0.31
26.75	0.83	0.37	2.23	0.31	0.00	0.31
26.80	0.83	0.37	2.23	0.31	0.00	0.31
26.85	0.83	0.37	2.23	0.31	0.00	0.31
26.90	0.83	0.37	2.23	0.31	0.00	0.31
26.95	0.83	0.37	2.23	0.31	0.00	0.31
27.00	0.83	0.37	2.23	0.31	0.00	0.31
27.05	0.83	0.37	2.23	0.31	0.00	0.31
27.10	0.83	0.37	2.23	0.31	0.00	0.31
27.15	0.83	0.37	2.23	0.31	0.00	0.31
27.20	0.83	0.37	2.23	0.31	0.00	0.31
27.25	0.83	0.37	2.23	0.31	0.00	0.31
27.30	0.83	0.37	2.23	0.31	0.00	0.31
27.35	0.83	0.37	2.24	0.31	0.00	0.31
27.40	0.83	0.37	2.24	0.31	0.00	0.31
27.45	0.83	0.37	2.24	0.31	0.00	0.31
27.50	0.83	0.37	2.24	0.31	0.00	0.31
27.55	0.83	0.37	2.24	0.31	0.00	0.31
27.60	0.83	0.37	2.24	0.31	0.00	0.31
27.65	0.83	0.37	2.24	0.31	0.00	0.31
27.70	0.83	0.37	2.24	0.31	0.00	0.31
27.75	0.83	0.37	2.24	0.31	0.00	0.31
27.80	0.83	0.37	2.24	0.31	0.00	0.31
27.85	0.83	0.37	2.24	0.31	0.00	0.31
27.90	0.83	0.37	2.24	0.31	0.00	0.31
27.95	0.83	0.37	2.24	0.31	0.00	0.31
28.00	0.83	0.37	2.24	0.31	0.00	0.31
28.05	0.83	0.37	2.24	0.31	0.00	0.31
28.10	0.83	0.37	2.24	0.31	0.00	0.31
28.15	0.83	0.37	2.24	0.31	0.00	0.31
28.20	0.83	0.37	2.24	0.31	0.00	0.31
28.25	0.83	0.37	2.24	0.31	0.00	0.31
28.30	0.83	0.37	2.25	0.31	0.00	0.31
28.35	0.83	0.37	2.25	0.31	0.00	0.31
28.40	0.83	0.37	2.25	0.31	0.00	0.31
28.45	0.83	0.37	2.25	0.31	0.00	0.31
28.50	0.83	0.37	2.25	0.31	0.00	0.31
28.55	0.83	0.37	2.25	0.31	0.00	0.31
28.60	0.83	0.37	2.25	0.31	0.00	0.31
28.65	0.83	0.37	2.25	0.31	0.00	0.31
28.70	0.83	0.37	2.25	0.31	0.00	0.31
28.75	0.83	0.37	2.25	0.31	0.00	0.31
28.80	0.83	0.37	2.25	0.31	0.00	0.31
28.85	0.83	0.37	2.25	0.31	0.00	0.31
28.90	0.83	0.37	2.25	0.31	0.00	0.31
28.95	0.83	0.37	2.25	0.31	0.00	0.31
29.00	0.83	0.37	2.25	0.31	0.00	0.31
29.05	0.83	0.37	2.25	0.31	0.00	0.31
29.10	0.83	0.37	2.25	0.31	0.00	0.31
29.15	0.83	0.37	2.25	0.31	0.00	0.31
29.20	0.83	0.37	2.25	0.31	0.00	0.31
29.25	0.83	0.37	2.25	0.31	0.00	0.31
29.30	0.83	0.37	2.25	0.31	0.00	0.31

29.35	0.83	0.37	2.25	0.31	0.00	0.31
29.40	0.83	0.37	2.25	0.31	0.00	0.31
29.45	0.83	0.37	2.26	0.31	0.00	0.31
29.50	0.83	0.37	2.26	0.31	0.00	0.31
29.55	0.83	0.37	2.26	0.31	0.00	0.31
29.60	0.83	0.37	2.26	0.31	0.00	0.31
29.65	0.83	0.37	2.26	0.31	0.00	0.31
29.70	0.83	0.37	2.26	0.31	0.00	0.31
29.75	0.83	0.37	2.26	0.31	0.00	0.31
29.80	0.83	0.37	2.26	0.31	0.00	0.31
29.85	0.83	0.37	2.26	0.31	0.00	0.31
29.90	0.83	0.37	2.26	0.31	0.00	0.31
29.95	0.83	0.37	2.26	0.31	0.00	0.31
30.00	0.83	0.37	2.26	0.31	0.00	0.31
30.05	0.83	0.37	2.26	0.31	0.00	0.31
30.10	0.83	0.37	2.26	0.31	0.00	0.31
30.15	0.83	0.37	2.26	0.31	0.00	0.31
30.20	0.83	0.37	2.26	0.31	0.00	0.31
30.25	0.83	0.37	2.27	0.31	0.00	0.31
30.30	0.83	0.37	2.27	0.31	0.00	0.31
30.35	0.83	0.37	2.27	0.31	0.00	0.31
30.40	0.83	0.37	2.27	0.31	0.00	0.31
30.45	0.83	0.37	2.27	0.31	0.00	0.31
30.50	0.83	0.37	2.27	0.31	0.00	0.31
30.55	0.83	0.37	2.27	0.31	0.00	0.31
30.60	0.83	0.37	2.27	0.31	0.00	0.31
30.65	0.83	0.37	2.27	0.31	0.00	0.31
30.70	0.83	0.36	2.28	0.31	0.00	0.31
30.75	0.83	0.36	2.28	0.31	0.00	0.31
30.80	0.83	0.36	2.28	0.31	0.00	0.31
30.85	0.83	0.36	2.28	0.31	0.00	0.31
30.90	0.83	0.36	2.28	0.31	0.00	0.31
30.95	0.83	0.36	2.28	0.31	0.00	0.31
31.00	0.83	0.36	2.28	0.31	0.00	0.31
31.05	0.83	0.36	2.28	0.31	0.00	0.31
31.10	0.83	0.36	2.28	0.31	0.00	0.31
31.15	0.83	0.36	2.29	0.31	0.00	0.31
31.20	0.83	0.36	2.29	0.31	0.00	0.31
31.25	0.83	0.36	2.29	0.31	0.00	0.31
31.30	0.83	0.36	2.29	0.31	0.00	0.31
31.35	0.83	0.36	2.29	0.31	0.00	0.31
31.40	0.83	0.36	2.29	0.31	0.00	0.31
31.45	0.83	0.36	2.29	0.31	0.00	0.31
31.50	0.83	0.36	2.29	0.31	0.00	0.31
31.55	0.83	0.36	2.30	0.31	0.00	0.31
31.60	0.83	0.36	2.30	0.31	0.00	0.31
31.65	0.83	0.36	2.30	0.31	0.00	0.31
31.70	0.83	0.36	2.30	0.31	0.00	0.31
31.75	0.83	0.36	2.30	0.31	0.00	0.31
31.80	0.83	0.36	2.30	0.31	0.00	0.31
31.85	0.83	0.36	2.30	0.31	0.00	0.31
31.90	0.83	0.36	2.30	0.31	0.00	0.31
31.95	0.83	0.36	2.30	0.31	0.00	0.31
32.00	0.83	0.36	2.31	0.31	0.00	0.31
32.05	0.83	0.36	2.31	0.31	0.00	0.31
32.10	0.83	0.36	2.31	0.31	0.00	0.31
32.15	0.83	0.36	2.31	0.31	0.00	0.31
32.20	0.83	0.36	2.31	0.31	0.00	0.31
32.25	0.83	0.36	2.31	0.31	0.00	0.31
32.30	0.83	0.36	2.31	0.31	0.00	0.31
32.35	0.83	0.36	2.31	0.31	0.00	0.31
32.40	0.83	0.36	2.31	0.31	0.00	0.31
32.45	0.83	0.36	2.32	0.31	0.00	0.31
32.50	0.83	0.36	2.32	0.31	0.00	0.31
32.55	0.83	0.36	2.32	0.31	0.00	0.31
32.60	0.83	0.36	2.32	0.31	0.00	0.31
32.65	0.83	0.36	2.32	0.31	0.00	0.31
32.70	0.83	0.36	2.32	0.31	0.00	0.31
32.75	0.83	0.36	2.32	0.31	0.00	0.31
32.80	0.83	0.36	2.32	0.31	0.00	0.31
32.85	0.83	0.36	2.32	0.31	0.00	0.31

32.90	0.83	0.36	2.33	0.31	0.00	0.31
32.95	0.83	0.36	2.33	0.31	0.00	0.31
33.00	0.83	0.36	2.33	0.31	0.00	0.31
33.05	0.83	0.36	2.33	0.31	0.00	0.31
33.10	0.83	0.36	2.33	0.31	0.00	0.31
33.15	0.83	0.36	2.33	0.31	0.00	0.31
33.20	0.83	0.36	2.33	0.31	0.00	0.31
33.25	0.83	0.36	2.33	0.31	0.00	0.31
33.30	0.83	0.36	2.34	0.31	0.00	0.31
33.35	0.83	0.36	2.34	0.31	0.00	0.31
33.40	0.83	0.36	2.34	0.31	0.00	0.31
33.45	0.83	0.36	2.34	0.31	0.00	0.31
33.50	0.83	0.36	2.34	0.31	0.00	0.31
33.55	0.83	0.35	2.34	0.31	0.00	0.31
33.60	0.83	0.35	2.34	0.31	0.00	0.31
33.65	0.83	0.35	2.34	0.31	0.00	0.31
33.70	0.83	0.35	2.34	0.31	0.00	0.31
33.75	0.83	0.35	2.35	0.31	0.00	0.31
33.80	0.83	0.35	2.35	0.31	0.00	0.31
33.85	0.83	0.35	2.35	0.31	0.00	0.31
33.90	0.83	0.35	2.35	0.31	0.00	0.31
33.95	0.83	0.35	2.35	0.31	0.00	0.31
34.00	0.83	0.35	2.35	0.31	0.00	0.31
34.05	0.83	0.35	2.35	0.31	0.00	0.31
34.10	0.83	0.35	2.35	0.31	0.00	0.31
34.15	0.83	0.35	2.35	0.31	0.00	0.31
34.20	0.83	0.35	2.36	0.31	0.00	0.31
34.25	0.83	0.35	2.36	0.31	0.00	0.31
34.30	0.83	0.35	2.36	0.31	0.00	0.31
34.35	0.83	0.35	2.36	0.31	0.00	0.31
34.40	0.83	0.35	2.36	0.31	0.00	0.31
34.45	0.83	0.35	2.36	0.31	0.00	0.31
34.50	0.83	0.35	2.36	0.31	0.00	0.31
34.55	0.83	0.35	2.36	0.31	0.00	0.31
34.60	0.83	0.35	2.37	0.31	0.00	0.31
34.65	0.83	0.35	2.37	0.31	0.00	0.31
34.70	0.83	0.35	2.37	0.31	0.00	0.31
34.75	0.83	0.35	2.37	0.31	0.00	0.31
34.80	0.83	0.35	2.37	0.31	0.00	0.31
34.85	0.83	0.35	2.37	0.31	0.00	0.31
34.90	0.83	0.35	2.37	0.31	0.00	0.31
34.95	0.83	0.35	2.37	0.31	0.00	0.31
35.00	0.83	0.35	2.37	0.31	0.00	0.31
35.05	0.46	0.35	1.32	0.31	0.00	0.31
35.10	0.46	0.35	1.32	0.30	0.00	0.30
35.15	0.46	0.35	1.32	0.30	0.00	0.30
35.20	0.46	0.35	1.32	0.30	0.00	0.30
35.25	0.46	0.35	1.32	0.30	0.00	0.30
35.30	0.46	0.35	1.32	0.30	0.00	0.30
35.35	0.46	0.35	1.32	0.30	0.00	0.30
35.40	0.46	0.35	1.32	0.29	0.00	0.29
35.45	0.46	0.35	1.32	0.29	0.00	0.29
35.50	0.46	0.35	1.32	0.29	0.00	0.29
35.55	0.46	0.35	1.32	0.29	0.00	0.29
35.60	0.46	0.35	1.32	0.29	0.00	0.29
35.65	0.46	0.35	1.31	0.29	0.00	0.29
35.70	0.46	0.35	1.31	0.29	0.00	0.29
35.75	0.46	0.35	1.31	0.28	0.00	0.28
35.80	0.46	0.35	1.31	0.28	0.00	0.28
35.85	0.46	0.35	1.31	0.28	0.00	0.28
35.90	0.46	0.35	1.31	0.28	0.00	0.28
35.95	0.46	0.35	1.31	0.28	0.00	0.28
36.00	0.46	0.35	1.31	0.28	0.00	0.28
36.05	0.45	0.35	1.31	0.27	0.00	0.27
36.10	0.45	0.35	1.31	0.27	0.00	0.27
36.15	0.45	0.35	1.31	0.27	0.00	0.27
36.20	0.45	0.35	1.31	0.27	0.00	0.27
36.25	0.45	0.35	1.31	0.27	0.00	0.27
36.30	0.45	0.35	1.31	0.27	0.00	0.27
36.35	0.45	0.35	1.31	0.26	0.00	0.26
36.40	0.45	0.35	1.31	0.26	0.00	0.26

36.45	0.45	0.35	1.31	0.26	0.00	0.26
36.50	0.45	0.35	1.31	0.26	0.00	0.26
36.55	0.45	0.35	1.31	0.26	0.00	0.26
36.60	0.45	0.34	1.31	0.26	0.00	0.26
36.65	0.45	0.34	1.31	0.26	0.00	0.26
36.70	0.45	0.34	1.31	0.25	0.00	0.25
36.75	0.45	0.34	1.31	0.25	0.00	0.25
36.80	0.45	0.34	1.31	0.25	0.00	0.25
36.85	0.45	0.34	1.31	0.25	0.00	0.25
36.90	0.45	0.34	1.31	0.25	0.00	0.25
36.95	0.45	0.34	1.31	0.25	0.00	0.25
37.00	0.45	0.34	1.31	0.24	0.00	0.24
37.05	0.45	0.34	1.31	0.24	0.00	0.24
37.10	0.45	0.34	1.31	0.24	0.00	0.24
37.15	0.45	0.34	1.31	0.24	0.00	0.24
37.20	0.45	0.34	1.31	0.24	0.00	0.24
37.25	0.45	0.34	1.31	0.24	0.00	0.24
37.30	0.45	0.34	1.30	0.23	0.00	0.23
37.35	0.45	0.34	1.30	0.23	0.00	0.23
37.40	0.45	0.34	1.30	0.23	0.00	0.23
37.45	0.45	0.34	1.30	0.23	0.00	0.23
37.50	0.45	0.34	1.30	0.23	0.00	0.23
37.55	0.45	0.34	1.30	0.23	0.00	0.23
37.60	0.45	0.34	1.30	0.22	0.00	0.22
37.65	0.45	0.34	1.30	0.22	0.00	0.22
37.70	0.45	0.34	1.30	0.22	0.00	0.22
37.75	0.44	0.34	1.30	0.22	0.00	0.22
37.80	0.44	0.34	1.30	0.22	0.00	0.22
37.85	0.44	0.34	1.30	0.22	0.00	0.22
37.90	0.44	0.34	1.30	0.21	0.00	0.21
37.95	0.44	0.34	1.30	0.21	0.00	0.21
38.00	0.44	0.34	1.30	0.21	0.00	0.21
38.05	0.44	0.34	1.30	0.21	0.00	0.21
38.10	0.44	0.34	1.30	0.21	0.00	0.21
38.15	0.44	0.34	1.30	0.21	0.00	0.21
38.20	0.44	0.34	1.30	0.20	0.00	0.20
38.25	0.44	0.34	1.30	0.20	0.00	0.20
38.30	0.44	0.34	1.30	0.20	0.00	0.20
38.35	0.44	0.34	1.30	0.20	0.00	0.20
38.40	0.44	0.34	1.30	0.20	0.00	0.20
38.45	0.44	0.34	1.30	0.20	0.00	0.20
38.50	0.44	0.34	1.30	0.19	0.00	0.19
38.55	0.44	0.34	1.30	0.19	0.00	0.19
38.60	0.44	0.34	1.30	0.19	0.00	0.19
38.65	0.44	0.34	1.30	0.19	0.00	0.19
38.70	0.44	0.34	1.30	0.19	0.00	0.19
38.75	0.44	0.34	1.30	0.19	0.00	0.19
38.80	0.44	0.34	1.30	0.18	0.00	0.18
38.85	0.44	0.34	1.30	0.18	0.00	0.18
38.90	0.44	0.34	1.30	0.18	0.00	0.18
38.95	0.44	0.34	1.30	0.18	0.00	0.18
39.00	0.44	0.34	1.30	0.18	0.00	0.18
39.05	0.44	0.34	1.30	0.18	0.00	0.18
39.10	0.44	0.34	1.30	0.17	0.00	0.17
39.15	0.44	0.34	1.30	0.17	0.00	0.17
39.20	0.44	0.34	1.30	0.17	0.00	0.17
39.25	0.44	0.34	1.30	0.17	0.00	0.17
39.30	0.44	0.34	1.30	0.17	0.00	0.17
39.35	0.44	0.34	1.30	0.17	0.00	0.17
39.40	0.44	0.34	1.30	0.16	0.00	0.16
39.45	0.44	0.34	1.30	0.16	0.00	0.16
39.50	0.44	0.34	1.30	0.16	0.00	0.16
39.55	0.44	0.34	1.30	0.16	0.00	0.16
39.60	0.44	0.34	1.30	0.16	0.00	0.16
39.65	0.43	0.34	1.30	0.16	0.00	0.16
39.70	0.43	0.34	1.30	0.15	0.00	0.15
39.75	0.43	0.34	1.30	0.15	0.00	0.15
39.80	0.43	0.34	1.29	0.15	0.00	0.15
39.85	0.43	0.34	1.29	0.15	0.00	0.15
39.90	0.43	0.33	1.29	0.15	0.00	0.15
39.95	0.43	0.33	1.29	0.15	0.00	0.15

40.00	0.43	0.33	1.29	0.14	0.00	0.14
40.05	0.46	0.33	1.38	0.14	0.00	0.14
40.10	0.46	0.33	1.38	0.14	0.00	0.14
40.15	0.46	0.33	1.38	0.14	0.00	0.14
40.20	0.46	0.33	1.38	0.14	0.00	0.14
40.25	0.46	0.33	1.38	0.14	0.00	0.14
40.30	0.46	0.33	1.38	0.14	0.00	0.14
40.35	0.46	0.33	1.38	0.13	0.00	0.13
40.40	0.46	0.33	1.38	0.13	0.00	0.13
40.45	0.46	0.33	1.38	0.13	0.00	0.13
40.50	0.46	0.33	1.38	0.13	0.00	0.13
40.55	0.46	0.33	1.38	0.13	0.00	0.13
40.60	0.46	0.33	1.38	0.13	0.00	0.13
40.65	0.46	0.33	1.38	0.13	0.00	0.13
40.70	0.46	0.33	1.38	0.12	0.00	0.12
40.75	0.46	0.33	1.38	0.12	0.00	0.12
40.80	0.46	0.33	1.38	0.12	0.00	0.12
40.85	0.46	0.33	1.38	0.12	0.00	0.12
40.90	0.46	0.33	1.38	0.12	0.00	0.12
40.95	0.46	0.33	1.38	0.12	0.00	0.12
41.00	0.46	0.33	1.38	0.12	0.00	0.12
41.05	0.45	0.33	1.38	0.11	0.00	0.11
41.10	0.45	0.33	1.38	0.11	0.00	0.11
41.15	0.45	0.33	1.38	0.11	0.00	0.11
41.20	0.45	0.33	1.38	0.11	0.00	0.11
41.25	0.45	0.33	1.38	0.11	0.00	0.11
41.30	0.45	0.33	1.38	0.11	0.00	0.11
41.35	0.45	0.33	1.38	0.11	0.00	0.11
41.40	0.45	0.33	1.38	0.10	0.00	0.10
41.45	0.45	0.33	1.37	0.10	0.00	0.10
41.50	0.45	0.33	1.37	0.10	0.00	0.10
41.55	0.45	0.33	1.37	0.10	0.00	0.10
41.60	0.45	0.33	1.37	0.10	0.00	0.10
41.65	0.45	0.33	1.37	0.10	0.00	0.10
41.70	0.45	0.33	1.37	0.10	0.00	0.10
41.75	0.45	0.33	1.37	0.10	0.00	0.10
41.80	0.45	0.33	1.37	0.09	0.00	0.09
41.85	0.45	0.33	1.37	0.09	0.00	0.09
41.90	0.45	0.33	1.37	0.09	0.00	0.09
41.95	0.45	0.33	1.37	0.09	0.00	0.09
42.00	0.45	0.33	1.37	0.09	0.00	0.09
42.05	0.45	0.33	1.37	0.09	0.00	0.09
42.10	0.45	0.33	1.37	0.09	0.00	0.09
42.15	0.45	0.33	1.37	0.08	0.00	0.08
42.20	0.45	0.33	1.37	0.08	0.00	0.08
42.25	0.45	0.33	1.37	0.08	0.00	0.08
42.30	0.45	0.33	1.37	0.08	0.00	0.08
42.35	0.45	0.33	1.37	0.08	0.00	0.08
42.40	0.45	0.32	1.37	0.08	0.00	0.08
42.45	0.45	0.32	1.37	0.08	0.00	0.08
42.50	0.45	0.32	1.37	0.07	0.00	0.07
42.55	0.45	0.32	1.37	0.07	0.00	0.07
42.60	0.44	0.32	1.37	0.07	0.00	0.07
42.65	0.44	0.32	1.37	0.07	0.00	0.07
42.70	0.44	0.32	1.37	0.07	0.00	0.07
42.75	0.44	0.32	1.37	0.07	0.00	0.07
42.80	0.44	0.32	1.37	0.07	0.00	0.07
42.85	0.44	0.32	1.37	0.06	0.00	0.06
42.90	0.44	0.32	1.37	0.06	0.00	0.06
42.95	0.44	0.32	1.37	0.06	0.00	0.06
43.00	0.44	0.32	1.37	0.06	0.00	0.06
43.05	0.44	0.32	1.37	0.06	0.00	0.06
43.10	0.44	0.32	1.37	0.06	0.00	0.06
43.15	0.44	0.32	1.37	0.06	0.00	0.06
43.20	0.44	0.32	1.37	0.05	0.00	0.05
43.25	0.44	0.32	1.37	0.05	0.00	0.05
43.30	0.44	0.32	1.37	0.05	0.00	0.05
43.35	0.44	0.32	1.37	0.05	0.00	0.05
43.40	0.44	0.32	1.37	0.05	0.00	0.05
43.45	0.44	0.32	1.37	0.05	0.00	0.05
43.50	0.44	0.32	1.37	0.05	0.00	0.05

43.55	0.44	0.32	1.37	0.04	0.00	0.04
43.60	0.44	0.32	1.37	0.04	0.00	0.04
43.65	0.44	0.32	1.37	0.04	0.00	0.04
43.70	0.44	0.32	1.37	0.04	0.00	0.04
43.75	0.44	0.32	1.37	0.04	0.00	0.04
43.80	0.44	0.32	1.37	0.04	0.00	0.04
43.85	0.44	0.32	1.37	0.04	0.00	0.04
43.90	0.44	0.32	1.37	0.03	0.00	0.03
43.95	0.44	0.32	1.37	0.03	0.00	0.03
44.00	0.44	0.32	1.37	0.03	0.00	0.03
44.05	0.44	0.32	1.37	0.03	0.00	0.03
44.10	0.44	0.32	1.37	0.03	0.00	0.03
44.15	0.44	0.32	1.37	0.03	0.00	0.03
44.20	0.44	0.32	1.37	0.02	0.00	0.02
44.25	0.44	0.32	1.37	0.02	0.00	0.02
44.30	0.43	0.32	1.37	0.02	0.00	0.02
44.35	0.43	0.32	1.37	0.02	0.00	0.02
44.40	0.43	0.32	1.37	0.02	0.00	0.02
44.45	0.43	0.32	1.37	0.02	0.00	0.02
44.50	0.43	0.32	1.37	0.02	0.00	0.02
44.55	0.43	0.32	1.37	0.01	0.00	0.01
44.60	0.43	0.32	1.37	0.01	0.00	0.01
44.65	0.43	0.32	1.37	0.01	0.00	0.01
44.70	0.43	0.32	1.37	0.01	0.00	0.01
44.75	0.43	0.32	1.37	0.01	0.00	0.01
44.80	0.43	0.32	1.37	0.01	0.00	0.01
44.85	0.43	0.32	1.37	0.01	0.00	0.01
44.90	0.43	0.32	1.37	0.00	0.00	0.00
44.95	0.43	0.32	1.37	0.00	0.00	0.00
45.00	0.43	0.31	1.37	0.00	0.00	0.00
45.05	0.83	0.31	2.64	0.00	0.00	0.00
45.10	0.83	0.31	2.64	0.00	0.00	0.00
45.15	0.83	0.31	2.64	0.00	0.00	0.00
45.20	0.83	0.31	2.64	0.00	0.00	0.00
45.25	0.83	0.31	2.64	0.00	0.00	0.00
45.30	0.83	0.31	2.65	0.00	0.00	0.00
45.35	0.83	0.31	2.65	0.00	0.00	0.00
45.40	0.83	0.31	2.65	0.00	0.00	0.00
45.45	0.83	0.31	2.65	0.00	0.00	0.00
45.50	0.83	0.31	2.65	0.00	0.00	0.00
45.55	0.83	0.31	2.65	0.00	0.00	0.00
45.60	0.83	0.31	2.65	0.00	0.00	0.00
45.65	0.83	0.31	2.65	0.00	0.00	0.00
45.70	0.83	0.31	2.66	0.00	0.00	0.00
45.75	0.83	0.31	2.66	0.00	0.00	0.00
45.80	0.83	0.31	2.66	0.00	0.00	0.00
45.85	0.83	0.31	2.66	0.00	0.00	0.00
45.90	0.83	0.31	2.66	0.00	0.00	0.00
45.95	0.83	0.31	2.66	0.00	0.00	0.00
46.00	0.83	0.31	2.66	0.00	0.00	0.00
46.05	0.83	0.31	2.66	0.00	0.00	0.00
46.10	0.83	0.31	2.67	0.00	0.00	0.00
46.15	0.83	0.31	2.67	0.00	0.00	0.00
46.20	0.83	0.31	2.67	0.00	0.00	0.00
46.25	0.83	0.31	2.67	0.00	0.00	0.00
46.30	0.83	0.31	2.67	0.00	0.00	0.00
46.35	0.83	0.31	2.67	0.00	0.00	0.00
46.40	0.83	0.31	2.67	0.00	0.00	0.00
46.45	0.83	0.31	2.67	0.00	0.00	0.00
46.50	0.83	0.31	2.68	0.00	0.00	0.00
46.55	0.83	0.31	2.68	0.00	0.00	0.00
46.60	0.83	0.31	2.68	0.00	0.00	0.00
46.65	0.83	0.31	2.68	0.00	0.00	0.00
46.70	0.83	0.31	2.68	0.00	0.00	0.00
46.75	0.83	0.31	2.68	0.00	0.00	0.00
46.80	0.83	0.31	2.68	0.00	0.00	0.00
46.85	0.83	0.31	2.68	0.00	0.00	0.00
46.90	0.83	0.31	2.69	0.00	0.00	0.00
46.95	0.83	0.31	2.69	0.00	0.00	0.00
47.00	0.83	0.31	2.69	0.00	0.00	0.00
47.05	0.83	0.31	2.69	0.00	0.00	0.00

47.10	0.83	0.31	2.69	0.00	0.00	0.00
47.15	0.83	0.31	2.69	0.00	0.00	0.00
47.20	0.83	0.31	2.69	0.00	0.00	0.00
47.25	0.83	0.31	2.69	0.00	0.00	0.00
47.30	0.83	0.31	2.70	0.00	0.00	0.00
47.35	0.83	0.31	2.70	0.00	0.00	0.00
47.40	0.83	0.31	2.70	0.00	0.00	0.00
47.45	0.83	0.31	2.70	0.00	0.00	0.00
47.50	0.83	0.31	2.70	0.00	0.00	0.00
47.55	0.83	0.31	2.70	0.00	0.00	0.00
47.60	0.83	0.31	2.70	0.00	0.00	0.00
47.65	0.83	0.31	2.70	0.00	0.00	0.00
47.70	0.83	0.31	2.71	0.00	0.00	0.00
47.75	0.83	0.31	2.71	0.00	0.00	0.00
47.80	0.83	0.31	2.71	0.00	0.00	0.00
47.85	0.83	0.31	2.71	0.00	0.00	0.00
47.90	0.83	0.31	2.71	0.00	0.00	0.00
47.95	0.83	0.31	2.71	0.00	0.00	0.00
48.00	0.83	0.31	2.71	0.00	0.00	0.00
48.05	0.83	0.31	2.71	0.00	0.00	0.00
48.10	0.83	0.31	2.72	0.00	0.00	0.00
48.15	0.83	0.31	2.72	0.00	0.00	0.00
48.20	0.83	0.31	2.72	0.00	0.00	0.00
48.25	0.83	0.31	2.72	0.00	0.00	0.00
48.30	0.83	0.31	2.72	0.00	0.00	0.00
48.35	0.83	0.31	2.72	0.00	0.00	0.00
48.40	0.83	0.30	2.72	0.00	0.00	0.00
48.45	0.83	0.30	2.73	0.00	0.00	0.00
48.50	0.83	0.30	2.73	0.00	0.00	0.00
48.55	0.83	0.30	2.73	0.00	0.00	0.00
48.60	0.83	0.30	2.73	0.00	0.00	0.00
48.65	0.83	0.30	2.73	0.00	0.00	0.00
48.70	0.83	0.30	2.73	0.00	0.00	0.00
48.75	0.83	0.30	2.73	0.00	0.00	0.00
48.80	0.83	0.30	2.73	0.00	0.00	0.00
48.85	0.83	0.30	2.74	0.00	0.00	0.00
48.90	0.83	0.30	2.74	0.00	0.00	0.00
48.95	0.83	0.30	2.74	0.00	0.00	0.00
49.00	0.83	0.30	2.74	0.00	0.00	0.00
49.05	0.83	0.30	2.74	0.00	0.00	0.00
49.10	0.83	0.30	2.74	0.00	0.00	0.00
49.15	0.83	0.30	2.74	0.00	0.00	0.00
49.20	0.83	0.30	2.74	0.00	0.00	0.00
49.25	0.83	0.30	2.75	0.00	0.00	0.00
49.30	0.83	0.30	2.75	0.00	0.00	0.00
49.35	0.83	0.30	2.75	0.00	0.00	0.00
49.40	0.83	0.30	2.75	0.00	0.00	0.00
49.45	0.83	0.30	2.75	0.00	0.00	0.00
49.50	0.83	0.30	2.75	0.00	0.00	0.00
49.55	0.83	0.30	2.75	0.00	0.00	0.00
49.60	0.83	0.30	2.76	0.00	0.00	0.00
49.65	0.83	0.30	2.76	0.00	0.00	0.00
49.70	0.83	0.30	2.76	0.00	0.00	0.00
49.75	0.83	0.30	2.76	0.00	0.00	0.00
49.80	0.83	0.30	2.76	0.00	0.00	0.00
49.85	0.83	0.30	2.76	0.00	0.00	0.00
49.90	0.83	0.30	2.76	0.00	0.00	0.00
49.95	0.83	0.30	2.76	0.00	0.00	0.00
50.00	0.83	0.30	2.77	0.00	0.00	0.00

---

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

---

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands

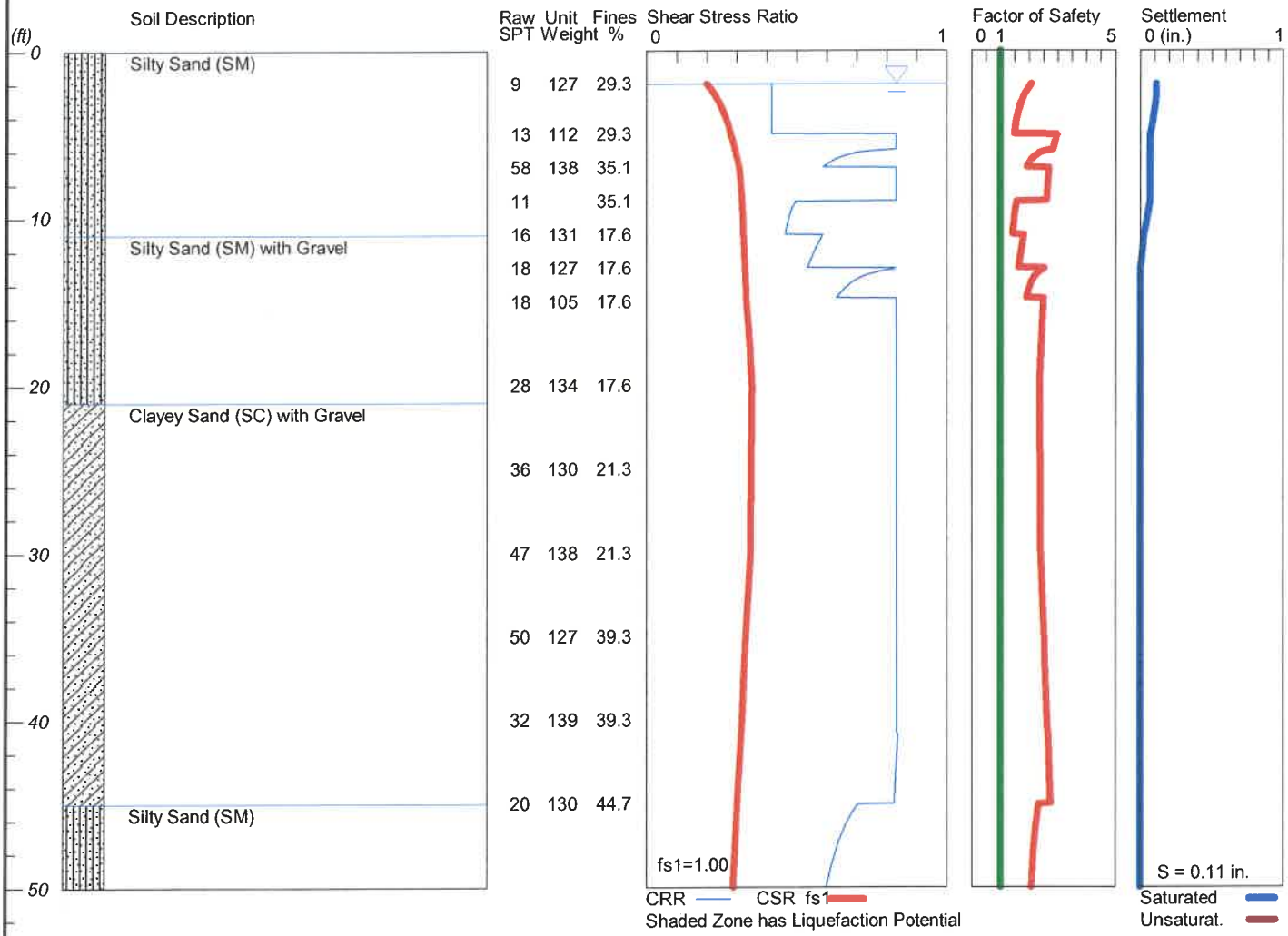
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Triangle Development

Hole No.=B13 Water Depth=2 ft

Magnitude=6.15
Acceleration=0.307g



LiquefyPro CivilTech Software USA www.civiltech.com

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*****************************************************************************************************
                                    LIQUEFACTION ANALYSIS SUMMARY
                                  Copyright by CivilTech Software
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*****************************************************************************************************
      Font: Courier New, Regular, Size 8 is recommended for this report.
      Licensed to ,   8/8/2023        12:06:47 PM

      Input File Name: C:\Users\mweber\Documents\Krazan\Projects\012\22\165 Triangle Development\B13\B13
Liquefaction.liq
      Title:  Triangle Development
      Subtitle:  012-22165

      Surface Elev.=
      Hole No.=B13
      Depth of Hole= 50.00 ft
      Water Table during Earthquake= 2.00 ft
      Water Table during In-Situ Testing= 9.50 ft
      Max. Acceleration= 0.31 g
      Earthquake Magnitude= 6.15

 Input Data:
      Surface Elev.=
      Hole No.=B13
      Depth of Hole=50.00 ft
      Water Table during Earthquake= 2.00 ft
      Water Table during In-Situ Testing= 9.50 ft
      Max. Acceleration=0.31 g
      Earthquake Magnitude=6.15
      No-Liquefiable Soils:   CL, OL are Non-Liq. Soil

      1. SPT or BPT Calculation.
      2. Settlement Analysis Method: Ishihara / Yoshimine
      3. Fines Correction for Liquefaction: Stark/Olson et al.*
      4. Fine Correction for Settlement: During Liquefaction*
      5. Settlement Calculation in: All zones*
      6. Hammer Energy Ratio,                                    Ce = 1.4
      7. Borehole Diameter,                                          Cb= 1.05
      8. Sampling Method,                                           Cs= 1
      9. User request factor of safety (apply to CSR) ,   User= 1
         Plot one CSR curve (fs1=User)
      10. Use Curve Smoothing: No
      * Recommended Options

      In-Situ Test Data:
      Depth   SPT     gamma   Fines
      ft              pcf     %
      ____________________________________
      2.00    9.00    127.00  29.30
      5.00    13.00   112.00  29.30
      7.00    58.00   138.00  35.10
      9.00    11.00   138.00  35.10
      11.00   16.00   131.00  17.60
      13.00   18.00   127.00  17.60
      15.00   18.00   105.00  17.60
      20.00   28.00   134.00  17.60
      25.00   36.00   130.00  21.30
      30.00   47.00   138.00  21.30
      35.00   50.00   127.00  39.30
      40.00   32.00   139.00  39.30
      45.00   20.00   130.00  44.70
      ____________________________________

Output Results:
      Settlement of Saturated Sands=0.11 in.
      Settlement of Unsaturated Sands=0.00 in.
      Total Settlement of Saturated and Unsaturated Sands=0.11 in.
      Differential Settlement=0.056 to 0.073 in.

      Depth   CRRm    CSRfs   F.S.    S_sat.  S_dry   S_all
      ft                              in.     in.     in.
```

2.00	0.41	0.20	2.08	0.11	0.00	0.11
2.05	0.41	0.20	2.06	0.11	0.00	0.11
2.10	0.41	0.20	2.04	0.11	0.00	0.11
2.15	0.41	0.21	2.01	0.11	0.00	0.11
2.20	0.41	0.21	1.99	0.11	0.00	0.11
2.25	0.41	0.21	1.97	0.11	0.00	0.11
2.30	0.41	0.21	1.95	0.11	0.00	0.11
2.35	0.41	0.21	1.93	0.11	0.00	0.11
2.40	0.41	0.22	1.92	0.11	0.00	0.11
2.45	0.41	0.22	1.90	0.11	0.00	0.11
2.50	0.41	0.22	1.88	0.11	0.00	0.11
2.55	0.41	0.22	1.87	0.11	0.00	0.11
2.60	0.41	0.22	1.85	0.11	0.00	0.11
2.65	0.41	0.23	1.84	0.11	0.00	0.11
2.70	0.41	0.23	1.82	0.11	0.00	0.11
2.75	0.41	0.23	1.81	0.11	0.00	0.11
2.80	0.41	0.23	1.79	0.11	0.00	0.11
2.85	0.41	0.23	1.78	0.11	0.00	0.11
2.90	0.41	0.23	1.77	0.11	0.00	0.11
2.95	0.41	0.24	1.76	0.11	0.00	0.11
3.00	0.41	0.24	1.75	0.11	0.00	0.11
3.05	0.41	0.24	1.74	0.11	0.00	0.11
3.10	0.41	0.24	1.73	0.10	0.00	0.10
3.15	0.41	0.24	1.71	0.10	0.00	0.10
3.20	0.41	0.24	1.70	0.10	0.00	0.10
3.25	0.41	0.24	1.70	0.10	0.00	0.10
3.30	0.41	0.25	1.69	0.10	0.00	0.10
3.35	0.41	0.25	1.68	0.10	0.00	0.10
3.40	0.41	0.25	1.67	0.10	0.00	0.10
3.45	0.41	0.25	1.66	0.10	0.00	0.10
3.50	0.41	0.25	1.65	0.10	0.00	0.10
3.55	0.41	0.25	1.64	0.10	0.00	0.10
3.60	0.41	0.25	1.63	0.10	0.00	0.10
3.65	0.41	0.25	1.63	0.10	0.00	0.10
3.70	0.41	0.26	1.62	0.10	0.00	0.10
3.75	0.41	0.26	1.61	0.09	0.00	0.09
3.80	0.41	0.26	1.61	0.09	0.00	0.09
3.85	0.41	0.26	1.60	0.09	0.00	0.09
3.90	0.41	0.26	1.59	0.09	0.00	0.09
3.95	0.41	0.26	1.59	0.09	0.00	0.09
4.00	0.41	0.26	1.58	0.09	0.00	0.09
4.05	0.41	0.26	1.57	0.09	0.00	0.09
4.10	0.41	0.26	1.57	0.09	0.00	0.09
4.15	0.41	0.27	1.56	0.09	0.00	0.09
4.20	0.41	0.27	1.56	0.09	0.00	0.09
4.25	0.41	0.27	1.55	0.08	0.00	0.08
4.30	0.41	0.27	1.54	0.08	0.00	0.08
4.35	0.41	0.27	1.54	0.08	0.00	0.08
4.40	0.41	0.27	1.53	0.08	0.00	0.08
4.45	0.41	0.27	1.53	0.08	0.00	0.08
4.50	0.41	0.27	1.52	0.08	0.00	0.08
4.55	0.41	0.27	1.52	0.08	0.00	0.08
4.60	0.41	0.27	1.51	0.08	0.00	0.08
4.65	0.41	0.27	1.51	0.08	0.00	0.08
4.70	0.41	0.27	1.51	0.07	0.00	0.07
4.75	0.41	0.28	1.50	0.07	0.00	0.07
4.80	0.41	0.28	1.50	0.07	0.00	0.07
4.85	0.41	0.28	1.49	0.07	0.00	0.07
4.90	0.41	0.28	1.49	0.07	0.00	0.07
4.95	0.41	0.28	1.48	0.07	0.00	0.07
5.00	0.83	0.28	2.97	0.07	0.00	0.07
5.05	0.83	0.28	2.96	0.07	0.00	0.07
5.10	0.83	0.28	2.95	0.07	0.00	0.07
5.15	0.83	0.28	2.94	0.07	0.00	0.07
5.20	0.83	0.28	2.93	0.07	0.00	0.07
5.25	0.83	0.28	2.93	0.07	0.00	0.07
5.30	0.83	0.28	2.92	0.07	0.00	0.07
5.35	0.83	0.29	2.91	0.07	0.00	0.07
5.40	0.83	0.29	2.90	0.07	0.00	0.07
5.45	0.83	0.29	2.89	0.07	0.00	0.07

5.50	0.83	0.29	2.88	0.07	0.00	0.07
5.55	0.83	0.29	2.88	0.07	0.00	0.07
5.60	0.83	0.29	2.87	0.07	0.00	0.07
5.65	0.83	0.29	2.86	0.07	0.00	0.07
5.70	0.83	0.29	2.85	0.07	0.00	0.07
5.75	0.83	0.29	2.85	0.07	0.00	0.07
5.80	0.83	0.29	2.84	0.07	0.00	0.07
5.85	0.83	0.29	2.83	0.07	0.00	0.07
5.90	0.83	0.29	2.82	0.07	0.00	0.07
5.95	0.78	0.29	2.65	0.07	0.00	0.07
6.00	0.75	0.30	2.53	0.07	0.00	0.07
6.05	0.72	0.30	2.44	0.07	0.00	0.07
6.10	0.70	0.30	2.37	0.07	0.00	0.07
6.15	0.69	0.30	2.32	0.07	0.00	0.07
6.20	0.68	0.30	2.27	0.07	0.00	0.07
6.25	0.67	0.30	2.23	0.07	0.00	0.07
6.30	0.66	0.30	2.20	0.07	0.00	0.07
6.35	0.65	0.30	2.16	0.07	0.00	0.07
6.40	0.64	0.30	2.13	0.07	0.00	0.07
6.45	0.64	0.30	2.11	0.07	0.00	0.07
6.50	0.63	0.30	2.08	0.07	0.00	0.07
6.55	0.62	0.30	2.06	0.07	0.00	0.07
6.60	0.62	0.30	2.04	0.07	0.00	0.07
6.65	0.61	0.30	2.02	0.07	0.00	0.07
6.70	0.61	0.30	2.00	0.07	0.00	0.07
6.75	0.60	0.31	1.98	0.07	0.00	0.07
6.80	0.60	0.31	1.96	0.07	0.00	0.07
6.85	0.60	0.31	1.95	0.07	0.00	0.07
6.90	0.59	0.31	1.93	0.07	0.00	0.07
6.95	0.59	0.31	1.91	0.07	0.00	0.07
7.00	0.83	0.31	2.69	0.07	0.00	0.07
7.05	0.83	0.31	2.69	0.07	0.00	0.07
7.10	0.83	0.31	2.69	0.07	0.00	0.07
7.15	0.83	0.31	2.69	0.07	0.00	0.07
7.20	0.83	0.31	2.68	0.07	0.00	0.07
7.25	0.83	0.31	2.68	0.07	0.00	0.07
7.30	0.83	0.31	2.68	0.07	0.00	0.07
7.35	0.83	0.31	2.68	0.07	0.00	0.07
7.40	0.83	0.31	2.67	0.07	0.00	0.07
7.45	0.83	0.31	2.67	0.07	0.00	0.07
7.50	0.83	0.31	2.67	0.07	0.00	0.07
7.55	0.83	0.31	2.67	0.07	0.00	0.07
7.60	0.83	0.31	2.67	0.07	0.00	0.07
7.65	0.83	0.31	2.66	0.07	0.00	0.07
7.70	0.83	0.31	2.66	0.07	0.00	0.07
7.75	0.83	0.31	2.66	0.07	0.00	0.07
7.80	0.83	0.31	2.66	0.07	0.00	0.07
7.85	0.83	0.31	2.65	0.07	0.00	0.07
7.90	0.83	0.31	2.65	0.07	0.00	0.07
7.95	0.83	0.31	2.65	0.07	0.00	0.07
8.00	0.83	0.31	2.65	0.07	0.00	0.07
8.05	0.83	0.31	2.65	0.07	0.00	0.07
8.10	0.83	0.31	2.65	0.07	0.00	0.07
8.15	0.83	0.31	2.64	0.07	0.00	0.07
8.20	0.83	0.31	2.64	0.07	0.00	0.07
8.25	0.83	0.31	2.64	0.07	0.00	0.07
8.30	0.83	0.31	2.64	0.07	0.00	0.07
8.35	0.83	0.32	2.64	0.07	0.00	0.07
8.40	0.83	0.32	2.63	0.07	0.00	0.07
8.45	0.83	0.32	2.63	0.07	0.00	0.07
8.50	0.83	0.32	2.63	0.07	0.00	0.07
8.55	0.83	0.32	2.63	0.07	0.00	0.07
8.60	0.83	0.32	2.63	0.07	0.00	0.07
8.65	0.83	0.32	2.63	0.07	0.00	0.07
8.70	0.83	0.32	2.62	0.07	0.00	0.07
8.75	0.83	0.32	2.62	0.07	0.00	0.07
8.80	0.83	0.32	2.62	0.07	0.00	0.07
8.85	0.83	0.32	2.62	0.07	0.00	0.07
8.90	0.83	0.32	2.62	0.07	0.00	0.07
8.95	0.83	0.32	2.62	0.07	0.00	0.07
9.00	0.50	0.32	1.57	0.07	0.00	0.07

9.05	0.50	0.32	1.56	0.07	0.00	0.07
9.10	0.49	0.32	1.55	0.07	0.00	0.07
9.15	0.49	0.32	1.55	0.06	0.00	0.06
9.20	0.49	0.32	1.54	0.06	0.00	0.06
9.25	0.49	0.32	1.54	0.06	0.00	0.06
9.30	0.49	0.32	1.53	0.06	0.00	0.06
9.35	0.49	0.32	1.52	0.06	0.00	0.06
9.40	0.48	0.32	1.52	0.06	0.00	0.06
9.45	0.48	0.32	1.51	0.06	0.00	0.06
9.50	0.48	0.32	1.51	0.06	0.00	0.06
9.55	0.48	0.32	1.50	0.06	0.00	0.06
9.60	0.48	0.32	1.50	0.06	0.00	0.06
9.65	0.48	0.32	1.50	0.05	0.00	0.05
9.70	0.48	0.32	1.49	0.05	0.00	0.05
9.75	0.48	0.32	1.49	0.05	0.00	0.05
9.80	0.48	0.32	1.49	0.05	0.00	0.05
9.85	0.48	0.32	1.49	0.05	0.00	0.05
9.90	0.47	0.32	1.48	0.05	0.00	0.05
9.95	0.47	0.32	1.48	0.05	0.00	0.05
10.00	0.47	0.32	1.48	0.05	0.00	0.05
10.05	0.47	0.32	1.47	0.05	0.00	0.05
10.10	0.47	0.32	1.47	0.04	0.00	0.04
10.15	0.47	0.32	1.47	0.04	0.00	0.04
10.20	0.47	0.32	1.47	0.04	0.00	0.04
10.25	0.47	0.32	1.46	0.04	0.00	0.04
10.30	0.47	0.32	1.46	0.04	0.00	0.04
10.35	0.47	0.32	1.46	0.04	0.00	0.04
10.40	0.47	0.32	1.45	0.04	0.00	0.04
10.45	0.47	0.32	1.45	0.04	0.00	0.04
10.50	0.47	0.32	1.45	0.04	0.00	0.04
10.55	0.47	0.32	1.45	0.03	0.00	0.03
10.60	0.46	0.32	1.44	0.03	0.00	0.03
10.65	0.46	0.32	1.44	0.03	0.00	0.03
10.70	0.46	0.32	1.44	0.03	0.00	0.03
10.75	0.46	0.32	1.44	0.03	0.00	0.03
10.80	0.46	0.32	1.43	0.03	0.00	0.03
10.85	0.46	0.32	1.43	0.03	0.00	0.03
10.90	0.46	0.32	1.43	0.03	0.00	0.03
10.95	0.46	0.32	1.43	0.02	0.00	0.02
11.00	0.59	0.32	1.82	0.02	0.00	0.02
11.05	0.59	0.32	1.81	0.02	0.00	0.02
11.10	0.58	0.32	1.80	0.02	0.00	0.02
11.15	0.58	0.32	1.80	0.02	0.00	0.02
11.20	0.58	0.32	1.79	0.02	0.00	0.02
11.25	0.58	0.32	1.79	0.02	0.00	0.02
11.30	0.58	0.32	1.78	0.02	0.00	0.02
11.35	0.58	0.32	1.78	0.02	0.00	0.02
11.40	0.57	0.32	1.77	0.02	0.00	0.02
11.45	0.57	0.32	1.77	0.02	0.00	0.02
11.50	0.57	0.32	1.76	0.02	0.00	0.02
11.55	0.57	0.32	1.76	0.02	0.00	0.02
11.60	0.57	0.32	1.75	0.02	0.00	0.02
11.65	0.57	0.32	1.75	0.02	0.00	0.02
11.70	0.57	0.33	1.74	0.02	0.00	0.02
11.75	0.56	0.33	1.74	0.02	0.00	0.02
11.80	0.56	0.33	1.73	0.02	0.00	0.02
11.85	0.56	0.33	1.73	0.02	0.00	0.02
11.90	0.56	0.33	1.72	0.02	0.00	0.02
11.95	0.56	0.33	1.72	0.01	0.00	0.01
12.00	0.56	0.33	1.71	0.01	0.00	0.01
12.05	0.56	0.33	1.71	0.01	0.00	0.01
12.10	0.56	0.33	1.70	0.01	0.00	0.01
12.15	0.55	0.33	1.70	0.01	0.00	0.01
12.20	0.55	0.33	1.70	0.01	0.00	0.01
12.25	0.55	0.33	1.69	0.01	0.00	0.01
12.30	0.55	0.33	1.69	0.01	0.00	0.01
12.35	0.55	0.33	1.68	0.01	0.00	0.01
12.40	0.55	0.33	1.68	0.01	0.00	0.01
12.45	0.55	0.33	1.68	0.01	0.00	0.01
12.50	0.55	0.33	1.67	0.01	0.00	0.01
12.55	0.55	0.33	1.67	0.01	0.00	0.01

12.60	0.54	0.33	1.66	0.01	0.00	0.01
12.65	0.54	0.33	1.66	0.01	0.00	0.01
12.70	0.54	0.33	1.66	0.01	0.00	0.01
12.75	0.54	0.33	1.65	0.00	0.00	0.00
12.80	0.54	0.33	1.65	0.00	0.00	0.00
12.85	0.54	0.33	1.64	0.00	0.00	0.00
12.90	0.54	0.33	1.64	0.00	0.00	0.00
12.95	0.54	0.33	1.64	0.00	0.00	0.00
13.00	0.83	0.33	2.53	0.00	0.00	0.00
13.05	0.82	0.33	2.51	0.00	0.00	0.00
13.10	0.81	0.33	2.45	0.00	0.00	0.00
13.15	0.79	0.33	2.40	0.00	0.00	0.00
13.20	0.78	0.33	2.36	0.00	0.00	0.00
13.25	0.76	0.33	2.32	0.00	0.00	0.00
13.30	0.75	0.33	2.29	0.00	0.00	0.00
13.35	0.74	0.33	2.26	0.00	0.00	0.00
13.40	0.73	0.33	2.23	0.00	0.00	0.00
13.45	0.73	0.33	2.21	0.00	0.00	0.00
13.50	0.72	0.33	2.19	0.00	0.00	0.00
13.55	0.71	0.33	2.17	0.00	0.00	0.00
13.60	0.71	0.33	2.15	0.00	0.00	0.00
13.65	0.70	0.33	2.13	0.00	0.00	0.00
13.70	0.70	0.33	2.11	0.00	0.00	0.00
13.75	0.69	0.33	2.10	0.00	0.00	0.00
13.80	0.69	0.33	2.09	0.00	0.00	0.00
13.85	0.68	0.33	2.07	0.00	0.00	0.00
13.90	0.68	0.33	2.06	0.00	0.00	0.00
13.95	0.68	0.33	2.05	0.00	0.00	0.00
14.00	0.67	0.33	2.04	0.00	0.00	0.00
14.05	0.67	0.33	2.03	0.00	0.00	0.00
14.10	0.67	0.33	2.01	0.00	0.00	0.00
14.15	0.66	0.33	2.00	0.00	0.00	0.00
14.20	0.66	0.33	2.00	0.00	0.00	0.00
14.25	0.66	0.33	1.99	0.00	0.00	0.00
14.30	0.65	0.33	1.98	0.00	0.00	0.00
14.35	0.65	0.33	1.97	0.00	0.00	0.00
14.40	0.65	0.33	1.96	0.00	0.00	0.00
14.45	0.65	0.33	1.95	0.00	0.00	0.00
14.50	0.64	0.33	1.94	0.00	0.00	0.00
14.55	0.64	0.33	1.94	0.00	0.00	0.00
14.60	0.64	0.33	1.93	0.00	0.00	0.00
14.65	0.64	0.33	1.92	0.00	0.00	0.00
14.70	0.64	0.33	1.92	0.00	0.00	0.00
14.75	0.63	0.33	1.91	0.00	0.00	0.00
14.80	0.83	0.33	2.50	0.00	0.00	0.00
14.85	0.83	0.33	2.50	0.00	0.00	0.00
14.90	0.83	0.33	2.50	0.00	0.00	0.00
14.95	0.83	0.33	2.50	0.00	0.00	0.00
15.00	0.83	0.33	2.50	0.00	0.00	0.00
15.05	0.83	0.33	2.50	0.00	0.00	0.00
15.10	0.83	0.33	2.49	0.00	0.00	0.00
15.15	0.83	0.33	2.49	0.00	0.00	0.00
15.20	0.83	0.33	2.49	0.00	0.00	0.00
15.25	0.83	0.33	2.49	0.00	0.00	0.00
15.30	0.83	0.33	2.49	0.00	0.00	0.00
15.35	0.83	0.33	2.49	0.00	0.00	0.00
15.40	0.83	0.33	2.48	0.00	0.00	0.00
15.45	0.83	0.33	2.48	0.00	0.00	0.00
15.50	0.83	0.33	2.48	0.00	0.00	0.00
15.55	0.83	0.34	2.48	0.00	0.00	0.00
15.60	0.83	0.34	2.48	0.00	0.00	0.00
15.65	0.83	0.34	2.48	0.00	0.00	0.00
15.70	0.83	0.34	2.47	0.00	0.00	0.00
15.75	0.83	0.34	2.47	0.00	0.00	0.00
15.80	0.83	0.34	2.47	0.00	0.00	0.00
15.85	0.83	0.34	2.47	0.00	0.00	0.00
15.90	0.83	0.34	2.47	0.00	0.00	0.00
15.95	0.83	0.34	2.47	0.00	0.00	0.00
16.00	0.83	0.34	2.47	0.00	0.00	0.00
16.05	0.83	0.34	2.46	0.00	0.00	0.00
16.10	0.83	0.34	2.46	0.00	0.00	0.00

16.15	0.83	0.34	2.46	0.00	0.00	0.00
16.20	0.83	0.34	2.46	0.00	0.00	0.00
16.25	0.83	0.34	2.46	0.00	0.00	0.00
16.30	0.83	0.34	2.46	0.00	0.00	0.00
16.35	0.83	0.34	2.45	0.00	0.00	0.00
16.40	0.83	0.34	2.45	0.00	0.00	0.00
16.45	0.83	0.34	2.45	0.00	0.00	0.00
16.50	0.83	0.34	2.45	0.00	0.00	0.00
16.55	0.83	0.34	2.45	0.00	0.00	0.00
16.60	0.83	0.34	2.45	0.00	0.00	0.00
16.65	0.83	0.34	2.45	0.00	0.00	0.00
16.70	0.83	0.34	2.44	0.00	0.00	0.00
16.75	0.83	0.34	2.44	0.00	0.00	0.00
16.80	0.83	0.34	2.44	0.00	0.00	0.00
16.85	0.83	0.34	2.44	0.00	0.00	0.00
16.90	0.83	0.34	2.44	0.00	0.00	0.00
16.95	0.83	0.34	2.44	0.00	0.00	0.00
17.00	0.83	0.34	2.44	0.00	0.00	0.00
17.05	0.83	0.34	2.43	0.00	0.00	0.00
17.10	0.83	0.34	2.43	0.00	0.00	0.00
17.15	0.83	0.34	2.43	0.00	0.00	0.00
17.20	0.83	0.34	2.43	0.00	0.00	0.00
17.25	0.83	0.34	2.43	0.00	0.00	0.00
17.30	0.83	0.34	2.43	0.00	0.00	0.00
17.35	0.83	0.34	2.43	0.00	0.00	0.00
17.40	0.83	0.34	2.43	0.00	0.00	0.00
17.45	0.83	0.34	2.42	0.00	0.00	0.00
17.50	0.83	0.34	2.42	0.00	0.00	0.00
17.55	0.83	0.34	2.42	0.00	0.00	0.00
17.60	0.83	0.34	2.42	0.00	0.00	0.00
17.65	0.83	0.34	2.42	0.00	0.00	0.00
17.70	0.83	0.34	2.42	0.00	0.00	0.00
17.75	0.83	0.34	2.42	0.00	0.00	0.00
17.80	0.83	0.34	2.42	0.00	0.00	0.00
17.85	0.83	0.34	2.41	0.00	0.00	0.00
17.90	0.83	0.34	2.41	0.00	0.00	0.00
17.95	0.83	0.34	2.41	0.00	0.00	0.00
18.00	0.83	0.34	2.41	0.00	0.00	0.00
18.05	0.83	0.34	2.41	0.00	0.00	0.00
18.10	0.83	0.35	2.41	0.00	0.00	0.00
18.15	0.83	0.35	2.41	0.00	0.00	0.00
18.20	0.83	0.35	2.41	0.00	0.00	0.00
18.25	0.83	0.35	2.40	0.00	0.00	0.00
18.30	0.83	0.35	2.40	0.00	0.00	0.00
18.35	0.83	0.35	2.40	0.00	0.00	0.00
18.40	0.83	0.35	2.40	0.00	0.00	0.00
18.45	0.83	0.35	2.40	0.00	0.00	0.00
18.50	0.83	0.35	2.40	0.00	0.00	0.00
18.55	0.83	0.35	2.40	0.00	0.00	0.00
18.60	0.83	0.35	2.40	0.00	0.00	0.00
18.65	0.83	0.35	2.39	0.00	0.00	0.00
18.70	0.83	0.35	2.39	0.00	0.00	0.00
18.75	0.83	0.35	2.39	0.00	0.00	0.00
18.80	0.83	0.35	2.39	0.00	0.00	0.00
18.85	0.83	0.35	2.39	0.00	0.00	0.00
18.90	0.83	0.35	2.39	0.00	0.00	0.00
18.95	0.83	0.35	2.39	0.00	0.00	0.00
19.00	0.83	0.35	2.39	0.00	0.00	0.00
19.05	0.83	0.35	2.39	0.00	0.00	0.00
19.10	0.83	0.35	2.38	0.00	0.00	0.00
19.15	0.83	0.35	2.38	0.00	0.00	0.00
19.20	0.83	0.35	2.38	0.00	0.00	0.00
19.25	0.83	0.35	2.38	0.00	0.00	0.00
19.30	0.83	0.35	2.38	0.00	0.00	0.00
19.35	0.83	0.35	2.38	0.00	0.00	0.00
19.40	0.83	0.35	2.38	0.00	0.00	0.00
19.45	0.83	0.35	2.38	0.00	0.00	0.00
19.50	0.83	0.35	2.38	0.00	0.00	0.00
19.55	0.83	0.35	2.38	0.00	0.00	0.00
19.60	0.83	0.35	2.37	0.00	0.00	0.00
19.65	0.83	0.35	2.37	0.00	0.00	0.00

19.70	0.83	0.35	2.37	0.00	0.00	0.00
19.75	0.83	0.35	2.37	0.00	0.00	0.00
19.80	0.83	0.35	2.37	0.00	0.00	0.00
19.85	0.83	0.35	2.37	0.00	0.00	0.00
19.90	0.83	0.35	2.37	0.00	0.00	0.00
19.95	0.83	0.35	2.37	0.00	0.00	0.00
20.00	0.83	0.35	2.37	0.00	0.00	0.00
20.05	0.83	0.35	2.37	0.00	0.00	0.00
20.10	0.83	0.35	2.37	0.00	0.00	0.00
20.15	0.83	0.35	2.37	0.00	0.00	0.00
20.20	0.83	0.35	2.37	0.00	0.00	0.00
20.25	0.83	0.35	2.37	0.00	0.00	0.00
20.30	0.83	0.35	2.37	0.00	0.00	0.00
20.35	0.83	0.35	2.37	0.00	0.00	0.00
20.40	0.83	0.35	2.37	0.00	0.00	0.00
20.45	0.83	0.35	2.37	0.00	0.00	0.00
20.50	0.83	0.35	2.37	0.00	0.00	0.00
20.55	0.83	0.35	2.37	0.00	0.00	0.00
20.60	0.83	0.35	2.37	0.00	0.00	0.00
20.65	0.83	0.35	2.37	0.00	0.00	0.00
20.70	0.83	0.35	2.37	0.00	0.00	0.00
20.75	0.83	0.35	2.37	0.00	0.00	0.00
20.80	0.83	0.35	2.37	0.00	0.00	0.00
20.85	0.83	0.35	2.37	0.00	0.00	0.00
20.90	0.83	0.35	2.37	0.00	0.00	0.00
20.95	0.83	0.35	2.37	0.00	0.00	0.00
21.00	0.83	0.35	2.37	0.00	0.00	0.00
21.05	0.83	0.35	2.37	0.00	0.00	0.00
21.10	0.83	0.35	2.37	0.00	0.00	0.00
21.15	0.83	0.35	2.37	0.00	0.00	0.00
21.20	0.83	0.35	2.37	0.00	0.00	0.00
21.25	0.83	0.35	2.37	0.00	0.00	0.00
21.30	0.83	0.35	2.37	0.00	0.00	0.00
21.35	0.83	0.35	2.37	0.00	0.00	0.00
21.40	0.83	0.35	2.37	0.00	0.00	0.00
21.45	0.83	0.35	2.37	0.00	0.00	0.00
21.50	0.83	0.35	2.37	0.00	0.00	0.00
21.55	0.83	0.35	2.37	0.00	0.00	0.00
21.60	0.83	0.35	2.37	0.00	0.00	0.00
21.65	0.83	0.35	2.37	0.00	0.00	0.00
21.70	0.83	0.35	2.37	0.00	0.00	0.00
21.75	0.83	0.35	2.37	0.00	0.00	0.00
21.80	0.83	0.35	2.37	0.00	0.00	0.00
21.85	0.83	0.35	2.37	0.00	0.00	0.00
21.90	0.83	0.35	2.37	0.00	0.00	0.00
21.95	0.83	0.35	2.37	0.00	0.00	0.00
22.00	0.83	0.35	2.37	0.00	0.00	0.00
22.05	0.83	0.35	2.37	0.00	0.00	0.00
22.10	0.83	0.35	2.37	0.00	0.00	0.00
22.15	0.83	0.35	2.37	0.00	0.00	0.00
22.20	0.83	0.35	2.37	0.00	0.00	0.00
22.25	0.83	0.35	2.37	0.00	0.00	0.00
22.30	0.83	0.35	2.37	0.00	0.00	0.00
22.35	0.83	0.35	2.38	0.00	0.00	0.00
22.40	0.83	0.35	2.38	0.00	0.00	0.00
22.45	0.83	0.35	2.38	0.00	0.00	0.00
22.50	0.83	0.35	2.38	0.00	0.00	0.00
22.55	0.83	0.35	2.38	0.00	0.00	0.00
22.60	0.83	0.35	2.38	0.00	0.00	0.00
22.65	0.83	0.35	2.38	0.00	0.00	0.00
22.70	0.83	0.35	2.38	0.00	0.00	0.00
22.75	0.83	0.35	2.38	0.00	0.00	0.00
22.80	0.83	0.35	2.38	0.00	0.00	0.00
22.85	0.83	0.35	2.38	0.00	0.00	0.00
22.90	0.83	0.35	2.38	0.00	0.00	0.00
22.95	0.83	0.35	2.38	0.00	0.00	0.00
23.00	0.83	0.35	2.38	0.00	0.00	0.00
23.05	0.83	0.35	2.38	0.00	0.00	0.00
23.10	0.83	0.35	2.38	0.00	0.00	0.00
23.15	0.83	0.35	2.38	0.00	0.00	0.00
23.20	0.83	0.35	2.38	0.00	0.00	0.00

23.25	0.83	0.35	2.38	0.00	0.00	0.00
23.30	0.83	0.35	2.38	0.00	0.00	0.00
23.35	0.83	0.35	2.38	0.00	0.00	0.00
23.40	0.83	0.35	2.38	0.00	0.00	0.00
23.45	0.83	0.35	2.38	0.00	0.00	0.00
23.50	0.83	0.35	2.38	0.00	0.00	0.00
23.55	0.83	0.35	2.38	0.00	0.00	0.00
23.60	0.83	0.35	2.38	0.00	0.00	0.00
23.65	0.83	0.35	2.38	0.00	0.00	0.00
23.70	0.83	0.35	2.38	0.00	0.00	0.00
23.75	0.83	0.35	2.38	0.00	0.00	0.00
23.80	0.83	0.35	2.38	0.00	0.00	0.00
23.85	0.83	0.35	2.38	0.00	0.00	0.00
23.90	0.83	0.35	2.38	0.00	0.00	0.00
23.95	0.83	0.35	2.38	0.00	0.00	0.00
24.00	0.83	0.35	2.38	0.00	0.00	0.00
24.05	0.83	0.35	2.38	0.00	0.00	0.00
24.10	0.83	0.35	2.38	0.00	0.00	0.00
24.15	0.83	0.35	2.38	0.00	0.00	0.00
24.20	0.83	0.35	2.38	0.00	0.00	0.00
24.25	0.83	0.35	2.38	0.00	0.00	0.00
24.30	0.83	0.35	2.38	0.00	0.00	0.00
24.35	0.83	0.35	2.38	0.00	0.00	0.00
24.40	0.83	0.35	2.38	0.00	0.00	0.00
24.45	0.83	0.35	2.38	0.00	0.00	0.00
24.50	0.83	0.35	2.39	0.00	0.00	0.00
24.55	0.83	0.35	2.39	0.00	0.00	0.00
24.60	0.83	0.35	2.39	0.00	0.00	0.00
24.65	0.83	0.35	2.39	0.00	0.00	0.00
24.70	0.83	0.35	2.39	0.00	0.00	0.00
24.75	0.83	0.35	2.39	0.00	0.00	0.00
24.80	0.83	0.35	2.39	0.00	0.00	0.00
24.85	0.83	0.35	2.39	0.00	0.00	0.00
24.90	0.83	0.35	2.39	0.00	0.00	0.00
24.95	0.83	0.35	2.39	0.00	0.00	0.00
25.00	0.83	0.35	2.39	0.00	0.00	0.00
25.05	0.83	0.35	2.39	0.00	0.00	0.00
25.10	0.83	0.35	2.39	0.00	0.00	0.00
25.15	0.83	0.35	2.39	0.00	0.00	0.00
25.20	0.83	0.35	2.39	0.00	0.00	0.00
25.25	0.83	0.35	2.39	0.00	0.00	0.00
25.30	0.83	0.35	2.39	0.00	0.00	0.00
25.35	0.83	0.35	2.39	0.00	0.00	0.00
25.40	0.83	0.35	2.39	0.00	0.00	0.00
25.45	0.83	0.35	2.39	0.00	0.00	0.00
25.50	0.83	0.35	2.39	0.00	0.00	0.00
25.55	0.83	0.35	2.39	0.00	0.00	0.00
25.60	0.83	0.35	2.39	0.00	0.00	0.00
25.65	0.83	0.35	2.39	0.00	0.00	0.00
25.70	0.83	0.35	2.39	0.00	0.00	0.00
25.75	0.83	0.35	2.39	0.00	0.00	0.00
25.80	0.83	0.35	2.39	0.00	0.00	0.00
25.85	0.83	0.35	2.39	0.00	0.00	0.00
25.90	0.83	0.35	2.39	0.00	0.00	0.00
25.95	0.83	0.35	2.39	0.00	0.00	0.00
26.00	0.83	0.35	2.39	0.00	0.00	0.00
26.05	0.83	0.35	2.39	0.00	0.00	0.00
26.10	0.83	0.35	2.39	0.00	0.00	0.00
26.15	0.83	0.35	2.39	0.00	0.00	0.00
26.20	0.83	0.35	2.39	0.00	0.00	0.00
26.25	0.83	0.35	2.39	0.00	0.00	0.00
26.30	0.83	0.35	2.39	0.00	0.00	0.00
26.35	0.83	0.35	2.39	0.00	0.00	0.00
26.40	0.83	0.35	2.39	0.00	0.00	0.00
26.45	0.83	0.35	2.39	0.00	0.00	0.00
26.50	0.83	0.35	2.39	0.00	0.00	0.00
26.55	0.83	0.35	2.39	0.00	0.00	0.00
26.60	0.83	0.35	2.39	0.00	0.00	0.00
26.65	0.83	0.35	2.39	0.00	0.00	0.00
26.70	0.83	0.35	2.39	0.00	0.00	0.00
26.75	0.83	0.35	2.39	0.00	0.00	0.00

26.80	0.83	0.35	2.39	0.00	0.00	0.00
26.85	0.83	0.35	2.39	0.00	0.00	0.00
26.90	0.83	0.35	2.39	0.00	0.00	0.00
26.95	0.83	0.35	2.39	0.00	0.00	0.00
27.00	0.83	0.35	2.39	0.00	0.00	0.00
27.05	0.83	0.35	2.39	0.00	0.00	0.00
27.10	0.83	0.35	2.39	0.00	0.00	0.00
27.15	0.83	0.35	2.39	0.00	0.00	0.00
27.20	0.83	0.35	2.39	0.00	0.00	0.00
27.25	0.83	0.35	2.39	0.00	0.00	0.00
27.30	0.83	0.35	2.39	0.00	0.00	0.00
27.35	0.83	0.35	2.39	0.00	0.00	0.00
27.40	0.83	0.35	2.39	0.00	0.00	0.00
27.45	0.83	0.35	2.39	0.00	0.00	0.00
27.50	0.83	0.35	2.39	0.00	0.00	0.00
27.55	0.83	0.35	2.39	0.00	0.00	0.00
27.60	0.83	0.35	2.39	0.00	0.00	0.00
27.65	0.83	0.35	2.39	0.00	0.00	0.00
27.70	0.83	0.35	2.39	0.00	0.00	0.00
27.75	0.83	0.35	2.39	0.00	0.00	0.00
27.80	0.83	0.35	2.39	0.00	0.00	0.00
27.85	0.83	0.35	2.40	0.00	0.00	0.00
27.90	0.83	0.35	2.40	0.00	0.00	0.00
27.95	0.83	0.35	2.40	0.00	0.00	0.00
28.00	0.83	0.35	2.40	0.00	0.00	0.00
28.05	0.83	0.35	2.40	0.00	0.00	0.00
28.10	0.83	0.35	2.40	0.00	0.00	0.00
28.15	0.83	0.35	2.40	0.00	0.00	0.00
28.20	0.83	0.35	2.40	0.00	0.00	0.00
28.25	0.83	0.35	2.40	0.00	0.00	0.00
28.30	0.83	0.35	2.40	0.00	0.00	0.00
28.35	0.83	0.35	2.40	0.00	0.00	0.00
28.40	0.83	0.35	2.40	0.00	0.00	0.00
28.45	0.83	0.35	2.40	0.00	0.00	0.00
28.50	0.83	0.35	2.40	0.00	0.00	0.00
28.55	0.83	0.35	2.40	0.00	0.00	0.00
28.60	0.83	0.35	2.40	0.00	0.00	0.00
28.65	0.83	0.35	2.40	0.00	0.00	0.00
28.70	0.83	0.35	2.40	0.00	0.00	0.00
28.75	0.83	0.35	2.40	0.00	0.00	0.00
28.80	0.83	0.35	2.40	0.00	0.00	0.00
28.85	0.83	0.35	2.40	0.00	0.00	0.00
28.90	0.83	0.35	2.40	0.00	0.00	0.00
28.95	0.83	0.35	2.40	0.00	0.00	0.00
29.00	0.83	0.35	2.40	0.00	0.00	0.00
29.05	0.83	0.35	2.40	0.00	0.00	0.00
29.10	0.83	0.35	2.40	0.00	0.00	0.00
29.15	0.83	0.35	2.40	0.00	0.00	0.00
29.20	0.83	0.35	2.40	0.00	0.00	0.00
29.25	0.83	0.35	2.40	0.00	0.00	0.00
29.30	0.83	0.35	2.40	0.00	0.00	0.00
29.35	0.83	0.35	2.40	0.00	0.00	0.00
29.40	0.83	0.35	2.40	0.00	0.00	0.00
29.45	0.83	0.35	2.40	0.00	0.00	0.00
29.50	0.83	0.35	2.40	0.00	0.00	0.00
29.55	0.83	0.35	2.40	0.00	0.00	0.00
29.60	0.83	0.35	2.40	0.00	0.00	0.00
29.65	0.83	0.35	2.40	0.00	0.00	0.00
29.70	0.83	0.35	2.40	0.00	0.00	0.00
29.75	0.83	0.35	2.40	0.00	0.00	0.00
29.80	0.83	0.35	2.40	0.00	0.00	0.00
29.85	0.83	0.35	2.40	0.00	0.00	0.00
29.90	0.83	0.35	2.40	0.00	0.00	0.00
29.95	0.83	0.35	2.40	0.00	0.00	0.00
30.00	0.83	0.35	2.40	0.00	0.00	0.00
30.05	0.83	0.35	2.40	0.00	0.00	0.00
30.10	0.83	0.35	2.40	0.00	0.00	0.00
30.15	0.83	0.35	2.41	0.00	0.00	0.00
30.20	0.83	0.35	2.41	0.00	0.00	0.00
30.25	0.83	0.34	2.41	0.00	0.00	0.00
30.30	0.83	0.34	2.41	0.00	0.00	0.00

30.35	0.83	0.34	2.41	0.00	0.00	0.00
30.40	0.83	0.34	2.41	0.00	0.00	0.00
30.45	0.83	0.34	2.41	0.00	0.00	0.00
30.50	0.83	0.34	2.41	0.00	0.00	0.00
30.55	0.83	0.34	2.41	0.00	0.00	0.00
30.60	0.83	0.34	2.42	0.00	0.00	0.00
30.65	0.83	0.34	2.42	0.00	0.00	0.00
30.70	0.83	0.34	2.42	0.00	0.00	0.00
30.75	0.83	0.34	2.42	0.00	0.00	0.00
30.80	0.83	0.34	2.42	0.00	0.00	0.00
30.85	0.83	0.34	2.42	0.00	0.00	0.00
30.90	0.83	0.34	2.42	0.00	0.00	0.00
30.95	0.83	0.34	2.42	0.00	0.00	0.00
31.00	0.83	0.34	2.43	0.00	0.00	0.00
31.05	0.83	0.34	2.43	0.00	0.00	0.00
31.10	0.83	0.34	2.43	0.00	0.00	0.00
31.15	0.83	0.34	2.43	0.00	0.00	0.00
31.20	0.83	0.34	2.43	0.00	0.00	0.00
31.25	0.83	0.34	2.43	0.00	0.00	0.00
31.30	0.83	0.34	2.43	0.00	0.00	0.00
31.35	0.83	0.34	2.43	0.00	0.00	0.00
31.40	0.83	0.34	2.43	0.00	0.00	0.00
31.45	0.83	0.34	2.44	0.00	0.00	0.00
31.50	0.83	0.34	2.44	0.00	0.00	0.00
31.55	0.83	0.34	2.44	0.00	0.00	0.00
31.60	0.83	0.34	2.44	0.00	0.00	0.00
31.65	0.83	0.34	2.44	0.00	0.00	0.00
31.70	0.83	0.34	2.44	0.00	0.00	0.00
31.75	0.83	0.34	2.44	0.00	0.00	0.00
31.80	0.83	0.34	2.44	0.00	0.00	0.00
31.85	0.83	0.34	2.45	0.00	0.00	0.00
31.90	0.83	0.34	2.45	0.00	0.00	0.00
31.95	0.83	0.34	2.45	0.00	0.00	0.00
32.00	0.83	0.34	2.45	0.00	0.00	0.00
32.05	0.83	0.34	2.45	0.00	0.00	0.00
32.10	0.83	0.34	2.45	0.00	0.00	0.00
32.15	0.83	0.34	2.45	0.00	0.00	0.00
32.20	0.83	0.34	2.45	0.00	0.00	0.00
32.25	0.83	0.34	2.45	0.00	0.00	0.00
32.30	0.83	0.34	2.46	0.00	0.00	0.00
32.35	0.83	0.34	2.46	0.00	0.00	0.00
32.40	0.83	0.34	2.46	0.00	0.00	0.00
32.45	0.83	0.34	2.46	0.00	0.00	0.00
32.50	0.83	0.34	2.46	0.00	0.00	0.00
32.55	0.83	0.34	2.46	0.00	0.00	0.00
32.60	0.83	0.34	2.46	0.00	0.00	0.00
32.65	0.83	0.34	2.46	0.00	0.00	0.00
32.70	0.83	0.34	2.47	0.00	0.00	0.00
32.75	0.83	0.34	2.47	0.00	0.00	0.00
32.80	0.83	0.34	2.47	0.00	0.00	0.00
32.85	0.83	0.34	2.47	0.00	0.00	0.00
32.90	0.83	0.34	2.47	0.00	0.00	0.00
32.95	0.83	0.34	2.47	0.00	0.00	0.00
33.00	0.83	0.34	2.47	0.00	0.00	0.00
33.05	0.83	0.34	2.47	0.00	0.00	0.00
33.10	0.83	0.34	2.47	0.00	0.00	0.00
33.15	0.83	0.34	2.48	0.00	0.00	0.00
33.20	0.83	0.34	2.48	0.00	0.00	0.00
33.25	0.83	0.34	2.48	0.00	0.00	0.00
33.30	0.83	0.34	2.48	0.00	0.00	0.00
33.35	0.83	0.33	2.48	0.00	0.00	0.00
33.40	0.83	0.33	2.48	0.00	0.00	0.00
33.45	0.83	0.33	2.48	0.00	0.00	0.00
33.50	0.83	0.33	2.48	0.00	0.00	0.00
33.55	0.83	0.33	2.49	0.00	0.00	0.00
33.60	0.83	0.33	2.49	0.00	0.00	0.00
33.65	0.83	0.33	2.49	0.00	0.00	0.00
33.70	0.83	0.33	2.49	0.00	0.00	0.00
33.75	0.83	0.33	2.49	0.00	0.00	0.00
33.80	0.83	0.33	2.49	0.00	0.00	0.00
33.85	0.83	0.33	2.49	0.00	0.00	0.00

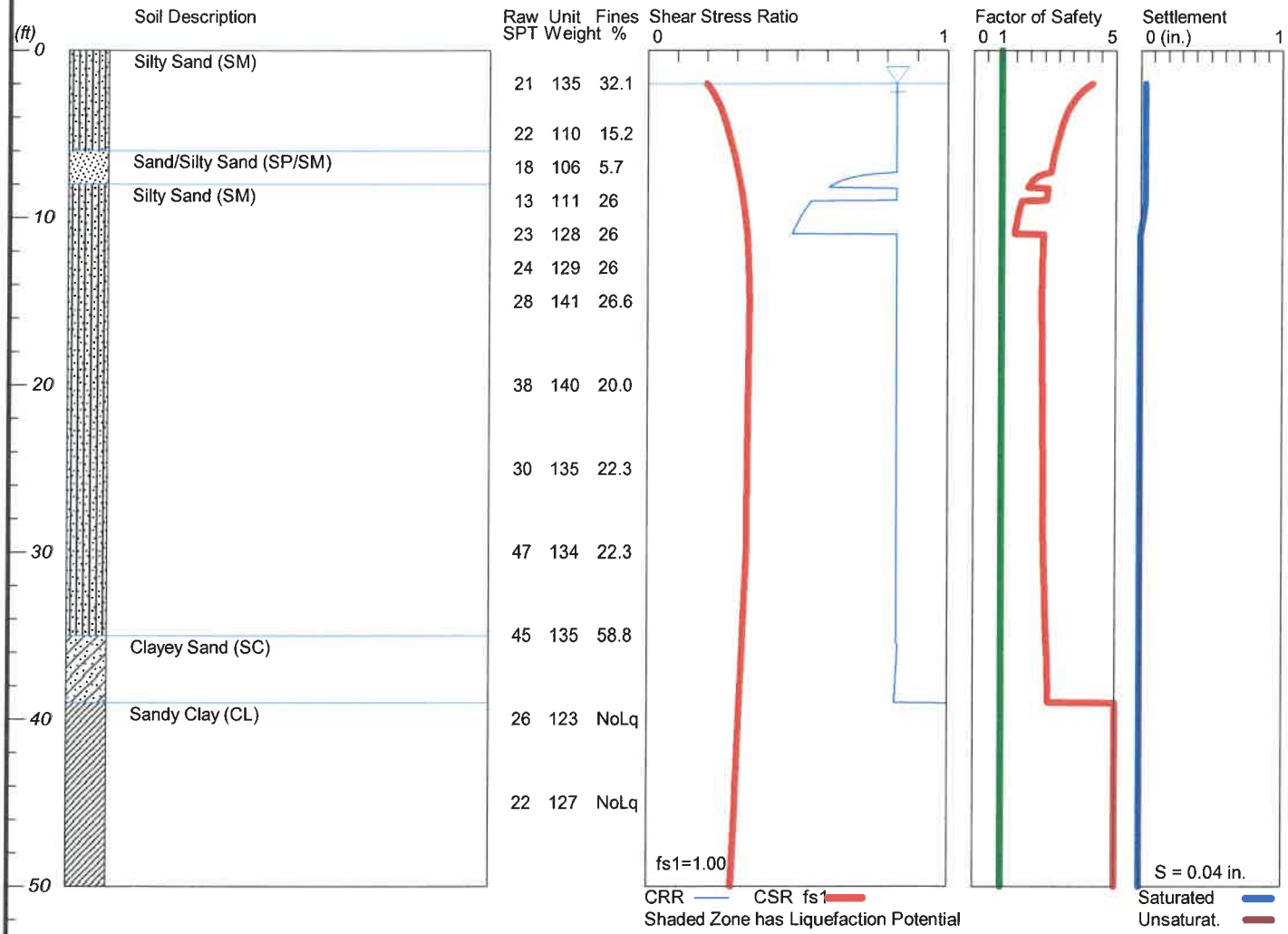
33.90	0.83	0.33	2.49	0.00	0.00	0.00
33.95	0.83	0.33	2.49	0.00	0.00	0.00
34.00	0.83	0.33	2.50	0.00	0.00	0.00
34.05	0.83	0.33	2.50	0.00	0.00	0.00
34.10	0.83	0.33	2.50	0.00	0.00	0.00
34.15	0.83	0.33	2.50	0.00	0.00	0.00
34.20	0.83	0.33	2.50	0.00	0.00	0.00
34.25	0.83	0.33	2.50	0.00	0.00	0.00
34.30	0.83	0.33	2.50	0.00	0.00	0.00
34.35	0.83	0.33	2.50	0.00	0.00	0.00
34.40	0.83	0.33	2.51	0.00	0.00	0.00
34.45	0.83	0.33	2.51	0.00	0.00	0.00
34.50	0.83	0.33	2.51	0.00	0.00	0.00
34.55	0.83	0.33	2.51	0.00	0.00	0.00
34.60	0.83	0.33	2.51	0.00	0.00	0.00
34.65	0.83	0.33	2.51	0.00	0.00	0.00
34.70	0.83	0.33	2.51	0.00	0.00	0.00
34.75	0.83	0.33	2.51	0.00	0.00	0.00
34.80	0.83	0.33	2.52	0.00	0.00	0.00
34.85	0.83	0.33	2.52	0.00	0.00	0.00
34.90	0.83	0.33	2.52	0.00	0.00	0.00
34.95	0.83	0.33	2.52	0.00	0.00	0.00
35.00	0.83	0.33	2.52	0.00	0.00	0.00
35.05	0.83	0.33	2.52	0.00	0.00	0.00
35.10	0.83	0.33	2.52	0.00	0.00	0.00
35.15	0.83	0.33	2.52	0.00	0.00	0.00
35.20	0.83	0.33	2.52	0.00	0.00	0.00
35.25	0.83	0.33	2.53	0.00	0.00	0.00
35.30	0.83	0.33	2.53	0.00	0.00	0.00
35.35	0.83	0.33	2.53	0.00	0.00	0.00
35.40	0.83	0.33	2.53	0.00	0.00	0.00
35.45	0.83	0.33	2.53	0.00	0.00	0.00
35.50	0.83	0.33	2.53	0.00	0.00	0.00
35.55	0.83	0.33	2.53	0.00	0.00	0.00
35.60	0.83	0.33	2.53	0.00	0.00	0.00
35.65	0.83	0.33	2.53	0.00	0.00	0.00
35.70	0.83	0.33	2.53	0.00	0.00	0.00
35.75	0.83	0.33	2.54	0.00	0.00	0.00
35.80	0.83	0.33	2.54	0.00	0.00	0.00
35.85	0.83	0.33	2.54	0.00	0.00	0.00
35.90	0.83	0.33	2.54	0.00	0.00	0.00
35.95	0.83	0.33	2.54	0.00	0.00	0.00
36.00	0.83	0.33	2.54	0.00	0.00	0.00
36.05	0.83	0.33	2.54	0.00	0.00	0.00
36.10	0.83	0.33	2.54	0.00	0.00	0.00
36.15	0.83	0.33	2.54	0.00	0.00	0.00
36.20	0.83	0.33	2.54	0.00	0.00	0.00
36.25	0.83	0.33	2.54	0.00	0.00	0.00
36.30	0.83	0.33	2.55	0.00	0.00	0.00
36.35	0.83	0.33	2.55	0.00	0.00	0.00
36.40	0.83	0.33	2.55	0.00	0.00	0.00
36.45	0.83	0.33	2.55	0.00	0.00	0.00
36.50	0.83	0.33	2.55	0.00	0.00	0.00
36.55	0.83	0.33	2.55	0.00	0.00	0.00
36.60	0.83	0.33	2.55	0.00	0.00	0.00
36.65	0.83	0.33	2.55	0.00	0.00	0.00
36.70	0.83	0.33	2.55	0.00	0.00	0.00
36.75	0.83	0.33	2.55	0.00	0.00	0.00
36.80	0.83	0.33	2.56	0.00	0.00	0.00
36.85	0.83	0.32	2.56	0.00	0.00	0.00
36.90	0.83	0.32	2.56	0.00	0.00	0.00
36.95	0.83	0.32	2.56	0.00	0.00	0.00
37.00	0.83	0.32	2.56	0.00	0.00	0.00
37.05	0.83	0.32	2.56	0.00	0.00	0.00
37.10	0.83	0.32	2.56	0.00	0.00	0.00
37.15	0.83	0.32	2.56	0.00	0.00	0.00
37.20	0.83	0.32	2.56	0.00	0.00	0.00
37.25	0.83	0.32	2.57	0.00	0.00	0.00
37.30	0.83	0.32	2.57	0.00	0.00	0.00
37.35	0.83	0.32	2.57	0.00	0.00	0.00
37.40	0.83	0.32	2.57	0.00	0.00	0.00

LIQUEFACTION ANALYSIS

Triangle Development

Hole No.=B14 Water Depth=2 ft

Magnitude=6.15
Acceleration=0.307g



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                                    LIQUEFACTION ANALYSIS SUMMARY
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      Licensed to ,   8/7/2023        2:15:00 PM

      Input File Name: C:\Users\mweber\Documents\Krazan\Projects\012\22\165 Triangle Development\B14\B14
Liquefaction.liq
      Title:  Triangle Development
      Subtitle:  012-22165

      Surface Elev.=
      Hole No.=B14
      Depth of Hole= 50.00 ft
      Water Table during Earthquake= 2.00 ft
      Water Table during In-Situ Testing= 13.00 ft
      Max. Acceleration= 0.31 g
      Earthquake Magnitude= 6.15

 Input Data:
      Surface Elev.=
      Hole No.=B14
      Depth of Hole=50.00 ft
      Water Table during Earthquake= 2.00 ft
      Water Table during In-Situ Testing= 13.00 ft
      Max. Acceleration=0.31 g
      Earthquake Magnitude=6.15
      No-Liquefiable Soils:   CL, OL are Non-Liq. Soil

      1. SPT or BPT Calculation.
      2. Settlement Analysis Method: Ishihara / Yoshimine
      3. Fines Correction for Liquefaction: Stark/Olson et al.*
      4. Fine Correction for Settlement: During Liquefaction*
      5. Settlement Calculation in: All zones*
      6. Hammer Energy Ratio,                                  Ce = 1.4
      7. Borehole Diameter,                                        Cb= 1.05
      8. Sampling Method,                                         Cs= 1
      9. User request factor of safety (apply to CSR) ,   User= 1
         Plot one CSR curve (fs1=User)
      10. Use Curve Smoothing: No
      * Recommended Options

      In-Situ Test Data:
      Depth   SPT     gamma   Fines
      ft              pcf     %
      ____________________________________
      2.00    21.00   135.00  32.10
      5.00    22.00   110.00  15.20
      7.00    18.00   106.00  5.70
      9.00    13.00   111.00  26.00
      11.00   23.00   128.00  26.00
      13.00   24.00   129.00  26.00
      15.00   28.00   141.00  26.60
      20.00   38.00   140.00  20.00
      25.00   30.00   135.00  22.30
      30.00   47.00   134.00  22.30
      35.00   45.00   135.00  58.80
      40.00   26.00   123.00  NoLiq
      45.00   22.00   127.00  NoLiq
      ____________________________________

Output Results:
      Settlement of Saturated Sands=0.04 in.
      Settlement of Unsaturated Sands=0.00 in.
      Total Settlement of Saturated and Unsaturated Sands=0.04 in.
      Differential Settlement=0.018 to 0.024 in.

      Depth   CRRm    CSRfs   F.S.    S_sat.  S_dry   S_all
      ft                              in.     in.     in.
```

2.00	0.83	0.20	4.18	0.04	0.00	0.04
2.05	0.83	0.20	4.14	0.04	0.00	0.04
2.10	0.83	0.20	4.09	0.04	0.00	0.04
2.15	0.83	0.21	4.05	0.04	0.00	0.04
2.20	0.83	0.21	4.01	0.04	0.00	0.04
2.25	0.83	0.21	3.97	0.04	0.00	0.04
2.30	0.83	0.21	3.93	0.04	0.00	0.04
2.35	0.83	0.21	3.90	0.04	0.00	0.04
2.40	0.83	0.21	3.86	0.04	0.00	0.04
2.45	0.83	0.22	3.83	0.04	0.00	0.04
2.50	0.83	0.22	3.80	0.04	0.00	0.04
2.55	0.83	0.22	3.77	0.04	0.00	0.04
2.60	0.83	0.22	3.74	0.04	0.00	0.04
2.65	0.83	0.22	3.71	0.04	0.00	0.04
2.70	0.83	0.23	3.69	0.04	0.00	0.04
2.75	0.83	0.23	3.66	0.04	0.00	0.04
2.80	0.83	0.23	3.64	0.04	0.00	0.04
2.85	0.83	0.23	3.61	0.04	0.00	0.04
2.90	0.83	0.23	3.59	0.04	0.00	0.04
2.95	0.83	0.23	3.57	0.04	0.00	0.04
3.00	0.83	0.23	3.55	0.04	0.00	0.04
3.05	0.83	0.24	3.53	0.04	0.00	0.04
3.10	0.83	0.24	3.51	0.04	0.00	0.04
3.15	0.83	0.24	3.49	0.04	0.00	0.04
3.20	0.83	0.24	3.47	0.04	0.00	0.04
3.25	0.83	0.24	3.45	0.04	0.00	0.04
3.30	0.83	0.24	3.43	0.04	0.00	0.04
3.35	0.83	0.24	3.41	0.04	0.00	0.04
3.40	0.83	0.24	3.40	0.04	0.00	0.04
3.45	0.83	0.25	3.38	0.04	0.00	0.04
3.50	0.83	0.25	3.37	0.04	0.00	0.04
3.55	0.83	0.25	3.35	0.04	0.00	0.04
3.60	0.83	0.25	3.34	0.04	0.00	0.04
3.65	0.83	0.25	3.32	0.04	0.00	0.04
3.70	0.83	0.25	3.31	0.04	0.00	0.04
3.75	0.83	0.25	3.29	0.04	0.00	0.04
3.80	0.83	0.25	3.28	0.04	0.00	0.04
3.85	0.83	0.25	3.27	0.04	0.00	0.04
3.90	0.83	0.26	3.26	0.04	0.00	0.04
3.95	0.83	0.26	3.24	0.04	0.00	0.04
4.00	0.83	0.26	3.23	0.04	0.00	0.04
4.05	0.83	0.26	3.22	0.04	0.00	0.04
4.10	0.83	0.26	3.21	0.04	0.00	0.04
4.15	0.83	0.26	3.20	0.04	0.00	0.04
4.20	0.83	0.26	3.19	0.04	0.00	0.04
4.25	0.83	0.26	3.18	0.04	0.00	0.04
4.30	0.83	0.26	3.17	0.04	0.00	0.04
4.35	0.83	0.26	3.16	0.04	0.00	0.04
4.40	0.83	0.26	3.15	0.04	0.00	0.04
4.45	0.83	0.26	3.14	0.04	0.00	0.04
4.50	0.83	0.27	3.13	0.04	0.00	0.04
4.55	0.83	0.27	3.12	0.04	0.00	0.04
4.60	0.83	0.27	3.11	0.04	0.00	0.04
4.65	0.83	0.27	3.10	0.04	0.00	0.04
4.70	0.83	0.27	3.09	0.04	0.00	0.04
4.75	0.83	0.27	3.08	0.04	0.00	0.04
4.80	0.83	0.27	3.07	0.04	0.00	0.04
4.85	0.83	0.27	3.07	0.04	0.00	0.04
4.90	0.83	0.27	3.06	0.04	0.00	0.04
4.95	0.83	0.27	3.05	0.04	0.00	0.04
5.00	0.83	0.27	3.04	0.04	0.00	0.04
5.05	0.83	0.27	3.03	0.04	0.00	0.04
5.10	0.83	0.27	3.03	0.04	0.00	0.04
5.15	0.83	0.28	3.02	0.04	0.00	0.04
5.20	0.83	0.28	3.01	0.04	0.00	0.04
5.25	0.83	0.28	3.00	0.04	0.00	0.04
5.30	0.83	0.28	2.99	0.04	0.00	0.04
5.35	0.83	0.28	2.98	0.04	0.00	0.04
5.40	0.83	0.28	2.97	0.04	0.00	0.04
5.45	0.83	0.28	2.96	0.04	0.00	0.04

5.50	0.83	0.28	2.96	0.04	0.00	0.04
5.55	0.83	0.28	2.95	0.04	0.00	0.04
5.60	0.83	0.28	2.94	0.04	0.00	0.04
5.65	0.83	0.28	2.93	0.04	0.00	0.04
5.70	0.83	0.28	2.92	0.04	0.00	0.04
5.75	0.83	0.28	2.92	0.04	0.00	0.04
5.80	0.83	0.29	2.91	0.04	0.00	0.04
5.85	0.83	0.29	2.90	0.04	0.00	0.04
5.90	0.83	0.29	2.89	0.04	0.00	0.04
5.95	0.83	0.29	2.89	0.04	0.00	0.04
6.00	0.83	0.29	2.88	0.04	0.00	0.04
6.05	0.83	0.29	2.87	0.04	0.00	0.04
6.10	0.83	0.29	2.87	0.04	0.00	0.04
6.15	0.83	0.29	2.86	0.04	0.00	0.04
6.20	0.83	0.29	2.85	0.04	0.00	0.04
6.25	0.83	0.29	2.85	0.04	0.00	0.04
6.30	0.83	0.29	2.84	0.04	0.00	0.04
6.35	0.83	0.29	2.83	0.04	0.00	0.04
6.40	0.83	0.29	2.83	0.04	0.00	0.04
6.45	0.83	0.29	2.82	0.04	0.00	0.04
6.50	0.83	0.30	2.81	0.04	0.00	0.04
6.55	0.83	0.30	2.81	0.04	0.00	0.04
6.60	0.83	0.30	2.80	0.04	0.00	0.04
6.65	0.83	0.30	2.80	0.04	0.00	0.04
6.70	0.83	0.30	2.79	0.04	0.00	0.04
6.75	0.83	0.30	2.78	0.04	0.00	0.04
6.80	0.83	0.30	2.78	0.04	0.00	0.04
6.85	0.83	0.30	2.77	0.04	0.00	0.04
6.90	0.83	0.30	2.77	0.04	0.00	0.04
6.95	0.83	0.30	2.76	0.04	0.00	0.04
7.00	0.83	0.30	2.76	0.04	0.00	0.04
7.05	0.83	0.30	2.75	0.04	0.00	0.04
7.10	0.83	0.30	2.75	0.04	0.00	0.04
7.15	0.83	0.30	2.74	0.04	0.00	0.04
7.20	0.83	0.30	2.73	0.04	0.00	0.04
7.25	0.83	0.30	2.73	0.04	0.00	0.04
7.30	0.83	0.30	2.72	0.04	0.00	0.04
7.35	0.79	0.31	2.60	0.04	0.00	0.04
7.40	0.76	0.31	2.47	0.04	0.00	0.04
7.45	0.73	0.31	2.38	0.04	0.00	0.04
7.50	0.71	0.31	2.32	0.04	0.00	0.04
7.55	0.70	0.31	2.26	0.04	0.00	0.04
7.60	0.68	0.31	2.22	0.04	0.00	0.04
7.65	0.67	0.31	2.18	0.04	0.00	0.04
7.70	0.66	0.31	2.15	0.04	0.00	0.04
7.75	0.66	0.31	2.11	0.04	0.00	0.04
7.80	0.65	0.31	2.09	0.04	0.00	0.04
7.85	0.64	0.31	2.06	0.04	0.00	0.04
7.90	0.64	0.31	2.04	0.04	0.00	0.04
7.95	0.63	0.31	2.02	0.04	0.00	0.04
8.00	0.62	0.31	2.00	0.04	0.00	0.04
8.05	0.62	0.31	1.98	0.04	0.00	0.04
8.10	0.61	0.31	1.96	0.04	0.00	0.04
8.15	0.61	0.31	1.94	0.04	0.00	0.04
8.20	0.61	0.31	1.92	0.04	0.00	0.04
8.25	0.83	0.32	2.63	0.04	0.00	0.04
8.30	0.83	0.32	2.63	0.04	0.00	0.04
8.35	0.83	0.32	2.63	0.04	0.00	0.04
8.40	0.83	0.32	2.62	0.04	0.00	0.04
8.45	0.83	0.32	2.62	0.04	0.00	0.04
8.50	0.83	0.32	2.61	0.04	0.00	0.04
8.55	0.83	0.32	2.61	0.04	0.00	0.04
8.60	0.83	0.32	2.60	0.04	0.00	0.04
8.65	0.83	0.32	2.60	0.04	0.00	0.04
8.70	0.83	0.32	2.60	0.04	0.00	0.04
8.75	0.83	0.32	2.59	0.04	0.00	0.04
8.80	0.83	0.32	2.59	0.04	0.00	0.04
8.85	0.83	0.32	2.59	0.04	0.00	0.04
8.90	0.83	0.32	2.58	0.04	0.00	0.04
8.95	0.83	0.32	2.58	0.04	0.00	0.04
9.00	0.55	0.32	1.70	0.04	0.00	0.04

9.05	0.55	0.32	1.69	0.04	0.00	0.04
9.10	0.54	0.32	1.68	0.03	0.00	0.03
9.15	0.54	0.32	1.68	0.03	0.00	0.03
9.20	0.54	0.32	1.67	0.03	0.00	0.03
9.25	0.54	0.32	1.66	0.03	0.00	0.03
9.30	0.54	0.33	1.65	0.03	0.00	0.03
9.35	0.53	0.33	1.64	0.03	0.00	0.03
9.40	0.53	0.33	1.64	0.03	0.00	0.03
9.45	0.53	0.33	1.63	0.03	0.00	0.03
9.50	0.53	0.33	1.62	0.03	0.00	0.03
9.55	0.53	0.33	1.61	0.03	0.00	0.03
9.60	0.53	0.33	1.61	0.03	0.00	0.03
9.65	0.52	0.33	1.60	0.03	0.00	0.03
9.70	0.52	0.33	1.59	0.03	0.00	0.03
9.75	0.52	0.33	1.58	0.03	0.00	0.03
9.80	0.52	0.33	1.58	0.02	0.00	0.02
9.85	0.52	0.33	1.57	0.02	0.00	0.02
9.90	0.52	0.33	1.56	0.02	0.00	0.02
9.95	0.51	0.33	1.56	0.02	0.00	0.02
10.00	0.51	0.33	1.55	0.02	0.00	0.02
10.05	0.51	0.33	1.54	0.02	0.00	0.02
10.10	0.51	0.33	1.54	0.02	0.00	0.02
10.15	0.51	0.33	1.53	0.02	0.00	0.02
10.20	0.51	0.33	1.53	0.02	0.00	0.02
10.25	0.50	0.33	1.52	0.02	0.00	0.02
10.30	0.50	0.33	1.51	0.02	0.00	0.02
10.35	0.50	0.33	1.51	0.01	0.00	0.01
10.40	0.50	0.33	1.50	0.01	0.00	0.01
10.45	0.50	0.33	1.50	0.01	0.00	0.01
10.50	0.50	0.33	1.49	0.01	0.00	0.01
10.55	0.50	0.33	1.49	0.01	0.00	0.01
10.60	0.49	0.33	1.48	0.01	0.00	0.01
10.65	0.49	0.33	1.47	0.01	0.00	0.01
10.70	0.49	0.33	1.47	0.01	0.00	0.01
10.75	0.49	0.34	1.46	0.01	0.00	0.01
10.80	0.49	0.34	1.46	0.00	0.00	0.00
10.85	0.49	0.34	1.45	0.00	0.00	0.00
10.90	0.49	0.34	1.45	0.00	0.00	0.00
10.95	0.49	0.34	1.44	0.00	0.00	0.00
11.00	0.83	0.34	2.47	0.00	0.00	0.00
11.05	0.83	0.34	2.47	0.00	0.00	0.00
11.10	0.83	0.34	2.46	0.00	0.00	0.00
11.15	0.83	0.34	2.46	0.00	0.00	0.00
11.20	0.83	0.34	2.46	0.00	0.00	0.00
11.25	0.83	0.34	2.46	0.00	0.00	0.00
11.30	0.83	0.34	2.46	0.00	0.00	0.00
11.35	0.83	0.34	2.46	0.00	0.00	0.00
11.40	0.83	0.34	2.46	0.00	0.00	0.00
11.45	0.83	0.34	2.46	0.00	0.00	0.00
11.50	0.83	0.34	2.46	0.00	0.00	0.00
11.55	0.83	0.34	2.46	0.00	0.00	0.00
11.60	0.83	0.34	2.46	0.00	0.00	0.00
11.65	0.83	0.34	2.45	0.00	0.00	0.00
11.70	0.83	0.34	2.45	0.00	0.00	0.00
11.75	0.83	0.34	2.45	0.00	0.00	0.00
11.80	0.83	0.34	2.45	0.00	0.00	0.00
11.85	0.83	0.34	2.45	0.00	0.00	0.00
11.90	0.83	0.34	2.45	0.00	0.00	0.00
11.95	0.83	0.34	2.45	0.00	0.00	0.00
12.00	0.83	0.34	2.45	0.00	0.00	0.00
12.05	0.83	0.34	2.45	0.00	0.00	0.00
12.10	0.83	0.34	2.45	0.00	0.00	0.00
12.15	0.83	0.34	2.45	0.00	0.00	0.00
12.20	0.83	0.34	2.45	0.00	0.00	0.00
12.25	0.83	0.34	2.44	0.00	0.00	0.00
12.30	0.83	0.34	2.44	0.00	0.00	0.00
12.35	0.83	0.34	2.44	0.00	0.00	0.00
12.40	0.83	0.34	2.44	0.00	0.00	0.00
12.45	0.83	0.34	2.44	0.00	0.00	0.00
12.50	0.83	0.34	2.44	0.00	0.00	0.00
12.55	0.83	0.34	2.44	0.00	0.00	0.00

12.60	0.83	0.34	2.44	0.00	0.00	0.00
12.65	0.83	0.34	2.44	0.00	0.00	0.00
12.70	0.83	0.34	2.44	0.00	0.00	0.00
12.75	0.83	0.34	2.44	0.00	0.00	0.00
12.80	0.83	0.34	2.44	0.00	0.00	0.00
12.85	0.83	0.34	2.44	0.00	0.00	0.00
12.90	0.83	0.34	2.44	0.00	0.00	0.00
12.95	0.83	0.34	2.43	0.00	0.00	0.00
13.00	0.83	0.34	2.43	0.00	0.00	0.00
13.05	0.83	0.34	2.43	0.00	0.00	0.00
13.10	0.83	0.34	2.43	0.00	0.00	0.00
13.15	0.83	0.34	2.43	0.00	0.00	0.00
13.20	0.83	0.34	2.43	0.00	0.00	0.00
13.25	0.83	0.34	2.43	0.00	0.00	0.00
13.30	0.83	0.34	2.43	0.00	0.00	0.00
13.35	0.83	0.34	2.43	0.00	0.00	0.00
13.40	0.83	0.34	2.43	0.00	0.00	0.00
13.45	0.83	0.34	2.43	0.00	0.00	0.00
13.50	0.83	0.34	2.43	0.00	0.00	0.00
13.55	0.83	0.34	2.43	0.00	0.00	0.00
13.60	0.83	0.34	2.43	0.00	0.00	0.00
13.65	0.83	0.34	2.43	0.00	0.00	0.00
13.70	0.83	0.34	2.43	0.00	0.00	0.00
13.75	0.83	0.34	2.43	0.00	0.00	0.00
13.80	0.83	0.34	2.43	0.00	0.00	0.00
13.85	0.83	0.34	2.42	0.00	0.00	0.00
13.90	0.83	0.34	2.42	0.00	0.00	0.00
13.95	0.83	0.34	2.42	0.00	0.00	0.00
14.00	0.83	0.34	2.42	0.00	0.00	0.00
14.05	0.83	0.34	2.42	0.00	0.00	0.00
14.10	0.83	0.34	2.42	0.00	0.00	0.00
14.15	0.83	0.34	2.42	0.00	0.00	0.00
14.20	0.83	0.34	2.42	0.00	0.00	0.00
14.25	0.83	0.34	2.42	0.00	0.00	0.00
14.30	0.83	0.34	2.42	0.00	0.00	0.00
14.35	0.83	0.34	2.42	0.00	0.00	0.00
14.40	0.83	0.34	2.42	0.00	0.00	0.00
14.45	0.83	0.34	2.42	0.00	0.00	0.00
14.50	0.83	0.34	2.42	0.00	0.00	0.00
14.55	0.83	0.34	2.42	0.00	0.00	0.00
14.60	0.83	0.34	2.42	0.00	0.00	0.00
14.65	0.83	0.34	2.42	0.00	0.00	0.00
14.70	0.83	0.34	2.42	0.00	0.00	0.00
14.75	0.83	0.34	2.42	0.00	0.00	0.00
14.80	0.83	0.34	2.42	0.00	0.00	0.00
14.85	0.83	0.34	2.42	0.00	0.00	0.00
14.90	0.83	0.34	2.42	0.00	0.00	0.00
14.95	0.83	0.34	2.42	0.00	0.00	0.00
15.00	0.83	0.34	2.42	0.00	0.00	0.00
15.05	0.83	0.34	2.42	0.00	0.00	0.00
15.10	0.83	0.34	2.42	0.00	0.00	0.00
15.15	0.83	0.34	2.42	0.00	0.00	0.00
15.20	0.83	0.34	2.42	0.00	0.00	0.00
15.25	0.83	0.34	2.42	0.00	0.00	0.00
15.30	0.83	0.34	2.42	0.00	0.00	0.00
15.35	0.83	0.34	2.42	0.00	0.00	0.00
15.40	0.83	0.34	2.42	0.00	0.00	0.00
15.45	0.83	0.34	2.42	0.00	0.00	0.00
15.50	0.83	0.34	2.42	0.00	0.00	0.00
15.55	0.83	0.34	2.42	0.00	0.00	0.00
15.60	0.83	0.34	2.42	0.00	0.00	0.00
15.65	0.83	0.34	2.42	0.00	0.00	0.00
15.70	0.83	0.34	2.42	0.00	0.00	0.00
15.75	0.83	0.34	2.42	0.00	0.00	0.00
15.80	0.83	0.34	2.42	0.00	0.00	0.00
15.85	0.83	0.34	2.42	0.00	0.00	0.00
15.90	0.83	0.34	2.42	0.00	0.00	0.00
15.95	0.83	0.34	2.42	0.00	0.00	0.00
16.00	0.83	0.34	2.42	0.00	0.00	0.00
16.05	0.83	0.34	2.42	0.00	0.00	0.00
16.10	0.83	0.34	2.42	0.00	0.00	0.00

16.15	0.83	0.34	2.42	0.00	0.00	0.00
16.20	0.83	0.34	2.42	0.00	0.00	0.00
16.25	0.83	0.34	2.42	0.00	0.00	0.00
16.30	0.83	0.34	2.42	0.00	0.00	0.00
16.35	0.83	0.34	2.42	0.00	0.00	0.00
16.40	0.83	0.34	2.42	0.00	0.00	0.00
16.45	0.83	0.34	2.42	0.00	0.00	0.00
16.50	0.83	0.34	2.42	0.00	0.00	0.00
16.55	0.83	0.34	2.42	0.00	0.00	0.00
16.60	0.83	0.34	2.42	0.00	0.00	0.00
16.65	0.83	0.34	2.42	0.00	0.00	0.00
16.70	0.83	0.34	2.42	0.00	0.00	0.00
16.75	0.83	0.34	2.42	0.00	0.00	0.00
16.80	0.83	0.34	2.42	0.00	0.00	0.00
16.85	0.83	0.34	2.42	0.00	0.00	0.00
16.90	0.83	0.34	2.42	0.00	0.00	0.00
16.95	0.83	0.34	2.43	0.00	0.00	0.00
17.00	0.83	0.34	2.43	0.00	0.00	0.00
17.05	0.83	0.34	2.43	0.00	0.00	0.00
17.10	0.83	0.34	2.43	0.00	0.00	0.00
17.15	0.83	0.34	2.43	0.00	0.00	0.00
17.20	0.83	0.34	2.43	0.00	0.00	0.00
17.25	0.83	0.34	2.43	0.00	0.00	0.00
17.30	0.83	0.34	2.43	0.00	0.00	0.00
17.35	0.83	0.34	2.43	0.00	0.00	0.00
17.40	0.83	0.34	2.43	0.00	0.00	0.00
17.45	0.83	0.34	2.43	0.00	0.00	0.00
17.50	0.83	0.34	2.43	0.00	0.00	0.00
17.55	0.83	0.34	2.43	0.00	0.00	0.00
17.60	0.83	0.34	2.43	0.00	0.00	0.00
17.65	0.83	0.34	2.43	0.00	0.00	0.00
17.70	0.83	0.34	2.43	0.00	0.00	0.00
17.75	0.83	0.34	2.43	0.00	0.00	0.00
17.80	0.83	0.34	2.43	0.00	0.00	0.00
17.85	0.83	0.34	2.43	0.00	0.00	0.00
17.90	0.83	0.34	2.43	0.00	0.00	0.00
17.95	0.83	0.34	2.43	0.00	0.00	0.00
18.00	0.83	0.34	2.43	0.00	0.00	0.00
18.05	0.83	0.34	2.43	0.00	0.00	0.00
18.10	0.83	0.34	2.43	0.00	0.00	0.00
18.15	0.83	0.34	2.43	0.00	0.00	0.00
18.20	0.83	0.34	2.43	0.00	0.00	0.00
18.25	0.83	0.34	2.43	0.00	0.00	0.00
18.30	0.83	0.34	2.43	0.00	0.00	0.00
18.35	0.83	0.34	2.43	0.00	0.00	0.00
18.40	0.83	0.34	2.43	0.00	0.00	0.00
18.45	0.83	0.34	2.43	0.00	0.00	0.00
18.50	0.83	0.34	2.43	0.00	0.00	0.00
18.55	0.83	0.34	2.43	0.00	0.00	0.00
18.60	0.83	0.34	2.43	0.00	0.00	0.00
18.65	0.83	0.34	2.43	0.00	0.00	0.00
18.70	0.83	0.34	2.43	0.00	0.00	0.00
18.75	0.83	0.34	2.43	0.00	0.00	0.00
18.80	0.83	0.34	2.44	0.00	0.00	0.00
18.85	0.83	0.34	2.44	0.00	0.00	0.00
18.90	0.83	0.34	2.44	0.00	0.00	0.00
18.95	0.83	0.34	2.44	0.00	0.00	0.00
19.00	0.83	0.34	2.44	0.00	0.00	0.00
19.05	0.83	0.34	2.44	0.00	0.00	0.00
19.10	0.83	0.34	2.44	0.00	0.00	0.00
19.15	0.83	0.34	2.44	0.00	0.00	0.00
19.20	0.83	0.34	2.44	0.00	0.00	0.00
19.25	0.83	0.34	2.44	0.00	0.00	0.00
19.30	0.83	0.34	2.44	0.00	0.00	0.00
19.35	0.83	0.34	2.44	0.00	0.00	0.00
19.40	0.83	0.34	2.44	0.00	0.00	0.00
19.45	0.83	0.34	2.44	0.00	0.00	0.00
19.50	0.83	0.34	2.44	0.00	0.00	0.00
19.55	0.83	0.34	2.44	0.00	0.00	0.00
19.60	0.83	0.34	2.44	0.00	0.00	0.00
19.65	0.83	0.34	2.44	0.00	0.00	0.00

19.70	0.83	0.34	2.44	0.00	0.00	0.00
19.75	0.83	0.34	2.44	0.00	0.00	0.00
19.80	0.83	0.34	2.44	0.00	0.00	0.00
19.85	0.83	0.34	2.44	0.00	0.00	0.00
19.90	0.83	0.34	2.44	0.00	0.00	0.00
19.95	0.83	0.34	2.44	0.00	0.00	0.00
20.00	0.83	0.34	2.44	0.00	0.00	0.00
20.05	0.83	0.34	2.44	0.00	0.00	0.00
20.10	0.83	0.34	2.44	0.00	0.00	0.00
20.15	0.83	0.34	2.44	0.00	0.00	0.00
20.20	0.83	0.34	2.44	0.00	0.00	0.00
20.25	0.83	0.34	2.44	0.00	0.00	0.00
20.30	0.83	0.34	2.44	0.00	0.00	0.00
20.35	0.83	0.34	2.44	0.00	0.00	0.00
20.40	0.83	0.34	2.44	0.00	0.00	0.00
20.45	0.83	0.34	2.44	0.00	0.00	0.00
20.50	0.83	0.34	2.44	0.00	0.00	0.00
20.55	0.83	0.34	2.44	0.00	0.00	0.00
20.60	0.83	0.34	2.44	0.00	0.00	0.00
20.65	0.83	0.34	2.44	0.00	0.00	0.00
20.70	0.83	0.34	2.45	0.00	0.00	0.00
20.75	0.83	0.34	2.45	0.00	0.00	0.00
20.80	0.83	0.34	2.45	0.00	0.00	0.00
20.85	0.83	0.34	2.45	0.00	0.00	0.00
20.90	0.83	0.34	2.45	0.00	0.00	0.00
20.95	0.83	0.34	2.45	0.00	0.00	0.00
21.00	0.83	0.34	2.45	0.00	0.00	0.00
21.05	0.83	0.34	2.45	0.00	0.00	0.00
21.10	0.83	0.34	2.45	0.00	0.00	0.00
21.15	0.83	0.34	2.45	0.00	0.00	0.00
21.20	0.83	0.34	2.45	0.00	0.00	0.00
21.25	0.83	0.34	2.45	0.00	0.00	0.00
21.30	0.83	0.34	2.45	0.00	0.00	0.00
21.35	0.83	0.34	2.45	0.00	0.00	0.00
21.40	0.83	0.34	2.45	0.00	0.00	0.00
21.45	0.83	0.34	2.45	0.00	0.00	0.00
21.50	0.83	0.34	2.45	0.00	0.00	0.00
21.55	0.83	0.34	2.45	0.00	0.00	0.00
21.60	0.83	0.34	2.45	0.00	0.00	0.00
21.65	0.83	0.34	2.45	0.00	0.00	0.00
21.70	0.83	0.34	2.45	0.00	0.00	0.00
21.75	0.83	0.34	2.45	0.00	0.00	0.00
21.80	0.83	0.34	2.45	0.00	0.00	0.00
21.85	0.83	0.34	2.45	0.00	0.00	0.00
21.90	0.83	0.34	2.45	0.00	0.00	0.00
21.95	0.83	0.34	2.45	0.00	0.00	0.00
22.00	0.83	0.34	2.45	0.00	0.00	0.00
22.05	0.83	0.34	2.45	0.00	0.00	0.00
22.10	0.83	0.34	2.45	0.00	0.00	0.00
22.15	0.83	0.34	2.45	0.00	0.00	0.00
22.20	0.83	0.34	2.45	0.00	0.00	0.00
22.25	0.83	0.34	2.45	0.00	0.00	0.00
22.30	0.83	0.34	2.45	0.00	0.00	0.00
22.35	0.83	0.34	2.45	0.00	0.00	0.00
22.40	0.83	0.34	2.45	0.00	0.00	0.00
22.45	0.83	0.34	2.45	0.00	0.00	0.00
22.50	0.83	0.34	2.45	0.00	0.00	0.00
22.55	0.83	0.34	2.45	0.00	0.00	0.00
22.60	0.83	0.34	2.45	0.00	0.00	0.00
22.65	0.83	0.34	2.45	0.00	0.00	0.00
22.70	0.83	0.34	2.46	0.00	0.00	0.00
22.75	0.83	0.34	2.46	0.00	0.00	0.00
22.80	0.83	0.34	2.46	0.00	0.00	0.00
22.85	0.83	0.34	2.46	0.00	0.00	0.00
22.90	0.83	0.34	2.46	0.00	0.00	0.00
22.95	0.83	0.34	2.46	0.00	0.00	0.00
23.00	0.83	0.34	2.46	0.00	0.00	0.00
23.05	0.83	0.34	2.46	0.00	0.00	0.00
23.10	0.83	0.34	2.46	0.00	0.00	0.00
23.15	0.83	0.34	2.46	0.00	0.00	0.00
23.20	0.83	0.34	2.46	0.00	0.00	0.00

23.25	0.83	0.34	2.46	0.00	0.00	0.00
23.30	0.83	0.34	2.46	0.00	0.00	0.00
23.35	0.83	0.34	2.46	0.00	0.00	0.00
23.40	0.83	0.34	2.46	0.00	0.00	0.00
23.45	0.83	0.34	2.46	0.00	0.00	0.00
23.50	0.83	0.34	2.46	0.00	0.00	0.00
23.55	0.83	0.34	2.46	0.00	0.00	0.00
23.60	0.83	0.34	2.46	0.00	0.00	0.00
23.65	0.83	0.34	2.46	0.00	0.00	0.00
23.70	0.83	0.34	2.46	0.00	0.00	0.00
23.75	0.83	0.34	2.46	0.00	0.00	0.00
23.80	0.83	0.34	2.46	0.00	0.00	0.00
23.85	0.83	0.34	2.46	0.00	0.00	0.00
23.90	0.83	0.34	2.46	0.00	0.00	0.00
23.95	0.83	0.34	2.46	0.00	0.00	0.00
24.00	0.83	0.34	2.46	0.00	0.00	0.00
24.05	0.83	0.34	2.46	0.00	0.00	0.00
24.10	0.83	0.34	2.46	0.00	0.00	0.00
24.15	0.83	0.34	2.46	0.00	0.00	0.00
24.20	0.83	0.34	2.46	0.00	0.00	0.00
24.25	0.83	0.34	2.46	0.00	0.00	0.00
24.30	0.83	0.34	2.46	0.00	0.00	0.00
24.35	0.83	0.34	2.46	0.00	0.00	0.00
24.40	0.83	0.34	2.46	0.00	0.00	0.00
24.45	0.83	0.34	2.46	0.00	0.00	0.00
24.50	0.83	0.34	2.46	0.00	0.00	0.00
24.55	0.83	0.34	2.46	0.00	0.00	0.00
24.60	0.83	0.34	2.47	0.00	0.00	0.00
24.65	0.83	0.34	2.47	0.00	0.00	0.00
24.70	0.83	0.34	2.47	0.00	0.00	0.00
24.75	0.83	0.34	2.47	0.00	0.00	0.00
24.80	0.83	0.34	2.47	0.00	0.00	0.00
24.85	0.83	0.34	2.47	0.00	0.00	0.00
24.90	0.83	0.34	2.47	0.00	0.00	0.00
24.95	0.83	0.34	2.47	0.00	0.00	0.00
25.00	0.83	0.34	2.47	0.00	0.00	0.00
25.05	0.83	0.34	2.47	0.00	0.00	0.00
25.10	0.83	0.34	2.47	0.00	0.00	0.00
25.15	0.83	0.34	2.47	0.00	0.00	0.00
25.20	0.83	0.34	2.47	0.00	0.00	0.00
25.25	0.83	0.34	2.47	0.00	0.00	0.00
25.30	0.83	0.34	2.47	0.00	0.00	0.00
25.35	0.83	0.34	2.47	0.00	0.00	0.00
25.40	0.83	0.34	2.47	0.00	0.00	0.00
25.45	0.83	0.34	2.47	0.00	0.00	0.00
25.50	0.83	0.34	2.47	0.00	0.00	0.00
25.55	0.83	0.34	2.47	0.00	0.00	0.00
25.60	0.83	0.34	2.47	0.00	0.00	0.00
25.65	0.83	0.34	2.47	0.00	0.00	0.00
25.70	0.83	0.34	2.47	0.00	0.00	0.00
25.75	0.83	0.34	2.47	0.00	0.00	0.00
25.80	0.83	0.34	2.47	0.00	0.00	0.00
25.85	0.83	0.34	2.47	0.00	0.00	0.00
25.90	0.83	0.34	2.47	0.00	0.00	0.00
25.95	0.83	0.34	2.47	0.00	0.00	0.00
26.00	0.83	0.34	2.47	0.00	0.00	0.00
26.05	0.83	0.34	2.47	0.00	0.00	0.00
26.10	0.83	0.34	2.47	0.00	0.00	0.00
26.15	0.83	0.34	2.47	0.00	0.00	0.00
26.20	0.83	0.34	2.47	0.00	0.00	0.00
26.25	0.83	0.34	2.47	0.00	0.00	0.00
26.30	0.83	0.34	2.47	0.00	0.00	0.00
26.35	0.83	0.34	2.47	0.00	0.00	0.00
26.40	0.83	0.34	2.47	0.00	0.00	0.00
26.45	0.83	0.34	2.47	0.00	0.00	0.00
26.50	0.83	0.34	2.47	0.00	0.00	0.00
26.55	0.83	0.34	2.47	0.00	0.00	0.00
26.60	0.83	0.34	2.47	0.00	0.00	0.00
26.65	0.83	0.34	2.47	0.00	0.00	0.00
26.70	0.83	0.34	2.47	0.00	0.00	0.00
26.75	0.83	0.34	2.47	0.00	0.00	0.00

26.80	0.83	0.34	2.47	0.00	0.00	0.00
26.85	0.83	0.34	2.47	0.00	0.00	0.00
26.90	0.83	0.34	2.47	0.00	0.00	0.00
26.95	0.83	0.34	2.47	0.00	0.00	0.00
27.00	0.83	0.34	2.47	0.00	0.00	0.00
27.05	0.83	0.34	2.47	0.00	0.00	0.00
27.10	0.83	0.34	2.47	0.00	0.00	0.00
27.15	0.83	0.34	2.47	0.00	0.00	0.00
27.20	0.83	0.34	2.47	0.00	0.00	0.00
27.25	0.83	0.34	2.47	0.00	0.00	0.00
27.30	0.83	0.34	2.47	0.00	0.00	0.00
27.35	0.83	0.34	2.47	0.00	0.00	0.00
27.40	0.83	0.34	2.47	0.00	0.00	0.00
27.45	0.83	0.34	2.47	0.00	0.00	0.00
27.50	0.83	0.34	2.47	0.00	0.00	0.00
27.55	0.83	0.34	2.47	0.00	0.00	0.00
27.60	0.83	0.34	2.47	0.00	0.00	0.00
27.65	0.83	0.34	2.47	0.00	0.00	0.00
27.70	0.83	0.34	2.47	0.00	0.00	0.00
27.75	0.83	0.34	2.48	0.00	0.00	0.00
27.80	0.83	0.34	2.48	0.00	0.00	0.00
27.85	0.83	0.34	2.48	0.00	0.00	0.00
27.90	0.83	0.34	2.48	0.00	0.00	0.00
27.95	0.83	0.34	2.48	0.00	0.00	0.00
28.00	0.83	0.34	2.48	0.00	0.00	0.00
28.05	0.83	0.34	2.48	0.00	0.00	0.00
28.10	0.83	0.34	2.48	0.00	0.00	0.00
28.15	0.83	0.34	2.48	0.00	0.00	0.00
28.20	0.83	0.34	2.48	0.00	0.00	0.00
28.25	0.83	0.34	2.48	0.00	0.00	0.00
28.30	0.83	0.34	2.48	0.00	0.00	0.00
28.35	0.83	0.34	2.48	0.00	0.00	0.00
28.40	0.83	0.34	2.48	0.00	0.00	0.00
28.45	0.83	0.34	2.48	0.00	0.00	0.00
28.50	0.83	0.34	2.48	0.00	0.00	0.00
28.55	0.83	0.34	2.48	0.00	0.00	0.00
28.60	0.83	0.34	2.48	0.00	0.00	0.00
28.65	0.83	0.34	2.48	0.00	0.00	0.00
28.70	0.83	0.34	2.48	0.00	0.00	0.00
28.75	0.83	0.34	2.48	0.00	0.00	0.00
28.80	0.83	0.34	2.48	0.00	0.00	0.00
28.85	0.83	0.34	2.48	0.00	0.00	0.00
28.90	0.83	0.34	2.48	0.00	0.00	0.00
28.95	0.83	0.34	2.48	0.00	0.00	0.00
29.00	0.83	0.34	2.48	0.00	0.00	0.00
29.05	0.83	0.34	2.48	0.00	0.00	0.00
29.10	0.83	0.34	2.48	0.00	0.00	0.00
29.15	0.83	0.34	2.48	0.00	0.00	0.00
29.20	0.83	0.33	2.48	0.00	0.00	0.00
29.25	0.83	0.33	2.48	0.00	0.00	0.00
29.30	0.83	0.33	2.48	0.00	0.00	0.00
29.35	0.83	0.33	2.48	0.00	0.00	0.00
29.40	0.83	0.33	2.48	0.00	0.00	0.00
29.45	0.83	0.33	2.48	0.00	0.00	0.00
29.50	0.83	0.33	2.48	0.00	0.00	0.00
29.55	0.83	0.33	2.48	0.00	0.00	0.00
29.60	0.83	0.33	2.48	0.00	0.00	0.00
29.65	0.83	0.33	2.48	0.00	0.00	0.00
29.70	0.83	0.33	2.48	0.00	0.00	0.00
29.75	0.83	0.33	2.48	0.00	0.00	0.00
29.80	0.83	0.33	2.48	0.00	0.00	0.00
29.85	0.83	0.33	2.48	0.00	0.00	0.00
29.90	0.83	0.33	2.48	0.00	0.00	0.00
29.95	0.83	0.33	2.48	0.00	0.00	0.00
30.00	0.83	0.33	2.48	0.00	0.00	0.00
30.05	0.83	0.33	2.48	0.00	0.00	0.00
30.10	0.83	0.33	2.49	0.00	0.00	0.00
30.15	0.83	0.33	2.49	0.00	0.00	0.00
30.20	0.83	0.33	2.49	0.00	0.00	0.00
30.25	0.83	0.33	2.49	0.00	0.00	0.00
30.30	0.83	0.33	2.49	0.00	0.00	0.00

30.35	0.83	0.33	2.49	0.00	0.00	0.00
30.40	0.83	0.33	2.49	0.00	0.00	0.00
30.45	0.83	0.33	2.49	0.00	0.00	0.00
30.50	0.83	0.33	2.49	0.00	0.00	0.00
30.55	0.83	0.33	2.49	0.00	0.00	0.00
30.60	0.83	0.33	2.49	0.00	0.00	0.00
30.65	0.83	0.33	2.50	0.00	0.00	0.00
30.70	0.83	0.33	2.50	0.00	0.00	0.00
30.75	0.83	0.33	2.50	0.00	0.00	0.00
30.80	0.83	0.33	2.50	0.00	0.00	0.00
30.85	0.83	0.33	2.50	0.00	0.00	0.00
30.90	0.83	0.33	2.50	0.00	0.00	0.00
30.95	0.83	0.33	2.50	0.00	0.00	0.00
31.00	0.83	0.33	2.50	0.00	0.00	0.00
31.05	0.83	0.33	2.50	0.00	0.00	0.00
31.10	0.83	0.33	2.50	0.00	0.00	0.00
31.15	0.83	0.33	2.50	0.00	0.00	0.00
31.20	0.83	0.33	2.51	0.00	0.00	0.00
31.25	0.83	0.33	2.51	0.00	0.00	0.00
31.30	0.83	0.33	2.51	0.00	0.00	0.00
31.35	0.83	0.33	2.51	0.00	0.00	0.00
31.40	0.83	0.33	2.51	0.00	0.00	0.00
31.45	0.83	0.33	2.51	0.00	0.00	0.00
31.50	0.83	0.33	2.51	0.00	0.00	0.00
31.55	0.83	0.33	2.51	0.00	0.00	0.00
31.60	0.83	0.33	2.51	0.00	0.00	0.00
31.65	0.83	0.33	2.51	0.00	0.00	0.00
31.70	0.83	0.33	2.52	0.00	0.00	0.00
31.75	0.83	0.33	2.52	0.00	0.00	0.00
31.80	0.83	0.33	2.52	0.00	0.00	0.00
31.85	0.83	0.33	2.52	0.00	0.00	0.00
31.90	0.83	0.33	2.52	0.00	0.00	0.00
31.95	0.83	0.33	2.52	0.00	0.00	0.00
32.00	0.83	0.33	2.52	0.00	0.00	0.00
32.05	0.83	0.33	2.52	0.00	0.00	0.00
32.10	0.83	0.33	2.52	0.00	0.00	0.00
32.15	0.83	0.33	2.52	0.00	0.00	0.00
32.20	0.83	0.33	2.53	0.00	0.00	0.00
32.25	0.83	0.33	2.53	0.00	0.00	0.00
32.30	0.83	0.33	2.53	0.00	0.00	0.00
32.35	0.83	0.33	2.53	0.00	0.00	0.00
32.40	0.83	0.33	2.53	0.00	0.00	0.00
32.45	0.83	0.33	2.53	0.00	0.00	0.00
32.50	0.83	0.33	2.53	0.00	0.00	0.00
32.55	0.83	0.33	2.53	0.00	0.00	0.00
32.60	0.83	0.33	2.53	0.00	0.00	0.00
32.65	0.83	0.33	2.53	0.00	0.00	0.00
32.70	0.83	0.33	2.54	0.00	0.00	0.00
32.75	0.83	0.33	2.54	0.00	0.00	0.00
32.80	0.83	0.33	2.54	0.00	0.00	0.00
32.85	0.83	0.33	2.54	0.00	0.00	0.00
32.90	0.83	0.33	2.54	0.00	0.00	0.00
32.95	0.83	0.33	2.54	0.00	0.00	0.00
33.00	0.83	0.33	2.54	0.00	0.00	0.00
33.05	0.83	0.33	2.54	0.00	0.00	0.00
33.10	0.83	0.33	2.54	0.00	0.00	0.00
33.15	0.83	0.33	2.54	0.00	0.00	0.00
33.20	0.83	0.33	2.55	0.00	0.00	0.00
33.25	0.83	0.33	2.55	0.00	0.00	0.00
33.30	0.83	0.33	2.55	0.00	0.00	0.00
33.35	0.83	0.33	2.55	0.00	0.00	0.00
33.40	0.83	0.33	2.55	0.00	0.00	0.00
33.45	0.83	0.33	2.55	0.00	0.00	0.00
33.50	0.83	0.33	2.55	0.00	0.00	0.00
33.55	0.83	0.33	2.55	0.00	0.00	0.00
33.60	0.83	0.33	2.55	0.00	0.00	0.00
33.65	0.83	0.33	2.55	0.00	0.00	0.00
33.70	0.83	0.33	2.56	0.00	0.00	0.00
33.75	0.83	0.32	2.56	0.00	0.00	0.00
33.80	0.83	0.32	2.56	0.00	0.00	0.00
33.85	0.83	0.32	2.56	0.00	0.00	0.00

33.90	0.83	0.32	2.56	0.00	0.00	0.00
33.95	0.83	0.32	2.56	0.00	0.00	0.00
34.00	0.83	0.32	2.56	0.00	0.00	0.00
34.05	0.83	0.32	2.56	0.00	0.00	0.00
34.10	0.83	0.32	2.56	0.00	0.00	0.00
34.15	0.83	0.32	2.57	0.00	0.00	0.00
34.20	0.83	0.32	2.57	0.00	0.00	0.00
34.25	0.83	0.32	2.57	0.00	0.00	0.00
34.30	0.83	0.32	2.57	0.00	0.00	0.00
34.35	0.83	0.32	2.57	0.00	0.00	0.00
34.40	0.83	0.32	2.57	0.00	0.00	0.00
34.45	0.83	0.32	2.57	0.00	0.00	0.00
34.50	0.83	0.32	2.57	0.00	0.00	0.00
34.55	0.83	0.32	2.57	0.00	0.00	0.00
34.60	0.83	0.32	2.57	0.00	0.00	0.00
34.65	0.83	0.32	2.58	0.00	0.00	0.00
34.70	0.83	0.32	2.58	0.00	0.00	0.00
34.75	0.83	0.32	2.58	0.00	0.00	0.00
34.80	0.83	0.32	2.58	0.00	0.00	0.00
34.85	0.83	0.32	2.58	0.00	0.00	0.00
34.90	0.83	0.32	2.58	0.00	0.00	0.00
34.95	0.83	0.32	2.58	0.00	0.00	0.00
35.00	0.83	0.32	2.58	0.00	0.00	0.00
35.05	0.83	0.32	2.58	0.00	0.00	0.00
35.10	0.83	0.32	2.59	0.00	0.00	0.00
35.15	0.83	0.32	2.59	0.00	0.00	0.00
35.20	0.83	0.32	2.59	0.00	0.00	0.00
35.25	0.83	0.32	2.59	0.00	0.00	0.00
35.30	0.83	0.32	2.59	0.00	0.00	0.00
35.35	0.83	0.32	2.59	0.00	0.00	0.00
35.40	0.83	0.32	2.59	0.00	0.00	0.00
35.45	0.83	0.32	2.59	0.00	0.00	0.00
35.50	0.84	0.32	2.61	0.00	0.00	0.00
35.55	0.84	0.32	2.61	0.00	0.00	0.00
35.60	0.84	0.32	2.61	0.00	0.00	0.00
35.65	0.84	0.32	2.61	0.00	0.00	0.00
35.70	0.84	0.32	2.61	0.00	0.00	0.00
35.75	0.84	0.32	2.61	0.00	0.00	0.00
35.80	0.83	0.32	2.61	0.00	0.00	0.00
35.85	0.83	0.32	2.61	0.00	0.00	0.00
35.90	0.83	0.32	2.62	0.00	0.00	0.00
35.95	0.83	0.32	2.62	0.00	0.00	0.00
36.00	0.83	0.32	2.62	0.00	0.00	0.00
36.05	0.83	0.32	2.62	0.00	0.00	0.00
36.10	0.83	0.32	2.62	0.00	0.00	0.00
36.15	0.83	0.32	2.62	0.00	0.00	0.00
36.20	0.83	0.32	2.62	0.00	0.00	0.00
36.25	0.83	0.32	2.62	0.00	0.00	0.00
36.30	0.83	0.32	2.62	0.00	0.00	0.00
36.35	0.83	0.32	2.62	0.00	0.00	0.00
36.40	0.83	0.32	2.62	0.00	0.00	0.00
36.45	0.83	0.32	2.62	0.00	0.00	0.00
36.50	0.83	0.32	2.62	0.00	0.00	0.00
36.55	0.83	0.32	2.62	0.00	0.00	0.00
36.60	0.83	0.32	2.62	0.00	0.00	0.00
36.65	0.83	0.32	2.62	0.00	0.00	0.00
36.70	0.83	0.32	2.63	0.00	0.00	0.00
36.75	0.83	0.32	2.63	0.00	0.00	0.00
36.80	0.83	0.32	2.63	0.00	0.00	0.00
36.85	0.83	0.32	2.63	0.00	0.00	0.00
36.90	0.83	0.32	2.63	0.00	0.00	0.00
36.95	0.83	0.32	2.63	0.00	0.00	0.00
37.00	0.83	0.32	2.63	0.00	0.00	0.00
37.05	0.83	0.32	2.63	0.00	0.00	0.00
37.10	0.83	0.32	2.63	0.00	0.00	0.00
37.15	0.83	0.32	2.63	0.00	0.00	0.00
37.20	0.83	0.32	2.63	0.00	0.00	0.00
37.25	0.83	0.32	2.63	0.00	0.00	0.00
37.30	0.83	0.32	2.63	0.00	0.00	0.00
37.35	0.83	0.32	2.63	0.00	0.00	0.00
37.40	0.83	0.32	2.64	0.00	0.00	0.00

37.45	0.83	0.31	2.64	0.00	0.00	0.00
37.50	0.83	0.31	2.64	0.00	0.00	0.00
37.55	0.83	0.31	2.64	0.00	0.00	0.00
37.60	0.83	0.31	2.64	0.00	0.00	0.00
37.65	0.83	0.31	2.64	0.00	0.00	0.00
37.70	0.83	0.31	2.64	0.00	0.00	0.00
37.75	0.83	0.31	2.64	0.00	0.00	0.00
37.80	0.83	0.31	2.64	0.00	0.00	0.00
37.85	0.83	0.31	2.64	0.00	0.00	0.00
37.90	0.83	0.31	2.64	0.00	0.00	0.00
37.95	0.83	0.31	2.64	0.00	0.00	0.00
38.00	0.83	0.31	2.64	0.00	0.00	0.00
38.05	0.83	0.31	2.64	0.00	0.00	0.00
38.10	0.83	0.31	2.64	0.00	0.00	0.00
38.15	0.83	0.31	2.65	0.00	0.00	0.00
38.20	0.83	0.31	2.65	0.00	0.00	0.00
38.25	0.83	0.31	2.65	0.00	0.00	0.00
38.30	0.83	0.31	2.65	0.00	0.00	0.00
38.35	0.83	0.31	2.65	0.00	0.00	0.00
38.40	0.83	0.31	2.65	0.00	0.00	0.00
38.45	0.83	0.31	2.65	0.00	0.00	0.00
38.50	0.83	0.31	2.65	0.00	0.00	0.00
38.55	0.83	0.31	2.65	0.00	0.00	0.00
38.60	0.83	0.31	2.65	0.00	0.00	0.00
38.65	0.83	0.31	2.65	0.00	0.00	0.00
38.70	0.83	0.31	2.65	0.00	0.00	0.00
38.75	0.83	0.31	2.65	0.00	0.00	0.00
38.80	0.83	0.31	2.65	0.00	0.00	0.00
38.85	0.83	0.31	2.66	0.00	0.00	0.00
38.90	0.83	0.31	2.66	0.00	0.00	0.00
38.95	0.83	0.31	2.66	0.00	0.00	0.00
39.00	0.83	0.31	2.66	0.00	0.00	0.00
39.05	2.00	0.31	5.00	0.00	0.00	0.00
39.10	2.00	0.31	5.00	0.00	0.00	0.00
39.15	2.00	0.31	5.00	0.00	0.00	0.00
39.20	2.00	0.31	5.00	0.00	0.00	0.00
39.25	2.00	0.31	5.00	0.00	0.00	0.00
39.30	2.00	0.31	5.00	0.00	0.00	0.00
39.35	2.00	0.31	5.00	0.00	0.00	0.00
39.40	2.00	0.31	5.00	0.00	0.00	0.00
39.45	2.00	0.31	5.00	0.00	0.00	0.00
39.50	2.00	0.31	5.00	0.00	0.00	0.00
39.55	2.00	0.31	5.00	0.00	0.00	0.00
39.60	2.00	0.31	5.00	0.00	0.00	0.00
39.65	2.00	0.31	5.00	0.00	0.00	0.00
39.70	2.00	0.31	5.00	0.00	0.00	0.00
39.75	2.00	0.31	5.00	0.00	0.00	0.00
39.80	2.00	0.31	5.00	0.00	0.00	0.00
39.85	2.00	0.31	5.00	0.00	0.00	0.00
39.90	2.00	0.31	5.00	0.00	0.00	0.00
39.95	2.00	0.31	5.00	0.00	0.00	0.00
40.00	2.00	0.31	5.00	0.00	0.00	0.00
40.05	2.00	0.31	5.00	0.00	0.00	0.00
40.10	2.00	0.31	5.00	0.00	0.00	0.00
40.15	2.00	0.31	5.00	0.00	0.00	0.00
40.20	2.00	0.31	5.00	0.00	0.00	0.00
40.25	2.00	0.31	5.00	0.00	0.00	0.00
40.30	2.00	0.31	5.00	0.00	0.00	0.00
40.35	2.00	0.31	5.00	0.00	0.00	0.00
40.40	2.00	0.31	5.00	0.00	0.00	0.00
40.45	2.00	0.31	5.00	0.00	0.00	0.00
40.50	2.00	0.31	5.00	0.00	0.00	0.00
40.55	2.00	0.31	5.00	0.00	0.00	0.00
40.60	2.00	0.31	5.00	0.00	0.00	0.00
40.65	2.00	0.31	5.00	0.00	0.00	0.00
40.70	2.00	0.31	5.00	0.00	0.00	0.00
40.75	2.00	0.31	5.00	0.00	0.00	0.00
40.80	2.00	0.31	5.00	0.00	0.00	0.00
40.85	2.00	0.31	5.00	0.00	0.00	0.00
40.90	2.00	0.31	5.00	0.00	0.00	0.00
40.95	2.00	0.31	5.00	0.00	0.00	0.00

41.00	2.00	0.31	5.00	0.00	0.00	0.00
41.05	2.00	0.31	5.00	0.00	0.00	0.00
41.10	2.00	0.31	5.00	0.00	0.00	0.00
41.15	2.00	0.31	5.00	0.00	0.00	0.00
41.20	2.00	0.31	5.00	0.00	0.00	0.00
41.25	2.00	0.31	5.00	0.00	0.00	0.00
41.30	2.00	0.30	5.00	0.00	0.00	0.00
41.35	2.00	0.30	5.00	0.00	0.00	0.00
41.40	2.00	0.30	5.00	0.00	0.00	0.00
41.45	2.00	0.30	5.00	0.00	0.00	0.00
41.50	2.00	0.30	5.00	0.00	0.00	0.00
41.55	2.00	0.30	5.00	0.00	0.00	0.00
41.60	2.00	0.30	5.00	0.00	0.00	0.00
41.65	2.00	0.30	5.00	0.00	0.00	0.00
41.70	2.00	0.30	5.00	0.00	0.00	0.00
41.75	2.00	0.30	5.00	0.00	0.00	0.00
41.80	2.00	0.30	5.00	0.00	0.00	0.00
41.85	2.00	0.30	5.00	0.00	0.00	0.00
41.90	2.00	0.30	5.00	0.00	0.00	0.00
41.95	2.00	0.30	5.00	0.00	0.00	0.00
42.00	2.00	0.30	5.00	0.00	0.00	0.00
42.05	2.00	0.30	5.00	0.00	0.00	0.00
42.10	2.00	0.30	5.00	0.00	0.00	0.00
42.15	2.00	0.30	5.00	0.00	0.00	0.00
42.20	2.00	0.30	5.00	0.00	0.00	0.00
42.25	2.00	0.30	5.00	0.00	0.00	0.00
42.30	2.00	0.30	5.00	0.00	0.00	0.00
42.35	2.00	0.30	5.00	0.00	0.00	0.00
42.40	2.00	0.30	5.00	0.00	0.00	0.00
42.45	2.00	0.30	5.00	0.00	0.00	0.00
42.50	2.00	0.30	5.00	0.00	0.00	0.00
42.55	2.00	0.30	5.00	0.00	0.00	0.00
42.60	2.00	0.30	5.00	0.00	0.00	0.00
42.65	2.00	0.30	5.00	0.00	0.00	0.00
42.70	2.00	0.30	5.00	0.00	0.00	0.00
42.75	2.00	0.30	5.00	0.00	0.00	0.00
42.80	2.00	0.30	5.00	0.00	0.00	0.00
42.85	2.00	0.30	5.00	0.00	0.00	0.00
42.90	2.00	0.30	5.00	0.00	0.00	0.00
42.95	2.00	0.30	5.00	0.00	0.00	0.00
43.00	2.00	0.30	5.00	0.00	0.00	0.00
43.05	2.00	0.30	5.00	0.00	0.00	0.00
43.10	2.00	0.30	5.00	0.00	0.00	0.00
43.15	2.00	0.30	5.00	0.00	0.00	0.00
43.20	2.00	0.30	5.00	0.00	0.00	0.00
43.25	2.00	0.30	5.00	0.00	0.00	0.00
43.30	2.00	0.30	5.00	0.00	0.00	0.00
43.35	2.00	0.30	5.00	0.00	0.00	0.00
43.40	2.00	0.30	5.00	0.00	0.00	0.00
43.45	2.00	0.30	5.00	0.00	0.00	0.00
43.50	2.00	0.30	5.00	0.00	0.00	0.00
43.55	2.00	0.30	5.00	0.00	0.00	0.00
43.60	2.00	0.30	5.00	0.00	0.00	0.00
43.65	2.00	0.30	5.00	0.00	0.00	0.00
43.70	2.00	0.30	5.00	0.00	0.00	0.00
43.75	2.00	0.30	5.00	0.00	0.00	0.00
43.80	2.00	0.30	5.00	0.00	0.00	0.00
43.85	2.00	0.30	5.00	0.00	0.00	0.00
43.90	2.00	0.30	5.00	0.00	0.00	0.00
43.95	2.00	0.30	5.00	0.00	0.00	0.00
44.00	2.00	0.30	5.00	0.00	0.00	0.00
44.05	2.00	0.30	5.00	0.00	0.00	0.00
44.10	2.00	0.30	5.00	0.00	0.00	0.00
44.15	2.00	0.30	5.00	0.00	0.00	0.00
44.20	2.00	0.30	5.00	0.00	0.00	0.00
44.25	2.00	0.30	5.00	0.00	0.00	0.00
44.30	2.00	0.30	5.00	0.00	0.00	0.00
44.35	2.00	0.30	5.00	0.00	0.00	0.00
44.40	2.00	0.30	5.00	0.00	0.00	0.00
44.45	2.00	0.30	5.00	0.00	0.00	0.00
44.50	2.00	0.30	5.00	0.00	0.00	0.00

44.55	2.00	0.30	5.00	0.00	0.00	0.00
44.60	2.00	0.30	5.00	0.00	0.00	0.00
44.65	2.00	0.30	5.00	0.00	0.00	0.00
44.70	2.00	0.30	5.00	0.00	0.00	0.00
44.75	2.00	0.30	5.00	0.00	0.00	0.00
44.80	2.00	0.30	5.00	0.00	0.00	0.00
44.85	2.00	0.30	5.00	0.00	0.00	0.00
44.90	2.00	0.30	5.00	0.00	0.00	0.00
44.95	2.00	0.30	5.00	0.00	0.00	0.00
45.00	2.00	0.30	5.00	0.00	0.00	0.00
45.05	2.00	0.30	5.00	0.00	0.00	0.00
45.10	2.00	0.30	5.00	0.00	0.00	0.00
45.15	2.00	0.30	5.00	0.00	0.00	0.00
45.20	2.00	0.30	5.00	0.00	0.00	0.00
45.25	2.00	0.30	5.00	0.00	0.00	0.00
45.30	2.00	0.30	5.00	0.00	0.00	0.00
45.35	2.00	0.30	5.00	0.00	0.00	0.00
45.40	2.00	0.30	5.00	0.00	0.00	0.00
45.45	2.00	0.30	5.00	0.00	0.00	0.00
45.50	2.00	0.30	5.00	0.00	0.00	0.00
45.55	2.00	0.29	5.00	0.00	0.00	0.00
45.60	2.00	0.29	5.00	0.00	0.00	0.00
45.65	2.00	0.29	5.00	0.00	0.00	0.00
45.70	2.00	0.29	5.00	0.00	0.00	0.00
45.75	2.00	0.29	5.00	0.00	0.00	0.00
45.80	2.00	0.29	5.00	0.00	0.00	0.00
45.85	2.00	0.29	5.00	0.00	0.00	0.00
45.90	2.00	0.29	5.00	0.00	0.00	0.00
45.95	2.00	0.29	5.00	0.00	0.00	0.00
46.00	2.00	0.29	5.00	0.00	0.00	0.00
46.05	2.00	0.29	5.00	0.00	0.00	0.00
46.10	2.00	0.29	5.00	0.00	0.00	0.00
46.15	2.00	0.29	5.00	0.00	0.00	0.00
46.20	2.00	0.29	5.00	0.00	0.00	0.00
46.25	2.00	0.29	5.00	0.00	0.00	0.00
46.30	2.00	0.29	5.00	0.00	0.00	0.00
46.35	2.00	0.29	5.00	0.00	0.00	0.00
46.40	2.00	0.29	5.00	0.00	0.00	0.00
46.45	2.00	0.29	5.00	0.00	0.00	0.00
46.50	2.00	0.29	5.00	0.00	0.00	0.00
46.55	2.00	0.29	5.00	0.00	0.00	0.00
46.60	2.00	0.29	5.00	0.00	0.00	0.00
46.65	2.00	0.29	5.00	0.00	0.00	0.00
46.70	2.00	0.29	5.00	0.00	0.00	0.00
46.75	2.00	0.29	5.00	0.00	0.00	0.00
46.80	2.00	0.29	5.00	0.00	0.00	0.00
46.85	2.00	0.29	5.00	0.00	0.00	0.00
46.90	2.00	0.29	5.00	0.00	0.00	0.00
46.95	2.00	0.29	5.00	0.00	0.00	0.00
47.00	2.00	0.29	5.00	0.00	0.00	0.00
47.05	2.00	0.29	5.00	0.00	0.00	0.00
47.10	2.00	0.29	5.00	0.00	0.00	0.00
47.15	2.00	0.29	5.00	0.00	0.00	0.00
47.20	2.00	0.29	5.00	0.00	0.00	0.00
47.25	2.00	0.29	5.00	0.00	0.00	0.00
47.30	2.00	0.29	5.00	0.00	0.00	0.00
47.35	2.00	0.29	5.00	0.00	0.00	0.00
47.40	2.00	0.29	5.00	0.00	0.00	0.00
47.45	2.00	0.29	5.00	0.00	0.00	0.00
47.50	2.00	0.29	5.00	0.00	0.00	0.00
47.55	2.00	0.29	5.00	0.00	0.00	0.00
47.60	2.00	0.29	5.00	0.00	0.00	0.00
47.65	2.00	0.29	5.00	0.00	0.00	0.00
47.70	2.00	0.29	5.00	0.00	0.00	0.00
47.75	2.00	0.29	5.00	0.00	0.00	0.00
47.80	2.00	0.29	5.00	0.00	0.00	0.00
47.85	2.00	0.29	5.00	0.00	0.00	0.00
47.90	2.00	0.29	5.00	0.00	0.00	0.00
47.95	2.00	0.29	5.00	0.00	0.00	0.00
48.00	2.00	0.29	5.00	0.00	0.00	0.00
48.05	2.00	0.29	5.00	0.00	0.00	0.00

48.10	2.00	0.29	5.00	0.00	0.00	0.00
48.15	2.00	0.29	5.00	0.00	0.00	0.00
48.20	2.00	0.29	5.00	0.00	0.00	0.00
48.25	2.00	0.29	5.00	0.00	0.00	0.00
48.30	2.00	0.29	5.00	0.00	0.00	0.00
48.35	2.00	0.29	5.00	0.00	0.00	0.00
48.40	2.00	0.29	5.00	0.00	0.00	0.00
48.45	2.00	0.29	5.00	0.00	0.00	0.00
48.50	2.00	0.29	5.00	0.00	0.00	0.00
48.55	2.00	0.29	5.00	0.00	0.00	0.00
48.60	2.00	0.29	5.00	0.00	0.00	0.00
48.65	2.00	0.29	5.00	0.00	0.00	0.00
48.70	2.00	0.29	5.00	0.00	0.00	0.00
48.75	2.00	0.29	5.00	0.00	0.00	0.00
48.80	2.00	0.29	5.00	0.00	0.00	0.00
48.85	2.00	0.29	5.00	0.00	0.00	0.00
48.90	2.00	0.29	5.00	0.00	0.00	0.00
48.95	2.00	0.29	5.00	0.00	0.00	0.00
49.00	2.00	0.29	5.00	0.00	0.00	0.00
49.05	2.00	0.29	5.00	0.00	0.00	0.00
49.10	2.00	0.29	5.00	0.00	0.00	0.00
49.15	2.00	0.29	5.00	0.00	0.00	0.00
49.20	2.00	0.29	5.00	0.00	0.00	0.00
49.25	2.00	0.29	5.00	0.00	0.00	0.00
49.30	2.00	0.29	5.00	0.00	0.00	0.00
49.35	2.00	0.28	5.00	0.00	0.00	0.00
49.40	2.00	0.28	5.00	0.00	0.00	0.00
49.45	2.00	0.28	5.00	0.00	0.00	0.00
49.50	2.00	0.28	5.00	0.00	0.00	0.00
49.55	2.00	0.28	5.00	0.00	0.00	0.00
49.60	2.00	0.28	5.00	0.00	0.00	0.00
49.65	2.00	0.28	5.00	0.00	0.00	0.00
49.70	2.00	0.28	5.00	0.00	0.00	0.00
49.75	2.00	0.28	5.00	0.00	0.00	0.00
49.80	2.00	0.28	5.00	0.00	0.00	0.00
49.85	2.00	0.28	5.00	0.00	0.00	0.00
49.90	2.00	0.28	5.00	0.00	0.00	0.00
49.95	2.00	0.28	5.00	0.00	0.00	0.00
50.00	2.00	0.28	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

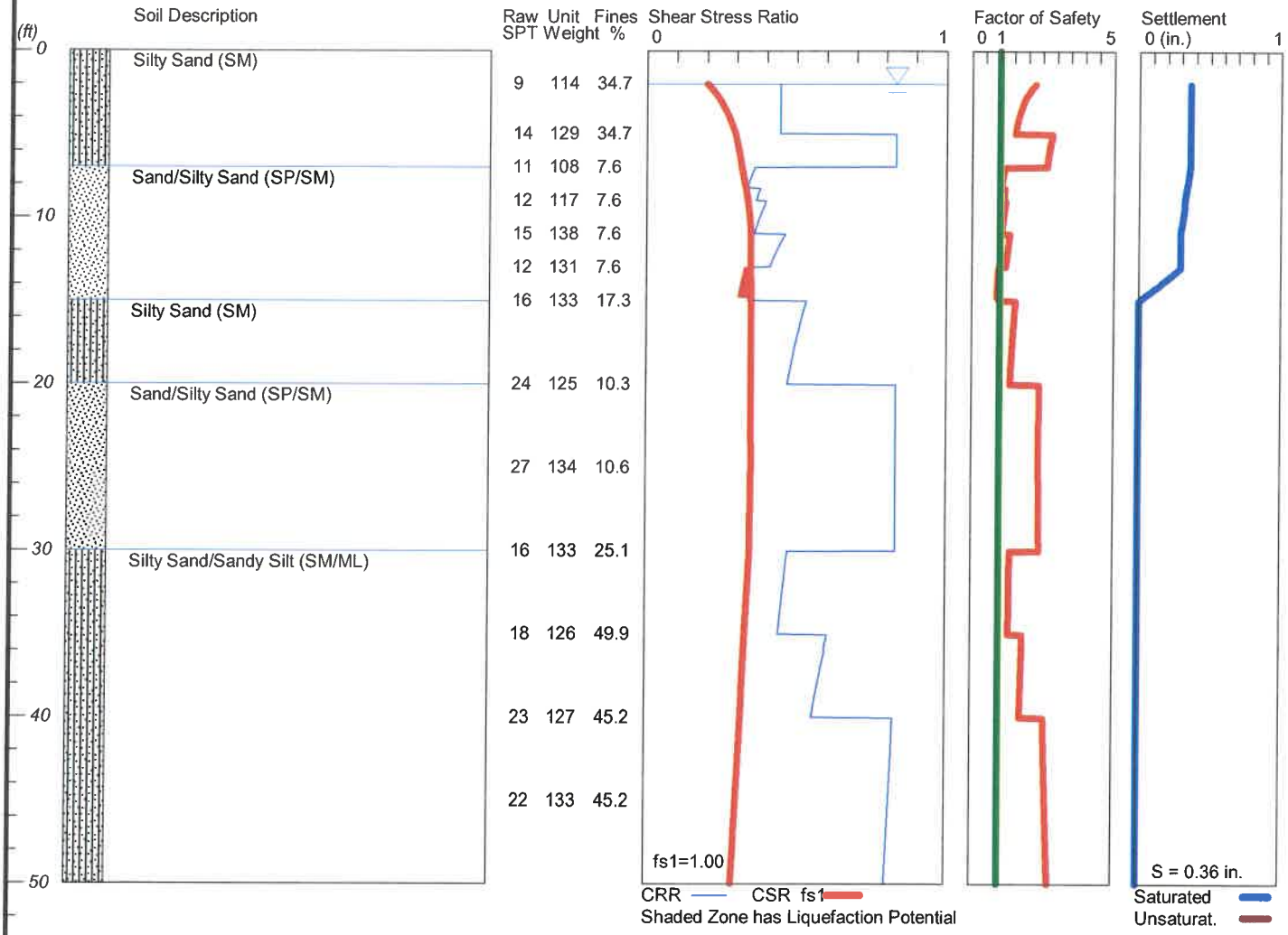
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Triangle Development

Hole No.=B15 Water Depth=2 ft

Magnitude=6.15
Acceleration=0.307g



LiquefyPro CivilTech Software USA www.civiltech.com

Krazan

012-22165

Plate A-1

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*****************************************************************************************************
                                    LIQUEFACTION ANALYSIS SUMMARY
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      Input File Name: C:\Users\mweber\Documents\Krazan\Projects\012\22\165 Triangle Development\B15\B15
Liquefaction.liq
      Title:  Triangle Development
      Subtitle:  012-22165

      Surface Elev.=
      Hole No.=B15
      Depth of Hole= 50.00 ft
      Water Table during Earthquake= 2.00 ft
      Water Table during In-Situ Testing= 15.00 ft
      Max. Acceleration= 0.31 g
      Earthquake Magnitude= 6.15

 Input Data:
      Surface Elev.=
      Hole No.=B15
      Depth of Hole=50.00 ft
      Water Table during Earthquake= 2.00 ft
      Water Table during In-Situ Testing= 15.00 ft
      Max. Acceleration=0.31 g
      Earthquake Magnitude=6.15
      No-Liquefiable Soils:   CL, OL are Non-Liq. Soil

      1. SPT or BPT Calculation.
      2. Settlement Analysis Method: Tokimatsu, M-correction
      3. Fines Correction for Liquefaction: Stark/Olson et al.*
      4. Fine Correction for Settlement: During Liquefaction*
      5. Settlement Calculation in: All zones*
      6. Hammer Energy Ratio,                                    Ce = 1.4
      7. Borehole Diameter,                                          Cb= 1.05
      8. Sampling Method,                                           Cs= 1
      9. User request factor of safety (apply to CSR) ,   User= 1
         Plot one CSR curve (fs1=User)
      10. Use Curve Smoothing: No
      * Recommended Options

      In-Situ Test Data:
      Depth   SPT     gamma   Fines
      ft              pcf     %
      ____________________________________
      2.00    9.00    114.00  34.70
      5.00    14.00   129.00  34.70
      7.00    11.00   108.00  7.60
      9.00    12.00   117.00  7.60
      11.00   15.00   138.00  7.60
      13.00   12.00   131.00  7.60
      15.00   16.00   133.00  17.30
      20.00   24.00   125.00  10.30
      25.00   27.00   134.00  10.60
      30.00   16.00   133.00  25.10
      35.00   18.00   126.00  49.90
      40.00   23.00   127.00  45.20
      45.00   22.00   133.00  45.20
      ____________________________________

Output Results:
      Settlement of Saturated Sands=0.36 in.
      Settlement of Unsaturated Sands=0.00 in.
      Total Settlement of Saturated and Unsaturated Sands=0.36 in.
      Differential Settlement=0.178 to 0.235 in.

      Depth   CRRm    CSRfs   F.S.    S_sat.  S_dry   S_all
      ft                              in.     in.     in.
```

2.00	0.44	0.20	2.23	0.36	0.00	0.36
2.05	0.44	0.20	2.21	0.36	0.00	0.36
2.10	0.44	0.20	2.18	0.36	0.00	0.36
2.15	0.44	0.21	2.15	0.36	0.00	0.36
2.20	0.44	0.21	2.12	0.36	0.00	0.36
2.25	0.44	0.21	2.10	0.36	0.00	0.36
2.30	0.44	0.21	2.08	0.36	0.00	0.36
2.35	0.44	0.22	2.05	0.36	0.00	0.36
2.40	0.44	0.22	2.03	0.36	0.00	0.36
2.45	0.44	0.22	2.01	0.36	0.00	0.36
2.50	0.44	0.22	1.99	0.36	0.00	0.36
2.55	0.44	0.22	1.97	0.36	0.00	0.36
2.60	0.44	0.23	1.96	0.36	0.00	0.36
2.65	0.44	0.23	1.94	0.36	0.00	0.36
2.70	0.44	0.23	1.92	0.36	0.00	0.36
2.75	0.44	0.23	1.90	0.36	0.00	0.36
2.80	0.44	0.23	1.89	0.36	0.00	0.36
2.85	0.44	0.24	1.87	0.36	0.00	0.36
2.90	0.44	0.24	1.86	0.36	0.00	0.36
2.95	0.44	0.24	1.84	0.36	0.00	0.36
3.00	0.44	0.24	1.83	0.36	0.00	0.36
3.05	0.44	0.24	1.82	0.36	0.00	0.36
3.10	0.44	0.25	1.81	0.36	0.00	0.36
3.15	0.44	0.25	1.79	0.36	0.00	0.36
3.20	0.44	0.25	1.78	0.36	0.00	0.36
3.25	0.44	0.25	1.77	0.36	0.00	0.36
3.30	0.44	0.25	1.76	0.36	0.00	0.36
3.35	0.44	0.25	1.75	0.36	0.00	0.36
3.40	0.44	0.26	1.74	0.36	0.00	0.36
3.45	0.44	0.26	1.73	0.36	0.00	0.36
3.50	0.44	0.26	1.72	0.36	0.00	0.36
3.55	0.44	0.26	1.71	0.36	0.00	0.36
3.60	0.44	0.26	1.70	0.36	0.00	0.36
3.65	0.44	0.26	1.69	0.36	0.00	0.36
3.70	0.44	0.26	1.68	0.36	0.00	0.36
3.75	0.44	0.27	1.67	0.36	0.00	0.36
3.80	0.44	0.27	1.66	0.36	0.00	0.36
3.85	0.44	0.27	1.65	0.36	0.00	0.36
3.90	0.44	0.27	1.65	0.36	0.00	0.36
3.95	0.44	0.27	1.64	0.36	0.00	0.36
4.00	0.44	0.27	1.63	0.36	0.00	0.36
4.05	0.44	0.27	1.62	0.36	0.00	0.36
4.10	0.44	0.27	1.62	0.36	0.00	0.36
4.15	0.44	0.28	1.61	0.36	0.00	0.36
4.20	0.44	0.28	1.60	0.36	0.00	0.36
4.25	0.44	0.28	1.60	0.36	0.00	0.36
4.30	0.44	0.28	1.59	0.36	0.00	0.36
4.35	0.44	0.28	1.58	0.36	0.00	0.36
4.40	0.44	0.28	1.58	0.36	0.00	0.36
4.45	0.44	0.28	1.57	0.36	0.00	0.36
4.50	0.44	0.28	1.56	0.36	0.00	0.36
4.55	0.44	0.28	1.56	0.36	0.00	0.36
4.60	0.44	0.29	1.55	0.36	0.00	0.36
4.65	0.44	0.29	1.55	0.36	0.00	0.36
4.70	0.44	0.29	1.54	0.36	0.00	0.36
4.75	0.44	0.29	1.54	0.36	0.00	0.36
4.80	0.44	0.29	1.53	0.36	0.00	0.36
4.85	0.44	0.29	1.53	0.36	0.00	0.36
4.90	0.44	0.29	1.52	0.36	0.00	0.36
4.95	0.44	0.29	1.52	0.36	0.00	0.36
5.00	0.83	0.29	2.83	0.36	0.00	0.36
5.05	0.83	0.29	2.82	0.36	0.00	0.36
5.10	0.83	0.30	2.81	0.36	0.00	0.36
5.15	0.83	0.30	2.81	0.36	0.00	0.36
5.20	0.83	0.30	2.80	0.36	0.00	0.36
5.25	0.83	0.30	2.80	0.36	0.00	0.36
5.30	0.83	0.30	2.79	0.36	0.00	0.36
5.35	0.83	0.30	2.78	0.36	0.00	0.36
5.40	0.83	0.30	2.78	0.36	0.00	0.36
5.45	0.83	0.30	2.77	0.36	0.00	0.36

5.50	0.83	0.30	2.77	0.36	0.00	0.36
5.55	0.83	0.30	2.76	0.36	0.00	0.36
5.60	0.83	0.30	2.75	0.36	0.00	0.36
5.65	0.83	0.30	2.75	0.36	0.00	0.36
5.70	0.83	0.30	2.74	0.36	0.00	0.36
5.75	0.83	0.30	2.74	0.36	0.00	0.36
5.80	0.83	0.30	2.73	0.36	0.00	0.36
5.85	0.83	0.30	2.73	0.36	0.00	0.36
5.90	0.83	0.30	2.72	0.36	0.00	0.36
5.95	0.83	0.31	2.72	0.36	0.00	0.36
6.00	0.83	0.31	2.71	0.36	0.00	0.36
6.05	0.83	0.31	2.71	0.36	0.00	0.36
6.10	0.83	0.31	2.71	0.36	0.00	0.36
6.15	0.83	0.31	2.70	0.36	0.00	0.36
6.20	0.83	0.31	2.70	0.36	0.00	0.36
6.25	0.83	0.31	2.69	0.36	0.00	0.36
6.30	0.83	0.31	2.69	0.36	0.00	0.36
6.35	0.83	0.31	2.68	0.36	0.00	0.36
6.40	0.83	0.31	2.68	0.36	0.00	0.36
6.45	0.83	0.31	2.68	0.36	0.00	0.36
6.50	0.83	0.31	2.67	0.36	0.00	0.36
6.55	0.83	0.31	2.67	0.36	0.00	0.36
6.60	0.83	0.31	2.66	0.36	0.00	0.36
6.65	0.83	0.31	2.66	0.36	0.00	0.36
6.70	0.83	0.31	2.66	0.36	0.00	0.36
6.75	0.83	0.31	2.65	0.36	0.00	0.36
6.80	0.83	0.31	2.65	0.36	0.00	0.36
6.85	0.83	0.31	2.65	0.36	0.00	0.36
6.90	0.83	0.31	2.64	0.36	0.00	0.36
6.95	0.83	0.31	2.64	0.36	0.00	0.36
7.00	0.36	0.31	1.14	0.36	0.00	0.36
7.05	0.36	0.32	1.14	0.35	0.00	0.35
7.10	0.36	0.32	1.13	0.35	0.00	0.35
7.15	0.36	0.32	1.12	0.35	0.00	0.35
7.20	0.35	0.32	1.12	0.35	0.00	0.35
7.25	0.35	0.32	1.11	0.35	0.00	0.35
7.30	0.35	0.32	1.11	0.35	0.00	0.35
7.35	0.35	0.32	1.10	0.35	0.00	0.35
7.40	0.35	0.32	1.10	0.35	0.00	0.35
7.45	0.35	0.32	1.09	0.35	0.00	0.35
7.50	0.35	0.32	1.08	0.35	0.00	0.35
7.55	0.35	0.32	1.08	0.35	0.00	0.35
7.60	0.35	0.32	1.07	0.35	0.00	0.35
7.65	0.35	0.32	1.07	0.34	0.00	0.34
7.70	0.34	0.32	1.06	0.34	0.00	0.34
7.75	0.34	0.32	1.06	0.34	0.00	0.34
7.80	0.34	0.32	1.05	0.34	0.00	0.34
7.85	0.34	0.32	1.05	0.34	0.00	0.34
7.90	0.34	0.33	1.05	0.34	0.00	0.34
7.95	0.34	0.33	1.04	0.34	0.00	0.34
8.00	0.34	0.33	1.04	0.34	0.00	0.34
8.05	0.34	0.33	1.03	0.34	0.00	0.34
8.10	0.34	0.33	1.03	0.33	0.00	0.33
8.15	0.34	0.33	1.02	0.33	0.00	0.33
8.20	0.33	0.33	1.02	0.33	0.00	0.33
8.25	0.38	0.33	1.15	0.33	0.00	0.33
8.30	0.38	0.33	1.15	0.33	0.00	0.33
8.35	0.38	0.33	1.14	0.33	0.00	0.33
8.40	0.38	0.33	1.14	0.33	0.00	0.33
8.45	0.37	0.33	1.13	0.33	0.00	0.33
8.50	0.37	0.33	1.13	0.33	0.00	0.33
8.55	0.37	0.33	1.12	0.33	0.00	0.33
8.60	0.37	0.33	1.12	0.33	0.00	0.33
8.65	0.37	0.33	1.11	0.32	0.00	0.32
8.70	0.37	0.33	1.11	0.32	0.00	0.32
8.75	0.37	0.33	1.10	0.32	0.00	0.32
8.80	0.37	0.33	1.10	0.32	0.00	0.32
8.85	0.37	0.33	1.09	0.32	0.00	0.32
8.90	0.36	0.34	1.09	0.32	0.00	0.32
8.95	0.36	0.34	1.08	0.32	0.00	0.32
9.00	0.40	0.34	1.19	0.32	0.00	0.32

9.05	0.40	0.34	1.18	0.32	0.00	0.32
9.10	0.40	0.34	1.18	0.32	0.00	0.32
9.15	0.39	0.34	1.17	0.32	0.00	0.32
9.20	0.39	0.34	1.17	0.32	0.00	0.32
9.25	0.39	0.34	1.16	0.32	0.00	0.32
9.30	0.39	0.34	1.16	0.32	0.00	0.32
9.35	0.39	0.34	1.15	0.32	0.00	0.32
9.40	0.39	0.34	1.15	0.32	0.00	0.32
9.45	0.39	0.34	1.14	0.32	0.00	0.32
9.50	0.39	0.34	1.14	0.32	0.00	0.32
9.55	0.39	0.34	1.14	0.32	0.00	0.32
9.60	0.38	0.34	1.13	0.31	0.00	0.31
9.65	0.38	0.34	1.13	0.31	0.00	0.31
9.70	0.38	0.34	1.12	0.31	0.00	0.31
9.75	0.38	0.34	1.12	0.31	0.00	0.31
9.80	0.38	0.34	1.12	0.31	0.00	0.31
9.85	0.38	0.34	1.11	0.31	0.00	0.31
9.90	0.38	0.34	1.11	0.31	0.00	0.31
9.95	0.38	0.34	1.10	0.31	0.00	0.31
10.00	0.38	0.34	1.10	0.31	0.00	0.31
10.05	0.37	0.34	1.10	0.31	0.00	0.31
10.10	0.37	0.34	1.09	0.31	0.00	0.31
10.15	0.37	0.34	1.09	0.31	0.00	0.31
10.20	0.37	0.34	1.08	0.30	0.00	0.30
10.25	0.37	0.34	1.08	0.30	0.00	0.30
10.30	0.37	0.34	1.08	0.30	0.00	0.30
10.35	0.37	0.34	1.07	0.30	0.00	0.30
10.40	0.37	0.34	1.07	0.30	0.00	0.30
10.45	0.37	0.34	1.07	0.30	0.00	0.30
10.50	0.37	0.34	1.06	0.30	0.00	0.30
10.55	0.37	0.34	1.06	0.30	0.00	0.30
10.60	0.36	0.34	1.06	0.30	0.00	0.30
10.65	0.36	0.35	1.05	0.30	0.00	0.30
10.70	0.36	0.35	1.05	0.29	0.00	0.29
10.75	0.36	0.35	1.05	0.29	0.00	0.29
10.80	0.36	0.35	1.04	0.29	0.00	0.29
10.85	0.36	0.35	1.04	0.29	0.00	0.29
10.90	0.36	0.35	1.04	0.29	0.00	0.29
10.95	0.36	0.35	1.03	0.29	0.00	0.29
11.00	0.46	0.35	1.33	0.29	0.00	0.29
11.05	0.46	0.35	1.33	0.29	0.00	0.29
11.10	0.46	0.35	1.32	0.29	0.00	0.29
11.15	0.46	0.35	1.32	0.29	0.00	0.29
11.20	0.46	0.35	1.31	0.29	0.00	0.29
11.25	0.45	0.35	1.31	0.29	0.00	0.29
11.30	0.45	0.35	1.31	0.29	0.00	0.29
11.35	0.45	0.35	1.30	0.29	0.00	0.29
11.40	0.45	0.35	1.30	0.29	0.00	0.29
11.45	0.45	0.35	1.29	0.29	0.00	0.29
11.50	0.45	0.35	1.29	0.29	0.00	0.29
11.55	0.45	0.35	1.28	0.29	0.00	0.29
11.60	0.44	0.35	1.28	0.29	0.00	0.29
11.65	0.44	0.35	1.28	0.29	0.00	0.29
11.70	0.44	0.35	1.27	0.29	0.00	0.29
11.75	0.44	0.35	1.27	0.29	0.00	0.29
11.80	0.44	0.35	1.26	0.29	0.00	0.29
11.85	0.44	0.35	1.26	0.29	0.00	0.29
11.90	0.44	0.35	1.26	0.29	0.00	0.29
11.95	0.43	0.35	1.25	0.29	0.00	0.29
12.00	0.43	0.35	1.25	0.29	0.00	0.29
12.05	0.43	0.35	1.24	0.29	0.00	0.29
12.10	0.43	0.35	1.24	0.29	0.00	0.29
12.15	0.43	0.35	1.24	0.29	0.00	0.29
12.20	0.43	0.35	1.23	0.29	0.00	0.29
12.25	0.43	0.35	1.23	0.29	0.00	0.29
12.30	0.43	0.35	1.23	0.29	0.00	0.29
12.35	0.42	0.35	1.22	0.29	0.00	0.29
12.40	0.42	0.35	1.22	0.29	0.00	0.29
12.45	0.42	0.35	1.22	0.29	0.00	0.29
12.50	0.42	0.35	1.21	0.29	0.00	0.29
12.55	0.42	0.35	1.21	0.29	0.00	0.29

12.60	0.42	0.35	1.21	0.29	0.00	0.29
12.65	0.42	0.35	1.20	0.29	0.00	0.29
12.70	0.42	0.35	1.20	0.29	0.00	0.29
12.75	0.41	0.35	1.20	0.29	0.00	0.29
12.80	0.41	0.35	1.19	0.29	0.00	0.29
12.85	0.41	0.35	1.19	0.29	0.00	0.29
12.90	0.41	0.35	1.19	0.29	0.00	0.29
12.95	0.41	0.35	1.18	0.29	0.00	0.29
13.00	0.32	0.35	0.94*	0.29	0.00	0.29
13.05	0.32	0.35	0.94*	0.28	0.00	0.28
13.10	0.32	0.35	0.93*	0.27	0.00	0.27
13.15	0.32	0.35	0.93*	0.27	0.00	0.27
13.20	0.32	0.35	0.93*	0.26	0.00	0.26
13.25	0.32	0.35	0.93*	0.25	0.00	0.25
13.30	0.32	0.35	0.93*	0.25	0.00	0.25
13.35	0.32	0.35	0.92*	0.24	0.00	0.24
13.40	0.32	0.35	0.92*	0.23	0.00	0.23
13.45	0.32	0.35	0.92*	0.23	0.00	0.23
13.50	0.32	0.35	0.92*	0.22	0.00	0.22
13.55	0.32	0.35	0.92*	0.21	0.00	0.21
13.60	0.32	0.35	0.91*	0.21	0.00	0.21
13.65	0.32	0.35	0.91*	0.20	0.00	0.20
13.70	0.32	0.35	0.91*	0.19	0.00	0.19
13.75	0.32	0.35	0.91*	0.18	0.00	0.18
13.80	0.31	0.35	0.91*	0.18	0.00	0.18
13.85	0.31	0.35	0.90*	0.17	0.00	0.17
13.90	0.31	0.35	0.90*	0.16	0.00	0.16
13.95	0.31	0.35	0.90*	0.15	0.00	0.15
14.00	0.31	0.35	0.90*	0.15	0.00	0.15
14.05	0.31	0.35	0.90*	0.14	0.00	0.14
14.10	0.31	0.35	0.90*	0.13	0.00	0.13
14.15	0.31	0.35	0.89*	0.12	0.00	0.12
14.20	0.31	0.35	0.89*	0.12	0.00	0.12
14.25	0.31	0.35	0.89*	0.11	0.00	0.11
14.30	0.31	0.35	0.89*	0.10	0.00	0.10
14.35	0.31	0.35	0.89*	0.09	0.00	0.09
14.40	0.31	0.35	0.89*	0.09	0.00	0.09
14.45	0.31	0.35	0.88*	0.08	0.00	0.08
14.50	0.31	0.35	0.88*	0.07	0.00	0.07
14.55	0.31	0.35	0.88*	0.06	0.00	0.06
14.60	0.31	0.35	0.88*	0.06	0.00	0.06
14.65	0.31	0.35	0.88*	0.05	0.00	0.05
14.70	0.30	0.35	0.88*	0.04	0.00	0.04
14.75	0.30	0.35	0.87*	0.03	0.00	0.03
14.80	0.34	0.35	0.97*	0.02	0.00	0.02
14.85	0.34	0.35	0.97*	0.02	0.00	0.02
14.90	0.34	0.35	0.97*	0.01	0.00	0.01
14.95	0.34	0.35	0.97*	0.01	0.00	0.01
15.00	0.53	0.35	1.53	0.00	0.00	0.00
15.05	0.53	0.35	1.53	0.00	0.00	0.00
15.10	0.53	0.35	1.53	0.00	0.00	0.00
15.15	0.53	0.35	1.53	0.00	0.00	0.00
15.20	0.53	0.35	1.52	0.00	0.00	0.00
15.25	0.53	0.35	1.52	0.00	0.00	0.00
15.30	0.53	0.35	1.52	0.00	0.00	0.00
15.35	0.53	0.35	1.52	0.00	0.00	0.00
15.40	0.53	0.35	1.51	0.00	0.00	0.00
15.45	0.53	0.35	1.51	0.00	0.00	0.00
15.50	0.53	0.35	1.51	0.00	0.00	0.00
15.55	0.52	0.35	1.51	0.00	0.00	0.00
15.60	0.52	0.35	1.50	0.00	0.00	0.00
15.65	0.52	0.35	1.50	0.00	0.00	0.00
15.70	0.52	0.35	1.50	0.00	0.00	0.00
15.75	0.52	0.35	1.50	0.00	0.00	0.00
15.80	0.52	0.35	1.50	0.00	0.00	0.00
15.85	0.52	0.35	1.49	0.00	0.00	0.00
15.90	0.52	0.35	1.49	0.00	0.00	0.00
15.95	0.52	0.35	1.49	0.00	0.00	0.00
16.00	0.52	0.35	1.49	0.00	0.00	0.00
16.05	0.52	0.35	1.48	0.00	0.00	0.00
16.10	0.52	0.35	1.48	0.00	0.00	0.00

16.15	0.52	0.35	1.48	0.00	0.00	0.00
16.20	0.51	0.35	1.48	0.00	0.00	0.00
16.25	0.51	0.35	1.48	0.00	0.00	0.00
16.30	0.51	0.35	1.47	0.00	0.00	0.00
16.35	0.51	0.35	1.47	0.00	0.00	0.00
16.40	0.51	0.35	1.47	0.00	0.00	0.00
16.45	0.51	0.35	1.47	0.00	0.00	0.00
16.50	0.51	0.35	1.47	0.00	0.00	0.00
16.55	0.51	0.35	1.46	0.00	0.00	0.00
16.60	0.51	0.35	1.46	0.00	0.00	0.00
16.65	0.51	0.35	1.46	0.00	0.00	0.00
16.70	0.51	0.35	1.46	0.00	0.00	0.00
16.75	0.51	0.35	1.46	0.00	0.00	0.00
16.80	0.51	0.35	1.45	0.00	0.00	0.00
16.85	0.51	0.35	1.45	0.00	0.00	0.00
16.90	0.51	0.35	1.45	0.00	0.00	0.00
16.95	0.50	0.35	1.45	0.00	0.00	0.00
17.00	0.50	0.35	1.45	0.00	0.00	0.00
17.05	0.50	0.35	1.45	0.00	0.00	0.00
17.10	0.50	0.35	1.44	0.00	0.00	0.00
17.15	0.50	0.35	1.44	0.00	0.00	0.00
17.20	0.50	0.35	1.44	0.00	0.00	0.00
17.25	0.50	0.35	1.44	0.00	0.00	0.00
17.30	0.50	0.35	1.44	0.00	0.00	0.00
17.35	0.50	0.35	1.43	0.00	0.00	0.00
17.40	0.50	0.35	1.43	0.00	0.00	0.00
17.45	0.50	0.35	1.43	0.00	0.00	0.00
17.50	0.50	0.35	1.43	0.00	0.00	0.00
17.55	0.50	0.35	1.43	0.00	0.00	0.00
17.60	0.50	0.35	1.43	0.00	0.00	0.00
17.65	0.50	0.35	1.42	0.00	0.00	0.00
17.70	0.50	0.35	1.42	0.00	0.00	0.00
17.75	0.49	0.35	1.42	0.00	0.00	0.00
17.80	0.49	0.35	1.42	0.00	0.00	0.00
17.85	0.49	0.35	1.42	0.00	0.00	0.00
17.90	0.49	0.35	1.42	0.00	0.00	0.00
17.95	0.49	0.35	1.41	0.00	0.00	0.00
18.00	0.49	0.35	1.41	0.00	0.00	0.00
18.05	0.49	0.35	1.41	0.00	0.00	0.00
18.10	0.49	0.35	1.41	0.00	0.00	0.00
18.15	0.49	0.35	1.41	0.00	0.00	0.00
18.20	0.49	0.35	1.41	0.00	0.00	0.00
18.25	0.49	0.35	1.40	0.00	0.00	0.00
18.30	0.49	0.35	1.40	0.00	0.00	0.00
18.35	0.49	0.35	1.40	0.00	0.00	0.00
18.40	0.49	0.35	1.40	0.00	0.00	0.00
18.45	0.49	0.35	1.40	0.00	0.00	0.00
18.50	0.49	0.35	1.40	0.00	0.00	0.00
18.55	0.49	0.35	1.39	0.00	0.00	0.00
18.60	0.48	0.35	1.39	0.00	0.00	0.00
18.65	0.48	0.35	1.39	0.00	0.00	0.00
18.70	0.48	0.35	1.39	0.00	0.00	0.00
18.75	0.48	0.35	1.39	0.00	0.00	0.00
18.80	0.48	0.35	1.39	0.00	0.00	0.00
18.85	0.48	0.35	1.39	0.00	0.00	0.00
18.90	0.48	0.35	1.38	0.00	0.00	0.00
18.95	0.48	0.35	1.38	0.00	0.00	0.00
19.00	0.48	0.35	1.38	0.00	0.00	0.00
19.05	0.48	0.35	1.38	0.00	0.00	0.00
19.10	0.48	0.35	1.38	0.00	0.00	0.00
19.15	0.48	0.35	1.38	0.00	0.00	0.00
19.20	0.48	0.35	1.37	0.00	0.00	0.00
19.25	0.48	0.35	1.37	0.00	0.00	0.00
19.30	0.48	0.35	1.37	0.00	0.00	0.00
19.35	0.48	0.35	1.37	0.00	0.00	0.00
19.40	0.48	0.35	1.37	0.00	0.00	0.00
19.45	0.48	0.35	1.37	0.00	0.00	0.00
19.50	0.48	0.35	1.37	0.00	0.00	0.00
19.55	0.47	0.35	1.36	0.00	0.00	0.00
19.60	0.47	0.35	1.36	0.00	0.00	0.00
19.65	0.47	0.35	1.36	0.00	0.00	0.00

19.70	0.47	0.35	1.36	0.00	0.00	0.00
19.75	0.47	0.35	1.36	0.00	0.00	0.00
19.80	0.47	0.35	1.36	0.00	0.00	0.00
19.85	0.47	0.35	1.36	0.00	0.00	0.00
19.90	0.47	0.35	1.36	0.00	0.00	0.00
19.95	0.47	0.35	1.35	0.00	0.00	0.00
20.00	0.47	0.35	1.35	0.00	0.00	0.00
20.05	0.83	0.35	2.39	0.00	0.00	0.00
20.10	0.83	0.35	2.39	0.00	0.00	0.00
20.15	0.83	0.35	2.39	0.00	0.00	0.00
20.20	0.83	0.35	2.39	0.00	0.00	0.00
20.25	0.83	0.35	2.39	0.00	0.00	0.00
20.30	0.83	0.35	2.39	0.00	0.00	0.00
20.35	0.83	0.35	2.39	0.00	0.00	0.00
20.40	0.83	0.35	2.39	0.00	0.00	0.00
20.45	0.83	0.35	2.39	0.00	0.00	0.00
20.50	0.83	0.35	2.39	0.00	0.00	0.00
20.55	0.83	0.35	2.39	0.00	0.00	0.00
20.60	0.83	0.35	2.39	0.00	0.00	0.00
20.65	0.83	0.35	2.39	0.00	0.00	0.00
20.70	0.83	0.35	2.39	0.00	0.00	0.00
20.75	0.83	0.35	2.39	0.00	0.00	0.00
20.80	0.83	0.35	2.39	0.00	0.00	0.00
20.85	0.83	0.35	2.39	0.00	0.00	0.00
20.90	0.83	0.35	2.39	0.00	0.00	0.00
20.95	0.83	0.35	2.39	0.00	0.00	0.00
21.00	0.83	0.35	2.39	0.00	0.00	0.00
21.05	0.83	0.35	2.39	0.00	0.00	0.00
21.10	0.83	0.35	2.39	0.00	0.00	0.00
21.15	0.83	0.35	2.39	0.00	0.00	0.00
21.20	0.83	0.35	2.39	0.00	0.00	0.00
21.25	0.83	0.35	2.39	0.00	0.00	0.00
21.30	0.83	0.35	2.39	0.00	0.00	0.00
21.35	0.83	0.35	2.38	0.00	0.00	0.00
21.40	0.83	0.35	2.38	0.00	0.00	0.00
21.45	0.83	0.35	2.38	0.00	0.00	0.00
21.50	0.83	0.35	2.38	0.00	0.00	0.00
21.55	0.83	0.35	2.38	0.00	0.00	0.00
21.60	0.83	0.35	2.38	0.00	0.00	0.00
21.65	0.83	0.35	2.38	0.00	0.00	0.00
21.70	0.83	0.35	2.38	0.00	0.00	0.00
21.75	0.83	0.35	2.38	0.00	0.00	0.00
21.80	0.83	0.35	2.38	0.00	0.00	0.00
21.85	0.83	0.35	2.38	0.00	0.00	0.00
21.90	0.83	0.35	2.38	0.00	0.00	0.00
21.95	0.83	0.35	2.38	0.00	0.00	0.00
22.00	0.83	0.35	2.38	0.00	0.00	0.00
22.05	0.83	0.35	2.38	0.00	0.00	0.00
22.10	0.83	0.35	2.38	0.00	0.00	0.00
22.15	0.83	0.35	2.38	0.00	0.00	0.00
22.20	0.83	0.35	2.38	0.00	0.00	0.00
22.25	0.83	0.35	2.38	0.00	0.00	0.00
22.30	0.83	0.35	2.38	0.00	0.00	0.00
22.35	0.83	0.35	2.38	0.00	0.00	0.00
22.40	0.83	0.35	2.38	0.00	0.00	0.00
22.45	0.83	0.35	2.38	0.00	0.00	0.00
22.50	0.83	0.35	2.38	0.00	0.00	0.00
22.55	0.83	0.35	2.38	0.00	0.00	0.00
22.60	0.83	0.35	2.38	0.00	0.00	0.00
22.65	0.83	0.35	2.38	0.00	0.00	0.00
22.70	0.83	0.35	2.38	0.00	0.00	0.00
22.75	0.83	0.35	2.38	0.00	0.00	0.00
22.80	0.83	0.35	2.38	0.00	0.00	0.00
22.85	0.83	0.35	2.38	0.00	0.00	0.00
22.90	0.83	0.35	2.38	0.00	0.00	0.00
22.95	0.83	0.35	2.38	0.00	0.00	0.00
23.00	0.83	0.35	2.38	0.00	0.00	0.00
23.05	0.83	0.35	2.38	0.00	0.00	0.00
23.10	0.83	0.35	2.38	0.00	0.00	0.00
23.15	0.83	0.35	2.38	0.00	0.00	0.00
23.20	0.83	0.35	2.38	0.00	0.00	0.00

23.25	0.83	0.35	2.38	0.00	0.00	0.00
23.30	0.83	0.35	2.38	0.00	0.00	0.00
23.35	0.83	0.35	2.38	0.00	0.00	0.00
23.40	0.83	0.35	2.38	0.00	0.00	0.00
23.45	0.83	0.35	2.38	0.00	0.00	0.00
23.50	0.83	0.35	2.38	0.00	0.00	0.00
23.55	0.83	0.35	2.38	0.00	0.00	0.00
23.60	0.83	0.35	2.38	0.00	0.00	0.00
23.65	0.83	0.35	2.38	0.00	0.00	0.00
23.70	0.83	0.35	2.38	0.00	0.00	0.00
23.75	0.83	0.35	2.38	0.00	0.00	0.00
23.80	0.83	0.35	2.38	0.00	0.00	0.00
23.85	0.83	0.35	2.38	0.00	0.00	0.00
23.90	0.83	0.35	2.38	0.00	0.00	0.00
23.95	0.83	0.35	2.38	0.00	0.00	0.00
24.00	0.83	0.35	2.38	0.00	0.00	0.00
24.05	0.83	0.35	2.38	0.00	0.00	0.00
24.10	0.83	0.35	2.38	0.00	0.00	0.00
24.15	0.83	0.35	2.38	0.00	0.00	0.00
24.20	0.83	0.35	2.38	0.00	0.00	0.00
24.25	0.83	0.35	2.38	0.00	0.00	0.00
24.30	0.83	0.35	2.38	0.00	0.00	0.00
24.35	0.83	0.35	2.38	0.00	0.00	0.00
24.40	0.83	0.35	2.38	0.00	0.00	0.00
24.45	0.83	0.35	2.38	0.00	0.00	0.00
24.50	0.83	0.35	2.38	0.00	0.00	0.00
24.55	0.83	0.35	2.38	0.00	0.00	0.00
24.60	0.83	0.35	2.38	0.00	0.00	0.00
24.65	0.83	0.35	2.38	0.00	0.00	0.00
24.70	0.83	0.35	2.38	0.00	0.00	0.00
24.75	0.83	0.35	2.38	0.00	0.00	0.00
24.80	0.83	0.35	2.38	0.00	0.00	0.00
24.85	0.83	0.35	2.38	0.00	0.00	0.00
24.90	0.83	0.35	2.38	0.00	0.00	0.00
24.95	0.83	0.35	2.38	0.00	0.00	0.00
25.00	0.83	0.35	2.38	0.00	0.00	0.00
25.05	0.83	0.35	2.38	0.00	0.00	0.00
25.10	0.83	0.35	2.38	0.00	0.00	0.00
25.15	0.83	0.35	2.38	0.00	0.00	0.00
25.20	0.83	0.35	2.38	0.00	0.00	0.00
25.25	0.83	0.35	2.38	0.00	0.00	0.00
25.30	0.83	0.35	2.38	0.00	0.00	0.00
25.35	0.83	0.35	2.38	0.00	0.00	0.00
25.40	0.83	0.35	2.38	0.00	0.00	0.00
25.45	0.83	0.35	2.38	0.00	0.00	0.00
25.50	0.83	0.35	2.38	0.00	0.00	0.00
25.55	0.83	0.35	2.38	0.00	0.00	0.00
25.60	0.83	0.35	2.38	0.00	0.00	0.00
25.65	0.83	0.35	2.38	0.00	0.00	0.00
25.70	0.83	0.35	2.38	0.00	0.00	0.00
25.75	0.83	0.35	2.38	0.00	0.00	0.00
25.80	0.83	0.35	2.38	0.00	0.00	0.00
25.85	0.83	0.35	2.38	0.00	0.00	0.00
25.90	0.83	0.35	2.38	0.00	0.00	0.00
25.95	0.83	0.35	2.38	0.00	0.00	0.00
26.00	0.83	0.35	2.38	0.00	0.00	0.00
26.05	0.83	0.35	2.38	0.00	0.00	0.00
26.10	0.83	0.35	2.38	0.00	0.00	0.00
26.15	0.83	0.35	2.38	0.00	0.00	0.00
26.20	0.83	0.35	2.38	0.00	0.00	0.00
26.25	0.83	0.35	2.38	0.00	0.00	0.00
26.30	0.83	0.35	2.38	0.00	0.00	0.00
26.35	0.83	0.35	2.39	0.00	0.00	0.00
26.40	0.83	0.35	2.39	0.00	0.00	0.00
26.45	0.83	0.35	2.39	0.00	0.00	0.00
26.50	0.83	0.35	2.39	0.00	0.00	0.00
26.55	0.83	0.35	2.39	0.00	0.00	0.00
26.60	0.83	0.35	2.39	0.00	0.00	0.00
26.65	0.83	0.35	2.39	0.00	0.00	0.00
26.70	0.83	0.35	2.39	0.00	0.00	0.00
26.75	0.83	0.35	2.39	0.00	0.00	0.00

26.80	0.83	0.35	2.39	0.00	0.00	0.00
26.85	0.83	0.35	2.39	0.00	0.00	0.00
26.90	0.83	0.35	2.39	0.00	0.00	0.00
26.95	0.83	0.35	2.39	0.00	0.00	0.00
27.00	0.83	0.35	2.39	0.00	0.00	0.00
27.05	0.83	0.35	2.39	0.00	0.00	0.00
27.10	0.83	0.35	2.39	0.00	0.00	0.00
27.15	0.83	0.35	2.39	0.00	0.00	0.00
27.20	0.83	0.35	2.39	0.00	0.00	0.00
27.25	0.83	0.35	2.39	0.00	0.00	0.00
27.30	0.83	0.35	2.39	0.00	0.00	0.00
27.35	0.83	0.35	2.39	0.00	0.00	0.00
27.40	0.83	0.35	2.39	0.00	0.00	0.00
27.45	0.83	0.35	2.39	0.00	0.00	0.00
27.50	0.83	0.35	2.39	0.00	0.00	0.00
27.55	0.83	0.35	2.39	0.00	0.00	0.00
27.60	0.83	0.35	2.39	0.00	0.00	0.00
27.65	0.83	0.35	2.39	0.00	0.00	0.00
27.70	0.83	0.35	2.39	0.00	0.00	0.00
27.75	0.83	0.35	2.39	0.00	0.00	0.00
27.80	0.83	0.35	2.39	0.00	0.00	0.00
27.85	0.83	0.35	2.39	0.00	0.00	0.00
27.90	0.83	0.35	2.39	0.00	0.00	0.00
27.95	0.83	0.35	2.39	0.00	0.00	0.00
28.00	0.83	0.35	2.39	0.00	0.00	0.00
28.05	0.83	0.35	2.39	0.00	0.00	0.00
28.10	0.83	0.35	2.39	0.00	0.00	0.00
28.15	0.83	0.35	2.39	0.00	0.00	0.00
28.20	0.83	0.35	2.39	0.00	0.00	0.00
28.25	0.83	0.35	2.40	0.00	0.00	0.00
28.30	0.83	0.35	2.40	0.00	0.00	0.00
28.35	0.83	0.35	2.40	0.00	0.00	0.00
28.40	0.83	0.35	2.40	0.00	0.00	0.00
28.45	0.83	0.35	2.40	0.00	0.00	0.00
28.50	0.83	0.35	2.40	0.00	0.00	0.00
28.55	0.83	0.35	2.40	0.00	0.00	0.00
28.60	0.83	0.35	2.40	0.00	0.00	0.00
28.65	0.83	0.35	2.40	0.00	0.00	0.00
28.70	0.83	0.35	2.40	0.00	0.00	0.00
28.75	0.83	0.35	2.40	0.00	0.00	0.00
28.80	0.83	0.35	2.40	0.00	0.00	0.00
28.85	0.83	0.35	2.40	0.00	0.00	0.00
28.90	0.83	0.35	2.40	0.00	0.00	0.00
28.95	0.83	0.35	2.40	0.00	0.00	0.00
29.00	0.83	0.35	2.40	0.00	0.00	0.00
29.05	0.83	0.35	2.40	0.00	0.00	0.00
29.10	0.83	0.35	2.40	0.00	0.00	0.00
29.15	0.83	0.35	2.40	0.00	0.00	0.00
29.20	0.83	0.35	2.40	0.00	0.00	0.00
29.25	0.83	0.35	2.40	0.00	0.00	0.00
29.30	0.83	0.35	2.40	0.00	0.00	0.00
29.35	0.83	0.35	2.40	0.00	0.00	0.00
29.40	0.83	0.35	2.40	0.00	0.00	0.00
29.45	0.83	0.35	2.40	0.00	0.00	0.00
29.50	0.83	0.35	2.40	0.00	0.00	0.00
29.55	0.83	0.35	2.40	0.00	0.00	0.00
29.60	0.83	0.35	2.40	0.00	0.00	0.00
29.65	0.83	0.35	2.40	0.00	0.00	0.00
29.70	0.83	0.35	2.40	0.00	0.00	0.00
29.75	0.83	0.35	2.40	0.00	0.00	0.00
29.80	0.83	0.35	2.40	0.00	0.00	0.00
29.85	0.83	0.35	2.40	0.00	0.00	0.00
29.90	0.83	0.35	2.40	0.00	0.00	0.00
29.95	0.83	0.35	2.40	0.00	0.00	0.00
30.00	0.83	0.35	2.40	0.00	0.00	0.00
30.05	0.47	0.35	1.37	0.00	0.00	0.00
30.10	0.47	0.35	1.37	0.00	0.00	0.00
30.15	0.47	0.34	1.37	0.00	0.00	0.00
30.20	0.47	0.34	1.37	0.00	0.00	0.00
30.25	0.47	0.34	1.37	0.00	0.00	0.00
30.30	0.47	0.34	1.37	0.00	0.00	0.00

30.35	0.47	0.34	1.37	0.00	0.00	0.00
30.40	0.47	0.34	1.37	0.00	0.00	0.00
30.45	0.47	0.34	1.37	0.00	0.00	0.00
30.50	0.47	0.34	1.37	0.00	0.00	0.00
30.55	0.47	0.34	1.37	0.00	0.00	0.00
30.60	0.47	0.34	1.36	0.00	0.00	0.00
30.65	0.47	0.34	1.36	0.00	0.00	0.00
30.70	0.47	0.34	1.36	0.00	0.00	0.00
30.75	0.47	0.34	1.36	0.00	0.00	0.00
30.80	0.47	0.34	1.36	0.00	0.00	0.00
30.85	0.47	0.34	1.36	0.00	0.00	0.00
30.90	0.47	0.34	1.36	0.00	0.00	0.00
30.95	0.47	0.34	1.36	0.00	0.00	0.00
31.00	0.47	0.34	1.36	0.00	0.00	0.00
31.05	0.47	0.34	1.36	0.00	0.00	0.00
31.10	0.47	0.34	1.36	0.00	0.00	0.00
31.15	0.47	0.34	1.36	0.00	0.00	0.00
31.20	0.47	0.34	1.36	0.00	0.00	0.00
31.25	0.46	0.34	1.36	0.00	0.00	0.00
31.30	0.46	0.34	1.36	0.00	0.00	0.00
31.35	0.46	0.34	1.36	0.00	0.00	0.00
31.40	0.46	0.34	1.36	0.00	0.00	0.00
31.45	0.46	0.34	1.36	0.00	0.00	0.00
31.50	0.46	0.34	1.36	0.00	0.00	0.00
31.55	0.46	0.34	1.36	0.00	0.00	0.00
31.60	0.46	0.34	1.36	0.00	0.00	0.00
31.65	0.46	0.34	1.36	0.00	0.00	0.00
31.70	0.46	0.34	1.36	0.00	0.00	0.00
31.75	0.46	0.34	1.36	0.00	0.00	0.00
31.80	0.46	0.34	1.36	0.00	0.00	0.00
31.85	0.46	0.34	1.36	0.00	0.00	0.00
31.90	0.46	0.34	1.36	0.00	0.00	0.00
31.95	0.46	0.34	1.36	0.00	0.00	0.00
32.00	0.46	0.34	1.35	0.00	0.00	0.00
32.05	0.46	0.34	1.35	0.00	0.00	0.00
32.10	0.46	0.34	1.35	0.00	0.00	0.00
32.15	0.46	0.34	1.35	0.00	0.00	0.00
32.20	0.46	0.34	1.35	0.00	0.00	0.00
32.25	0.46	0.34	1.35	0.00	0.00	0.00
32.30	0.46	0.34	1.35	0.00	0.00	0.00
32.35	0.46	0.34	1.35	0.00	0.00	0.00
32.40	0.46	0.34	1.35	0.00	0.00	0.00
32.45	0.46	0.34	1.35	0.00	0.00	0.00
32.50	0.46	0.34	1.35	0.00	0.00	0.00
32.55	0.46	0.34	1.35	0.00	0.00	0.00
32.60	0.46	0.34	1.35	0.00	0.00	0.00
32.65	0.46	0.34	1.35	0.00	0.00	0.00
32.70	0.46	0.34	1.35	0.00	0.00	0.00
32.75	0.46	0.34	1.35	0.00	0.00	0.00
32.80	0.46	0.34	1.35	0.00	0.00	0.00
32.85	0.46	0.34	1.35	0.00	0.00	0.00
32.90	0.45	0.34	1.35	0.00	0.00	0.00
32.95	0.45	0.34	1.35	0.00	0.00	0.00
33.00	0.45	0.34	1.35	0.00	0.00	0.00
33.05	0.45	0.34	1.35	0.00	0.00	0.00
33.10	0.45	0.34	1.35	0.00	0.00	0.00
33.15	0.45	0.34	1.35	0.00	0.00	0.00
33.20	0.45	0.34	1.35	0.00	0.00	0.00
33.25	0.45	0.34	1.35	0.00	0.00	0.00
33.30	0.45	0.34	1.35	0.00	0.00	0.00
33.35	0.45	0.34	1.35	0.00	0.00	0.00
33.40	0.45	0.34	1.35	0.00	0.00	0.00
33.45	0.45	0.34	1.35	0.00	0.00	0.00
33.50	0.45	0.34	1.35	0.00	0.00	0.00
33.55	0.45	0.34	1.35	0.00	0.00	0.00
33.60	0.45	0.33	1.35	0.00	0.00	0.00
33.65	0.45	0.33	1.35	0.00	0.00	0.00
33.70	0.45	0.33	1.35	0.00	0.00	0.00
33.75	0.45	0.33	1.35	0.00	0.00	0.00
33.80	0.45	0.33	1.34	0.00	0.00	0.00
33.85	0.45	0.33	1.34	0.00	0.00	0.00

33.90	0.45	0.33	1.34	0.00	0.00	0.00
33.95	0.45	0.33	1.34	0.00	0.00	0.00
34.00	0.45	0.33	1.34	0.00	0.00	0.00
34.05	0.45	0.33	1.34	0.00	0.00	0.00
34.10	0.45	0.33	1.34	0.00	0.00	0.00
34.15	0.45	0.33	1.34	0.00	0.00	0.00
34.20	0.45	0.33	1.34	0.00	0.00	0.00
34.25	0.45	0.33	1.34	0.00	0.00	0.00
34.30	0.45	0.33	1.34	0.00	0.00	0.00
34.35	0.45	0.33	1.34	0.00	0.00	0.00
34.40	0.45	0.33	1.34	0.00	0.00	0.00
34.45	0.45	0.33	1.34	0.00	0.00	0.00
34.50	0.45	0.33	1.34	0.00	0.00	0.00
34.55	0.45	0.33	1.34	0.00	0.00	0.00
34.60	0.45	0.33	1.34	0.00	0.00	0.00
34.65	0.45	0.33	1.34	0.00	0.00	0.00
34.70	0.44	0.33	1.34	0.00	0.00	0.00
34.75	0.44	0.33	1.34	0.00	0.00	0.00
34.80	0.44	0.33	1.34	0.00	0.00	0.00
34.85	0.44	0.33	1.34	0.00	0.00	0.00
34.90	0.44	0.33	1.34	0.00	0.00	0.00
34.95	0.44	0.33	1.34	0.00	0.00	0.00
35.00	0.44	0.33	1.34	0.00	0.00	0.00
35.05	0.61	0.33	1.83	0.00	0.00	0.00
35.10	0.61	0.33	1.83	0.00	0.00	0.00
35.15	0.60	0.33	1.83	0.00	0.00	0.00
35.20	0.60	0.33	1.83	0.00	0.00	0.00
35.25	0.60	0.33	1.83	0.00	0.00	0.00
35.30	0.60	0.33	1.83	0.00	0.00	0.00
35.35	0.60	0.33	1.83	0.00	0.00	0.00
35.40	0.60	0.33	1.82	0.00	0.00	0.00
35.45	0.60	0.33	1.82	0.00	0.00	0.00
35.50	0.60	0.33	1.82	0.00	0.00	0.00
35.55	0.60	0.33	1.82	0.00	0.00	0.00
35.60	0.60	0.33	1.82	0.00	0.00	0.00
35.65	0.60	0.33	1.82	0.00	0.00	0.00
35.70	0.60	0.33	1.82	0.00	0.00	0.00
35.75	0.60	0.33	1.82	0.00	0.00	0.00
35.80	0.60	0.33	1.82	0.00	0.00	0.00
35.85	0.60	0.33	1.82	0.00	0.00	0.00
35.90	0.60	0.33	1.81	0.00	0.00	0.00
35.95	0.60	0.33	1.81	0.00	0.00	0.00
36.00	0.60	0.33	1.82	0.00	0.00	0.00
36.05	0.60	0.33	1.82	0.00	0.00	0.00
36.10	0.60	0.33	1.82	0.00	0.00	0.00
36.15	0.60	0.33	1.82	0.00	0.00	0.00
36.20	0.60	0.33	1.82	0.00	0.00	0.00
36.25	0.60	0.33	1.82	0.00	0.00	0.00
36.30	0.59	0.33	1.82	0.00	0.00	0.00
36.35	0.59	0.33	1.82	0.00	0.00	0.00
36.40	0.59	0.33	1.81	0.00	0.00	0.00
36.45	0.59	0.33	1.81	0.00	0.00	0.00
36.50	0.59	0.33	1.81	0.00	0.00	0.00
36.55	0.59	0.33	1.81	0.00	0.00	0.00
36.60	0.59	0.33	1.81	0.00	0.00	0.00
36.65	0.59	0.33	1.81	0.00	0.00	0.00
36.70	0.59	0.33	1.81	0.00	0.00	0.00
36.75	0.59	0.33	1.81	0.00	0.00	0.00
36.80	0.59	0.33	1.80	0.00	0.00	0.00
36.85	0.59	0.33	1.80	0.00	0.00	0.00
36.90	0.59	0.33	1.80	0.00	0.00	0.00
36.95	0.59	0.33	1.80	0.00	0.00	0.00
37.00	0.59	0.33	1.80	0.00	0.00	0.00
37.05	0.59	0.33	1.80	0.00	0.00	0.00
37.10	0.59	0.33	1.80	0.00	0.00	0.00
37.15	0.58	0.33	1.80	0.00	0.00	0.00
37.20	0.58	0.33	1.80	0.00	0.00	0.00
37.25	0.58	0.33	1.79	0.00	0.00	0.00
37.30	0.58	0.33	1.79	0.00	0.00	0.00
37.35	0.58	0.32	1.79	0.00	0.00	0.00
37.40	0.58	0.32	1.79	0.00	0.00	0.00

37.45	0.58	0.32	1.79	0.00	0.00	0.00
37.50	0.58	0.32	1.79	0.00	0.00	0.00
37.55	0.58	0.32	1.79	0.00	0.00	0.00
37.60	0.58	0.32	1.79	0.00	0.00	0.00
37.65	0.58	0.32	1.79	0.00	0.00	0.00
37.70	0.58	0.32	1.79	0.00	0.00	0.00
37.75	0.58	0.32	1.78	0.00	0.00	0.00
37.80	0.58	0.32	1.78	0.00	0.00	0.00
37.85	0.58	0.32	1.78	0.00	0.00	0.00
37.90	0.58	0.32	1.78	0.00	0.00	0.00
37.95	0.58	0.32	1.78	0.00	0.00	0.00
38.00	0.58	0.32	1.78	0.00	0.00	0.00
38.05	0.57	0.32	1.78	0.00	0.00	0.00
38.10	0.57	0.32	1.78	0.00	0.00	0.00
38.15	0.57	0.32	1.78	0.00	0.00	0.00
38.20	0.57	0.32	1.78	0.00	0.00	0.00
38.25	0.57	0.32	1.78	0.00	0.00	0.00
38.30	0.57	0.32	1.77	0.00	0.00	0.00
38.35	0.57	0.32	1.77	0.00	0.00	0.00
38.40	0.57	0.32	1.77	0.00	0.00	0.00
38.45	0.57	0.32	1.77	0.00	0.00	0.00
38.50	0.57	0.32	1.77	0.00	0.00	0.00
38.55	0.57	0.32	1.77	0.00	0.00	0.00
38.60	0.57	0.32	1.77	0.00	0.00	0.00
38.65	0.57	0.32	1.77	0.00	0.00	0.00
38.70	0.57	0.32	1.77	0.00	0.00	0.00
38.75	0.57	0.32	1.77	0.00	0.00	0.00
38.80	0.57	0.32	1.77	0.00	0.00	0.00
38.85	0.57	0.32	1.76	0.00	0.00	0.00
38.90	0.57	0.32	1.76	0.00	0.00	0.00
38.95	0.57	0.32	1.76	0.00	0.00	0.00
39.00	0.57	0.32	1.76	0.00	0.00	0.00
39.05	0.56	0.32	1.76	0.00	0.00	0.00
39.10	0.56	0.32	1.76	0.00	0.00	0.00
39.15	0.56	0.32	1.76	0.00	0.00	0.00
39.20	0.56	0.32	1.76	0.00	0.00	0.00
39.25	0.56	0.32	1.76	0.00	0.00	0.00
39.30	0.56	0.32	1.76	0.00	0.00	0.00
39.35	0.56	0.32	1.76	0.00	0.00	0.00
39.40	0.56	0.32	1.76	0.00	0.00	0.00
39.45	0.56	0.32	1.75	0.00	0.00	0.00
39.50	0.56	0.32	1.75	0.00	0.00	0.00
39.55	0.56	0.32	1.75	0.00	0.00	0.00
39.60	0.56	0.32	1.75	0.00	0.00	0.00
39.65	0.56	0.32	1.75	0.00	0.00	0.00
39.70	0.56	0.32	1.75	0.00	0.00	0.00
39.75	0.56	0.32	1.75	0.00	0.00	0.00
39.80	0.56	0.32	1.75	0.00	0.00	0.00
39.85	0.56	0.32	1.75	0.00	0.00	0.00
39.90	0.56	0.32	1.75	0.00	0.00	0.00
39.95	0.56	0.32	1.75	0.00	0.00	0.00
40.00	0.56	0.32	1.75	0.00	0.00	0.00
40.05	0.83	0.32	2.60	0.00	0.00	0.00
40.10	0.83	0.32	2.60	0.00	0.00	0.00
40.15	0.83	0.32	2.60	0.00	0.00	0.00
40.20	0.83	0.32	2.60	0.00	0.00	0.00
40.25	0.82	0.32	2.60	0.00	0.00	0.00
40.30	0.82	0.32	2.60	0.00	0.00	0.00
40.35	0.82	0.32	2.60	0.00	0.00	0.00
40.40	0.82	0.32	2.60	0.00	0.00	0.00
40.45	0.82	0.32	2.60	0.00	0.00	0.00
40.50	0.82	0.32	2.60	0.00	0.00	0.00
40.55	0.82	0.32	2.60	0.00	0.00	0.00
40.60	0.82	0.32	2.60	0.00	0.00	0.00
40.65	0.82	0.32	2.61	0.00	0.00	0.00
40.70	0.82	0.32	2.61	0.00	0.00	0.00
40.75	0.82	0.32	2.61	0.00	0.00	0.00
40.80	0.82	0.32	2.61	0.00	0.00	0.00
40.85	0.82	0.32	2.61	0.00	0.00	0.00
40.90	0.82	0.32	2.61	0.00	0.00	0.00
40.95	0.82	0.32	2.61	0.00	0.00	0.00

41.00	0.82	0.32	2.61	0.00	0.00	0.00
41.05	0.82	0.32	2.61	0.00	0.00	0.00
41.10	0.82	0.32	2.61	0.00	0.00	0.00
41.15	0.82	0.31	2.61	0.00	0.00	0.00
41.20	0.82	0.31	2.61	0.00	0.00	0.00
41.25	0.82	0.31	2.61	0.00	0.00	0.00
41.30	0.82	0.31	2.61	0.00	0.00	0.00
41.35	0.82	0.31	2.62	0.00	0.00	0.00
41.40	0.82	0.31	2.62	0.00	0.00	0.00
41.45	0.82	0.31	2.62	0.00	0.00	0.00
41.50	0.82	0.31	2.62	0.00	0.00	0.00
41.55	0.82	0.31	2.62	0.00	0.00	0.00
41.60	0.82	0.31	2.62	0.00	0.00	0.00
41.65	0.82	0.31	2.62	0.00	0.00	0.00
41.70	0.82	0.31	2.62	0.00	0.00	0.00
41.75	0.82	0.31	2.62	0.00	0.00	0.00
41.80	0.82	0.31	2.62	0.00	0.00	0.00
41.85	0.82	0.31	2.62	0.00	0.00	0.00
41.90	0.82	0.31	2.62	0.00	0.00	0.00
41.95	0.82	0.31	2.62	0.00	0.00	0.00
42.00	0.82	0.31	2.62	0.00	0.00	0.00
42.05	0.82	0.31	2.63	0.00	0.00	0.00
42.10	0.82	0.31	2.63	0.00	0.00	0.00
42.15	0.82	0.31	2.63	0.00	0.00	0.00
42.20	0.82	0.31	2.63	0.00	0.00	0.00
42.25	0.82	0.31	2.63	0.00	0.00	0.00
42.30	0.82	0.31	2.63	0.00	0.00	0.00
42.35	0.82	0.31	2.63	0.00	0.00	0.00
42.40	0.82	0.31	2.63	0.00	0.00	0.00
42.45	0.82	0.31	2.63	0.00	0.00	0.00
42.50	0.82	0.31	2.63	0.00	0.00	0.00
42.55	0.82	0.31	2.63	0.00	0.00	0.00
42.60	0.82	0.31	2.63	0.00	0.00	0.00
42.65	0.82	0.31	2.63	0.00	0.00	0.00
42.70	0.82	0.31	2.64	0.00	0.00	0.00
42.75	0.82	0.31	2.64	0.00	0.00	0.00
42.80	0.82	0.31	2.64	0.00	0.00	0.00
42.85	0.82	0.31	2.64	0.00	0.00	0.00
42.90	0.82	0.31	2.64	0.00	0.00	0.00
42.95	0.82	0.31	2.64	0.00	0.00	0.00
43.00	0.82	0.31	2.64	0.00	0.00	0.00
43.05	0.82	0.31	2.64	0.00	0.00	0.00
43.10	0.82	0.31	2.64	0.00	0.00	0.00
43.15	0.82	0.31	2.64	0.00	0.00	0.00
43.20	0.82	0.31	2.64	0.00	0.00	0.00
43.25	0.82	0.31	2.64	0.00	0.00	0.00
43.30	0.82	0.31	2.64	0.00	0.00	0.00
43.35	0.82	0.31	2.65	0.00	0.00	0.00
43.40	0.82	0.31	2.65	0.00	0.00	0.00
43.45	0.82	0.31	2.65	0.00	0.00	0.00
43.50	0.82	0.31	2.65	0.00	0.00	0.00
43.55	0.82	0.31	2.65	0.00	0.00	0.00
43.60	0.82	0.31	2.65	0.00	0.00	0.00
43.65	0.82	0.31	2.65	0.00	0.00	0.00
43.70	0.82	0.31	2.65	0.00	0.00	0.00
43.75	0.82	0.31	2.65	0.00	0.00	0.00
43.80	0.82	0.31	2.65	0.00	0.00	0.00
43.85	0.82	0.31	2.65	0.00	0.00	0.00
43.90	0.82	0.31	2.65	0.00	0.00	0.00
43.95	0.82	0.31	2.65	0.00	0.00	0.00
44.00	0.82	0.31	2.66	0.00	0.00	0.00
44.05	0.82	0.31	2.66	0.00	0.00	0.00
44.10	0.82	0.31	2.66	0.00	0.00	0.00
44.15	0.82	0.31	2.66	0.00	0.00	0.00
44.20	0.81	0.31	2.66	0.00	0.00	0.00
44.25	0.81	0.31	2.66	0.00	0.00	0.00
44.30	0.81	0.31	2.66	0.00	0.00	0.00
44.35	0.81	0.31	2.66	0.00	0.00	0.00
44.40	0.81	0.31	2.66	0.00	0.00	0.00
44.45	0.81	0.31	2.66	0.00	0.00	0.00
44.50	0.81	0.31	2.66	0.00	0.00	0.00

44.55	0.81	0.31	2.66	0.00	0.00	0.00
44.60	0.81	0.31	2.67	0.00	0.00	0.00
44.65	0.81	0.31	2.67	0.00	0.00	0.00
44.70	0.81	0.31	2.67	0.00	0.00	0.00
44.75	0.81	0.30	2.67	0.00	0.00	0.00
44.80	0.81	0.30	2.67	0.00	0.00	0.00
44.85	0.81	0.30	2.67	0.00	0.00	0.00
44.90	0.81	0.30	2.67	0.00	0.00	0.00
44.95	0.81	0.30	2.67	0.00	0.00	0.00
45.00	0.81	0.30	2.67	0.00	0.00	0.00
45.05	0.81	0.30	2.67	0.00	0.00	0.00
45.10	0.81	0.30	2.67	0.00	0.00	0.00
45.15	0.81	0.30	2.67	0.00	0.00	0.00
45.20	0.81	0.30	2.68	0.00	0.00	0.00
45.25	0.81	0.30	2.68	0.00	0.00	0.00
45.30	0.81	0.30	2.68	0.00	0.00	0.00
45.35	0.81	0.30	2.68	0.00	0.00	0.00
45.40	0.81	0.30	2.68	0.00	0.00	0.00
45.45	0.81	0.30	2.68	0.00	0.00	0.00
45.50	0.81	0.30	2.68	0.00	0.00	0.00
45.55	0.81	0.30	2.68	0.00	0.00	0.00
45.60	0.81	0.30	2.68	0.00	0.00	0.00
45.65	0.81	0.30	2.68	0.00	0.00	0.00
45.70	0.81	0.30	2.68	0.00	0.00	0.00
45.75	0.81	0.30	2.69	0.00	0.00	0.00
45.80	0.81	0.30	2.69	0.00	0.00	0.00
45.85	0.81	0.30	2.69	0.00	0.00	0.00
45.90	0.81	0.30	2.69	0.00	0.00	0.00
45.95	0.81	0.30	2.69	0.00	0.00	0.00
46.00	0.81	0.30	2.69	0.00	0.00	0.00
46.05	0.81	0.30	2.69	0.00	0.00	0.00
46.10	0.81	0.30	2.69	0.00	0.00	0.00
46.15	0.81	0.30	2.69	0.00	0.00	0.00
46.20	0.81	0.30	2.69	0.00	0.00	0.00
46.25	0.81	0.30	2.69	0.00	0.00	0.00
46.30	0.81	0.30	2.70	0.00	0.00	0.00
46.35	0.81	0.30	2.70	0.00	0.00	0.00
46.40	0.81	0.30	2.70	0.00	0.00	0.00
46.45	0.81	0.30	2.70	0.00	0.00	0.00
46.50	0.81	0.30	2.70	0.00	0.00	0.00
46.55	0.81	0.30	2.70	0.00	0.00	0.00
46.60	0.81	0.30	2.70	0.00	0.00	0.00
46.65	0.81	0.30	2.70	0.00	0.00	0.00
46.70	0.81	0.30	2.70	0.00	0.00	0.00
46.75	0.81	0.30	2.70	0.00	0.00	0.00
46.80	0.81	0.30	2.71	0.00	0.00	0.00
46.85	0.81	0.30	2.71	0.00	0.00	0.00
46.90	0.81	0.30	2.71	0.00	0.00	0.00
46.95	0.81	0.30	2.71	0.00	0.00	0.00
47.00	0.81	0.30	2.71	0.00	0.00	0.00
47.05	0.81	0.30	2.71	0.00	0.00	0.00
47.10	0.81	0.30	2.71	0.00	0.00	0.00
47.15	0.81	0.30	2.71	0.00	0.00	0.00
47.20	0.81	0.30	2.71	0.00	0.00	0.00
47.25	0.81	0.30	2.71	0.00	0.00	0.00
47.30	0.81	0.30	2.71	0.00	0.00	0.00
47.35	0.81	0.30	2.72	0.00	0.00	0.00
47.40	0.81	0.30	2.72	0.00	0.00	0.00
47.45	0.81	0.30	2.72	0.00	0.00	0.00
47.50	0.81	0.30	2.72	0.00	0.00	0.00
47.55	0.81	0.30	2.72	0.00	0.00	0.00
47.60	0.81	0.30	2.72	0.00	0.00	0.00
47.65	0.81	0.30	2.72	0.00	0.00	0.00
47.70	0.81	0.30	2.72	0.00	0.00	0.00
47.75	0.81	0.30	2.72	0.00	0.00	0.00
47.80	0.81	0.30	2.72	0.00	0.00	0.00
47.85	0.81	0.30	2.73	0.00	0.00	0.00
47.90	0.81	0.30	2.73	0.00	0.00	0.00
47.95	0.81	0.30	2.73	0.00	0.00	0.00
48.00	0.80	0.30	2.73	0.00	0.00	0.00
48.05	0.80	0.29	2.73	0.00	0.00	0.00

48.10	0.80	0.29	2.73	0.00	0.00	0.00
48.15	0.80	0.29	2.73	0.00	0.00	0.00
48.20	0.80	0.29	2.73	0.00	0.00	0.00
48.25	0.80	0.29	2.73	0.00	0.00	0.00
48.30	0.80	0.29	2.73	0.00	0.00	0.00
48.35	0.80	0.29	2.73	0.00	0.00	0.00
48.40	0.80	0.29	2.74	0.00	0.00	0.00
48.45	0.80	0.29	2.74	0.00	0.00	0.00
48.50	0.80	0.29	2.74	0.00	0.00	0.00
48.55	0.80	0.29	2.74	0.00	0.00	0.00
48.60	0.80	0.29	2.74	0.00	0.00	0.00
48.65	0.80	0.29	2.74	0.00	0.00	0.00
48.70	0.80	0.29	2.74	0.00	0.00	0.00
48.75	0.80	0.29	2.74	0.00	0.00	0.00
48.80	0.80	0.29	2.74	0.00	0.00	0.00
48.85	0.80	0.29	2.74	0.00	0.00	0.00
48.90	0.80	0.29	2.75	0.00	0.00	0.00
48.95	0.80	0.29	2.75	0.00	0.00	0.00
49.00	0.80	0.29	2.75	0.00	0.00	0.00
49.05	0.80	0.29	2.75	0.00	0.00	0.00
49.10	0.80	0.29	2.75	0.00	0.00	0.00
49.15	0.80	0.29	2.75	0.00	0.00	0.00
49.20	0.80	0.29	2.75	0.00	0.00	0.00
49.25	0.80	0.29	2.75	0.00	0.00	0.00
49.30	0.80	0.29	2.75	0.00	0.00	0.00
49.35	0.80	0.29	2.75	0.00	0.00	0.00
49.40	0.80	0.29	2.76	0.00	0.00	0.00
49.45	0.80	0.29	2.76	0.00	0.00	0.00
49.50	0.80	0.29	2.76	0.00	0.00	0.00
49.55	0.80	0.29	2.76	0.00	0.00	0.00
49.60	0.80	0.29	2.76	0.00	0.00	0.00
49.65	0.80	0.29	2.76	0.00	0.00	0.00
49.70	0.80	0.29	2.76	0.00	0.00	0.00
49.75	0.80	0.29	2.76	0.00	0.00	0.00
49.80	0.80	0.29	2.76	0.00	0.00	0.00
49.85	0.80	0.29	2.76	0.00	0.00	0.00
49.90	0.80	0.29	2.77	0.00	0.00	0.00
49.95	0.80	0.29	2.77	0.00	0.00	0.00
50.00	0.80	0.29	2.77	0.00	0.00	0.00

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* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)

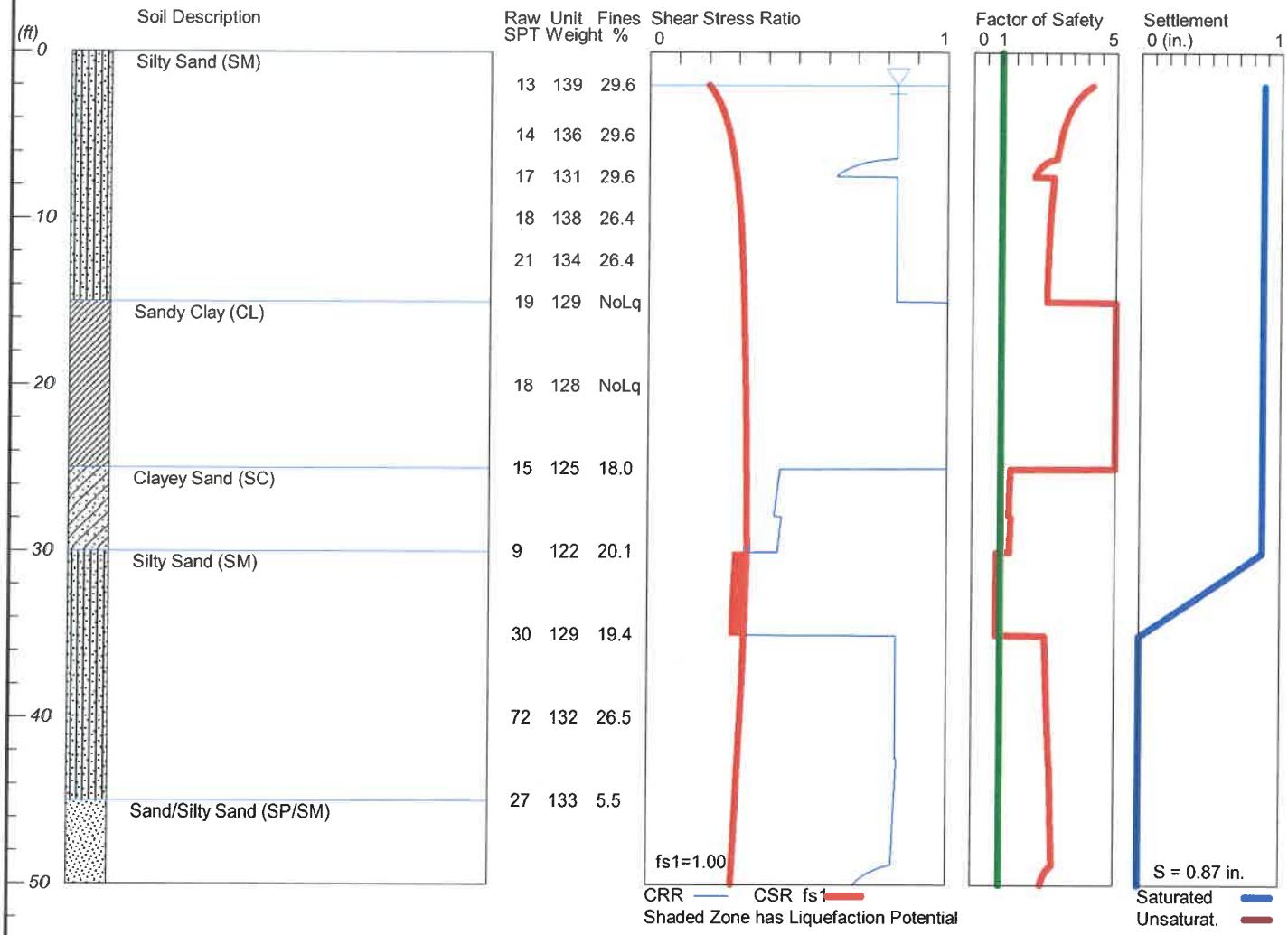
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Triangle Development

Hole No.=B17 Water Depth=2 ft

Magnitude=6.15
Acceleration=0.307g



LiquefyPro CivilTech Software USA www.civiltech.com

Krazan

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Plate A-1

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*****************************************************************************************************
                                        LIQUEFACTION ANALYSIS SUMMARY
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    Input File Name: C:\Users\mweber\Documents\Krazan\Projects\012\22\165 Triangle Development\B17\B17
Liquefaction.liq
    Title:  Triangle Development
    Subtitle:  012-22165

    Surface Elev.=
    Hole No.=B17
    Depth of Hole= 50.00 ft
    Water Table during Earthquake= 2.00 ft
    Water Table during In-Situ Testing= 6.00 ft
    Max. Acceleration= 0.31 g
    Earthquake Magnitude= 6.15

 Input Data:
    Surface Elev.=
    Hole No.=B17
    Depth of Hole=50.00 ft
    Water Table during Earthquake= 2.00 ft
    Water Table during In-Situ Testing= 6.00 ft
    Max. Acceleration=0.31 g
    Earthquake Magnitude=6.15
    No-Liquefiable Soils:   CL, OL are Non-Liq. Soil

    1. SPT or BPT Calculation.
    2. Settlement Analysis Method: Tokimatsu, M-correction
    3. Fines Correction for Liquefaction: Stark/Olson et al.*
    4. Fine Correction for Settlement: During Liquefaction*
    5. Settlement Calculation in: All zones*
    6. Hammer Energy Ratio,                                    Ce = 1.4
    7. Borehole Diameter,                                          Cb= 1.05
    8. Sampling Method,                                           Cs= 1
    9. User request factor of safety (apply to CSR) ,   User= 1
       Plot one CSR curve (fs1=User)
    10. Use Curve Smoothing: No
    * Recommended Options

    In-Situ Test Data:
    Depth   SPT     gamma   Fines
    ft              pcf     %
    ____________________________________
    2.00    13.00   139.00  29.60
    5.00    14.00   136.00  29.60
    7.50    17.00   131.00  29.60
    10.00   18.00   138.00  26.40
    12.50   21.00   134.00  26.40
    15.00   19.00   129.00  NoLiq
    20.00   18.00   128.00  NoLiq
    25.00   15.00   125.00  18.00
    30.00   9.00    122.00  20.10
    35.00   30.00   129.00  19.40
    40.00   72.00   132.00  26.50
    45.00   27.00   133.00  5.50
    ____________________________________

Output Results:
    Settlement of Saturated Sands=0.87 in.
    Settlement of Unsaturated Sands=0.00 in.
    Total Settlement of Saturated and Unsaturated Sands=0.87 in.
    Differential Settlement=0.437 to 0.576 in.

    Depth   CRRm    CSRfs   F.S.    S_sat.  S_dry   S_all
    ft                              in.     in.     in.
    ____________________________________________________
```

2.00	0.83	0.20	4.18	0.87	0.00	0.87
2.05	0.83	0.20	4.14	0.87	0.00	0.87
2.10	0.83	0.20	4.09	0.87	0.00	0.87
2.15	0.83	0.20	4.05	0.87	0.00	0.87
2.20	0.83	0.21	4.01	0.87	0.00	0.87
2.25	0.83	0.21	3.98	0.87	0.00	0.87
2.30	0.83	0.21	3.94	0.87	0.00	0.87
2.35	0.83	0.21	3.91	0.87	0.00	0.87
2.40	0.83	0.21	3.87	0.87	0.00	0.87
2.45	0.83	0.22	3.84	0.87	0.00	0.87
2.50	0.83	0.22	3.81	0.87	0.00	0.87
2.55	0.83	0.22	3.78	0.87	0.00	0.87
2.60	0.83	0.22	3.75	0.87	0.00	0.87
2.65	0.83	0.22	3.73	0.87	0.00	0.87
2.70	0.83	0.22	3.70	0.87	0.00	0.87
2.75	0.83	0.23	3.68	0.87	0.00	0.87
2.80	0.83	0.23	3.65	0.87	0.00	0.87
2.85	0.83	0.23	3.63	0.87	0.00	0.87
2.90	0.83	0.23	3.61	0.87	0.00	0.87
2.95	0.83	0.23	3.59	0.87	0.00	0.87
3.00	0.83	0.23	3.56	0.87	0.00	0.87
3.05	0.83	0.23	3.54	0.87	0.00	0.87
3.10	0.83	0.24	3.53	0.87	0.00	0.87
3.15	0.83	0.24	3.51	0.87	0.00	0.87
3.20	0.83	0.24	3.49	0.87	0.00	0.87
3.25	0.83	0.24	3.47	0.87	0.00	0.87
3.30	0.83	0.24	3.45	0.87	0.00	0.87
3.35	0.83	0.24	3.44	0.87	0.00	0.87
3.40	0.83	0.24	3.42	0.87	0.00	0.87
3.45	0.83	0.24	3.40	0.87	0.00	0.87
3.50	0.83	0.25	3.39	0.87	0.00	0.87
3.55	0.83	0.25	3.37	0.87	0.00	0.87
3.60	0.83	0.25	3.36	0.87	0.00	0.87
3.65	0.83	0.25	3.35	0.87	0.00	0.87
3.70	0.83	0.25	3.33	0.87	0.00	0.87
3.75	0.83	0.25	3.32	0.87	0.00	0.87
3.80	0.83	0.25	3.31	0.87	0.00	0.87
3.85	0.83	0.25	3.29	0.87	0.00	0.87
3.90	0.83	0.25	3.28	0.87	0.00	0.87
3.95	0.83	0.25	3.27	0.87	0.00	0.87
4.00	0.83	0.25	3.26	0.87	0.00	0.87
4.05	0.83	0.26	3.25	0.87	0.00	0.87
4.10	0.83	0.26	3.24	0.87	0.00	0.87
4.15	0.83	0.26	3.23	0.87	0.00	0.87
4.20	0.83	0.26	3.22	0.87	0.00	0.87
4.25	0.83	0.26	3.21	0.87	0.00	0.87
4.30	0.83	0.26	3.20	0.87	0.00	0.87
4.35	0.83	0.26	3.19	0.87	0.00	0.87
4.40	0.83	0.26	3.18	0.87	0.00	0.87
4.45	0.83	0.26	3.17	0.87	0.00	0.87
4.50	0.83	0.26	3.16	0.87	0.00	0.87
4.55	0.83	0.26	3.15	0.87	0.00	0.87
4.60	0.83	0.26	3.14	0.87	0.00	0.87
4.65	0.83	0.27	3.13	0.87	0.00	0.87
4.70	0.83	0.27	3.12	0.87	0.00	0.87
4.75	0.83	0.27	3.12	0.87	0.00	0.87
4.80	0.83	0.27	3.11	0.87	0.00	0.87
4.85	0.83	0.27	3.10	0.87	0.00	0.87
4.90	0.83	0.27	3.09	0.87	0.00	0.87
4.95	0.83	0.27	3.08	0.87	0.00	0.87
5.00	0.83	0.27	3.08	0.87	0.00	0.87
5.05	0.83	0.27	3.07	0.87	0.00	0.87
5.10	0.83	0.27	3.06	0.87	0.00	0.87
5.15	0.83	0.27	3.06	0.87	0.00	0.87
5.20	0.83	0.27	3.05	0.87	0.00	0.87
5.25	0.83	0.27	3.04	0.87	0.00	0.87
5.30	0.83	0.27	3.04	0.87	0.00	0.87
5.35	0.83	0.27	3.03	0.87	0.00	0.87
5.40	0.83	0.27	3.02	0.87	0.00	0.87
5.45	0.83	0.28	3.02	0.87	0.00	0.87
5.50	0.83	0.28	3.01	0.87	0.00	0.87

5.55	0.83	0.28	3.00	0.87	0.00	0.87
5.60	0.83	0.28	3.00	0.87	0.00	0.87
5.65	0.83	0.28	2.99	0.87	0.00	0.87
5.70	0.83	0.28	2.99	0.87	0.00	0.87
5.75	0.83	0.28	2.98	0.87	0.00	0.87
5.80	0.83	0.28	2.98	0.87	0.00	0.87
5.85	0.83	0.28	2.97	0.87	0.00	0.87
5.90	0.83	0.28	2.96	0.87	0.00	0.87
5.95	0.83	0.28	2.96	0.87	0.00	0.87
6.00	0.83	0.28	2.95	0.87	0.00	0.87
6.05	0.83	0.28	2.95	0.87	0.00	0.87
6.10	0.83	0.28	2.94	0.87	0.00	0.87
6.15	0.83	0.28	2.94	0.87	0.00	0.87
6.20	0.83	0.28	2.93	0.87	0.00	0.87
6.25	0.83	0.28	2.93	0.87	0.00	0.87
6.30	0.83	0.28	2.92	0.87	0.00	0.87
6.35	0.83	0.28	2.92	0.87	0.00	0.87
6.40	0.82	0.28	2.87	0.87	0.00	0.87
6.45	0.79	0.29	2.76	0.87	0.00	0.87
6.50	0.76	0.29	2.68	0.87	0.00	0.87
6.55	0.75	0.29	2.61	0.87	0.00	0.87
6.60	0.73	0.29	2.56	0.87	0.00	0.87
6.65	0.72	0.29	2.51	0.87	0.00	0.87
6.70	0.71	0.29	2.47	0.87	0.00	0.87
6.75	0.70	0.29	2.43	0.87	0.00	0.87
6.80	0.69	0.29	2.40	0.87	0.00	0.87
6.85	0.68	0.29	2.37	0.87	0.00	0.87
6.90	0.68	0.29	2.35	0.87	0.00	0.87
6.95	0.67	0.29	2.32	0.87	0.00	0.87
7.00	0.67	0.29	2.30	0.87	0.00	0.87
7.05	0.66	0.29	2.28	0.87	0.00	0.87
7.10	0.66	0.29	2.26	0.87	0.00	0.87
7.15	0.65	0.29	2.24	0.87	0.00	0.87
7.20	0.65	0.29	2.22	0.87	0.00	0.87
7.25	0.64	0.29	2.21	0.87	0.00	0.87
7.30	0.64	0.29	2.19	0.87	0.00	0.87
7.35	0.64	0.29	2.18	0.87	0.00	0.87
7.40	0.63	0.29	2.16	0.87	0.00	0.87
7.45	0.63	0.29	2.15	0.87	0.00	0.87
7.50	0.83	0.29	2.83	0.87	0.00	0.87
7.55	0.83	0.29	2.83	0.87	0.00	0.87
7.60	0.83	0.29	2.83	0.87	0.00	0.87
7.65	0.83	0.29	2.82	0.87	0.00	0.87
7.70	0.83	0.29	2.82	0.87	0.00	0.87
7.75	0.83	0.30	2.81	0.87	0.00	0.87
7.80	0.83	0.30	2.81	0.87	0.00	0.87
7.85	0.83	0.30	2.81	0.87	0.00	0.87
7.90	0.83	0.30	2.81	0.87	0.00	0.87
7.95	0.83	0.30	2.80	0.87	0.00	0.87
8.00	0.83	0.30	2.80	0.87	0.00	0.87
8.05	0.83	0.30	2.80	0.87	0.00	0.87
8.10	0.83	0.30	2.79	0.87	0.00	0.87
8.15	0.83	0.30	2.79	0.87	0.00	0.87
8.20	0.83	0.30	2.79	0.87	0.00	0.87
8.25	0.83	0.30	2.78	0.87	0.00	0.87
8.30	0.83	0.30	2.78	0.87	0.00	0.87
8.35	0.83	0.30	2.78	0.87	0.00	0.87
8.40	0.83	0.30	2.78	0.87	0.00	0.87
8.45	0.83	0.30	2.77	0.87	0.00	0.87
8.50	0.83	0.30	2.77	0.87	0.00	0.87
8.55	0.83	0.30	2.77	0.87	0.00	0.87
8.60	0.83	0.30	2.76	0.87	0.00	0.87
8.65	0.83	0.30	2.76	0.87	0.00	0.87
8.70	0.83	0.30	2.76	0.87	0.00	0.87
8.75	0.83	0.30	2.76	0.87	0.00	0.87
8.80	0.83	0.30	2.75	0.87	0.00	0.87
8.85	0.83	0.30	2.75	0.87	0.00	0.87
8.90	0.83	0.30	2.75	0.87	0.00	0.87
8.95	0.83	0.30	2.75	0.87	0.00	0.87
9.00	0.83	0.30	2.74	0.87	0.00	0.87
9.05	0.83	0.30	2.74	0.87	0.00	0.87

9.10	0.83	0.30	2.74	0.87	0.00	0.87
9.15	0.83	0.30	2.74	0.87	0.00	0.87
9.20	0.83	0.30	2.73	0.87	0.00	0.87
9.25	0.83	0.30	2.73	0.87	0.00	0.87
9.30	0.83	0.30	2.73	0.87	0.00	0.87
9.35	0.83	0.30	2.73	0.87	0.00	0.87
9.40	0.83	0.30	2.73	0.87	0.00	0.87
9.45	0.83	0.31	2.72	0.87	0.00	0.87
9.50	0.83	0.31	2.72	0.87	0.00	0.87
9.55	0.83	0.31	2.72	0.87	0.00	0.87
9.60	0.83	0.31	2.72	0.87	0.00	0.87
9.65	0.83	0.31	2.71	0.87	0.00	0.87
9.70	0.83	0.31	2.71	0.87	0.00	0.87
9.75	0.83	0.31	2.71	0.87	0.00	0.87
9.80	0.83	0.31	2.71	0.87	0.00	0.87
9.85	0.83	0.31	2.71	0.87	0.00	0.87
9.90	0.83	0.31	2.70	0.87	0.00	0.87
9.95	0.83	0.31	2.70	0.87	0.00	0.87
10.00	0.83	0.31	2.70	0.87	0.00	0.87
10.05	0.83	0.31	2.70	0.87	0.00	0.87
10.10	0.83	0.31	2.70	0.87	0.00	0.87
10.15	0.83	0.31	2.70	0.87	0.00	0.87
10.20	0.83	0.31	2.69	0.87	0.00	0.87
10.25	0.83	0.31	2.69	0.87	0.00	0.87
10.30	0.83	0.31	2.69	0.87	0.00	0.87
10.35	0.83	0.31	2.69	0.87	0.00	0.87
10.40	0.83	0.31	2.69	0.87	0.00	0.87
10.45	0.83	0.31	2.69	0.87	0.00	0.87
10.50	0.83	0.31	2.69	0.87	0.00	0.87
10.55	0.83	0.31	2.68	0.87	0.00	0.87
10.60	0.83	0.31	2.68	0.87	0.00	0.87
10.65	0.83	0.31	2.68	0.87	0.00	0.87
10.70	0.83	0.31	2.68	0.87	0.00	0.87
10.75	0.83	0.31	2.68	0.87	0.00	0.87
10.80	0.83	0.31	2.68	0.87	0.00	0.87
10.85	0.83	0.31	2.68	0.87	0.00	0.87
10.90	0.83	0.31	2.68	0.87	0.00	0.87
10.95	0.83	0.31	2.67	0.87	0.00	0.87
11.00	0.83	0.31	2.67	0.87	0.00	0.87
11.05	0.83	0.31	2.67	0.87	0.00	0.87
11.10	0.83	0.31	2.67	0.87	0.00	0.87
11.15	0.83	0.31	2.67	0.87	0.00	0.87
11.20	0.83	0.31	2.67	0.87	0.00	0.87
11.25	0.83	0.31	2.67	0.87	0.00	0.87
11.30	0.83	0.31	2.67	0.87	0.00	0.87
11.35	0.83	0.31	2.67	0.87	0.00	0.87
11.40	0.83	0.31	2.66	0.87	0.00	0.87
11.45	0.83	0.31	2.66	0.87	0.00	0.87
11.50	0.83	0.31	2.66	0.87	0.00	0.87
11.55	0.83	0.31	2.66	0.87	0.00	0.87
11.60	0.83	0.31	2.66	0.87	0.00	0.87
11.65	0.83	0.31	2.66	0.87	0.00	0.87
11.70	0.83	0.31	2.66	0.87	0.00	0.87
11.75	0.83	0.31	2.66	0.87	0.00	0.87
11.80	0.83	0.31	2.66	0.87	0.00	0.87
11.85	0.83	0.31	2.65	0.87	0.00	0.87
11.90	0.83	0.31	2.65	0.87	0.00	0.87
11.95	0.83	0.31	2.65	0.87	0.00	0.87
12.00	0.83	0.31	2.65	0.87	0.00	0.87
12.05	0.83	0.31	2.65	0.87	0.00	0.87
12.10	0.83	0.31	2.65	0.87	0.00	0.87
12.15	0.83	0.31	2.65	0.87	0.00	0.87
12.20	0.83	0.31	2.65	0.87	0.00	0.87
12.25	0.83	0.31	2.65	0.87	0.00	0.87
12.30	0.83	0.31	2.65	0.87	0.00	0.87
12.35	0.83	0.31	2.65	0.87	0.00	0.87
12.40	0.83	0.31	2.64	0.87	0.00	0.87
12.45	0.83	0.31	2.64	0.87	0.00	0.87
12.50	0.83	0.31	2.64	0.87	0.00	0.87
12.55	0.83	0.31	2.64	0.87	0.00	0.87
12.60	0.83	0.31	2.64	0.87	0.00	0.87

12.65	0.83	0.31	2.64	0.87	0.00	0.87
12.70	0.83	0.31	2.64	0.87	0.00	0.87
12.75	0.83	0.31	2.64	0.87	0.00	0.87
12.80	0.83	0.32	2.64	0.87	0.00	0.87
12.85	0.83	0.32	2.64	0.87	0.00	0.87
12.90	0.83	0.32	2.63	0.87	0.00	0.87
12.95	0.83	0.32	2.63	0.87	0.00	0.87
13.00	0.83	0.32	2.63	0.87	0.00	0.87
13.05	0.83	0.32	2.63	0.87	0.00	0.87
13.10	0.83	0.32	2.63	0.87	0.00	0.87
13.15	0.83	0.32	2.63	0.87	0.00	0.87
13.20	0.83	0.32	2.63	0.87	0.00	0.87
13.25	0.83	0.32	2.63	0.87	0.00	0.87
13.30	0.83	0.32	2.63	0.87	0.00	0.87
13.35	0.83	0.32	2.63	0.87	0.00	0.87
13.40	0.83	0.32	2.63	0.87	0.00	0.87
13.45	0.83	0.32	2.62	0.87	0.00	0.87
13.50	0.83	0.32	2.62	0.87	0.00	0.87
13.55	0.83	0.32	2.62	0.87	0.00	0.87
13.60	0.83	0.32	2.62	0.87	0.00	0.87
13.65	0.83	0.32	2.62	0.87	0.00	0.87
13.70	0.83	0.32	2.62	0.87	0.00	0.87
13.75	0.83	0.32	2.62	0.87	0.00	0.87
13.80	0.83	0.32	2.62	0.87	0.00	0.87
13.85	0.83	0.32	2.62	0.87	0.00	0.87
13.90	0.83	0.32	2.62	0.87	0.00	0.87
13.95	0.83	0.32	2.62	0.87	0.00	0.87
14.00	0.83	0.32	2.61	0.87	0.00	0.87
14.05	0.83	0.32	2.61	0.87	0.00	0.87
14.10	0.83	0.32	2.61	0.87	0.00	0.87
14.15	0.83	0.32	2.61	0.87	0.00	0.87
14.20	0.83	0.32	2.61	0.87	0.00	0.87
14.25	0.83	0.32	2.61	0.87	0.00	0.87
14.30	0.83	0.32	2.61	0.87	0.00	0.87
14.35	0.83	0.32	2.61	0.87	0.00	0.87
14.40	0.83	0.32	2.61	0.87	0.00	0.87
14.45	0.83	0.32	2.61	0.87	0.00	0.87
14.50	0.83	0.32	2.61	0.87	0.00	0.87
14.55	0.83	0.32	2.61	0.87	0.00	0.87
14.60	0.83	0.32	2.61	0.87	0.00	0.87
14.65	0.83	0.32	2.61	0.87	0.00	0.87
14.70	0.83	0.32	2.60	0.87	0.00	0.87
14.75	0.83	0.32	2.60	0.87	0.00	0.87
14.80	0.83	0.32	2.60	0.87	0.00	0.87
14.85	0.83	0.32	2.60	0.87	0.00	0.87
14.90	0.83	0.32	2.60	0.87	0.00	0.87
14.95	0.83	0.32	2.60	0.87	0.00	0.87
15.00	2.00	0.32	5.00	0.87	0.00	0.87
15.05	2.00	0.32	5.00	0.87	0.00	0.87
15.10	2.00	0.32	5.00	0.87	0.00	0.87
15.15	2.00	0.32	5.00	0.87	0.00	0.87
15.20	2.00	0.32	5.00	0.87	0.00	0.87
15.25	2.00	0.32	5.00	0.87	0.00	0.87
15.30	2.00	0.32	5.00	0.87	0.00	0.87
15.35	2.00	0.32	5.00	0.87	0.00	0.87
15.40	2.00	0.32	5.00	0.87	0.00	0.87
15.45	2.00	0.32	5.00	0.87	0.00	0.87
15.50	2.00	0.32	5.00	0.87	0.00	0.87
15.55	2.00	0.32	5.00	0.87	0.00	0.87
15.60	2.00	0.32	5.00	0.87	0.00	0.87
15.65	2.00	0.32	5.00	0.87	0.00	0.87
15.70	2.00	0.32	5.00	0.87	0.00	0.87
15.75	2.00	0.32	5.00	0.87	0.00	0.87
15.80	2.00	0.32	5.00	0.87	0.00	0.87
15.85	2.00	0.32	5.00	0.87	0.00	0.87
15.90	2.00	0.32	5.00	0.87	0.00	0.87
15.95	2.00	0.32	5.00	0.87	0.00	0.87
16.00	2.00	0.32	5.00	0.87	0.00	0.87
16.05	2.00	0.32	5.00	0.87	0.00	0.87
16.10	2.00	0.32	5.00	0.87	0.00	0.87
16.15	2.00	0.32	5.00	0.87	0.00	0.87

16.20	2.00	0.32	5.00	0.87	0.00	0.87
16.25	2.00	0.32	5.00	0.87	0.00	0.87
16.30	2.00	0.32	5.00	0.87	0.00	0.87
16.35	2.00	0.32	5.00	0.87	0.00	0.87
16.40	2.00	0.32	5.00	0.87	0.00	0.87
16.45	2.00	0.32	5.00	0.87	0.00	0.87
16.50	2.00	0.32	5.00	0.87	0.00	0.87
16.55	2.00	0.32	5.00	0.87	0.00	0.87
16.60	2.00	0.32	5.00	0.87	0.00	0.87
16.65	2.00	0.32	5.00	0.87	0.00	0.87
16.70	2.00	0.32	5.00	0.87	0.00	0.87
16.75	2.00	0.32	5.00	0.87	0.00	0.87
16.80	2.00	0.32	5.00	0.87	0.00	0.87
16.85	2.00	0.32	5.00	0.87	0.00	0.87
16.90	2.00	0.32	5.00	0.87	0.00	0.87
16.95	2.00	0.32	5.00	0.87	0.00	0.87
17.00	2.00	0.32	5.00	0.87	0.00	0.87
17.05	2.00	0.32	5.00	0.87	0.00	0.87
17.10	2.00	0.32	5.00	0.87	0.00	0.87
17.15	2.00	0.32	5.00	0.87	0.00	0.87
17.20	2.00	0.32	5.00	0.87	0.00	0.87
17.25	2.00	0.32	5.00	0.87	0.00	0.87
17.30	2.00	0.32	5.00	0.87	0.00	0.87
17.35	2.00	0.32	5.00	0.87	0.00	0.87
17.40	2.00	0.32	5.00	0.87	0.00	0.87
17.45	2.00	0.32	5.00	0.87	0.00	0.87
17.50	2.00	0.32	5.00	0.87	0.00	0.87
17.55	2.00	0.32	5.00	0.87	0.00	0.87
17.60	2.00	0.32	5.00	0.87	0.00	0.87
17.65	2.00	0.32	5.00	0.87	0.00	0.87
17.70	2.00	0.32	5.00	0.87	0.00	0.87
17.75	2.00	0.32	5.00	0.87	0.00	0.87
17.80	2.00	0.32	5.00	0.87	0.00	0.87
17.85	2.00	0.32	5.00	0.87	0.00	0.87
17.90	2.00	0.32	5.00	0.87	0.00	0.87
17.95	2.00	0.32	5.00	0.87	0.00	0.87
18.00	2.00	0.32	5.00	0.87	0.00	0.87
18.05	2.00	0.32	5.00	0.87	0.00	0.87
18.10	2.00	0.32	5.00	0.87	0.00	0.87
18.15	2.00	0.32	5.00	0.87	0.00	0.87
18.20	2.00	0.32	5.00	0.87	0.00	0.87
18.25	2.00	0.32	5.00	0.87	0.00	0.87
18.30	2.00	0.32	5.00	0.87	0.00	0.87
18.35	2.00	0.33	5.00	0.87	0.00	0.87
18.40	2.00	0.33	5.00	0.87	0.00	0.87
18.45	2.00	0.33	5.00	0.87	0.00	0.87
18.50	2.00	0.33	5.00	0.87	0.00	0.87
18.55	2.00	0.33	5.00	0.87	0.00	0.87
18.60	2.00	0.33	5.00	0.87	0.00	0.87
18.65	2.00	0.33	5.00	0.87	0.00	0.87
18.70	2.00	0.33	5.00	0.87	0.00	0.87
18.75	2.00	0.33	5.00	0.87	0.00	0.87
18.80	2.00	0.33	5.00	0.87	0.00	0.87
18.85	2.00	0.33	5.00	0.87	0.00	0.87
18.90	2.00	0.33	5.00	0.87	0.00	0.87
18.95	2.00	0.33	5.00	0.87	0.00	0.87
19.00	2.00	0.33	5.00	0.87	0.00	0.87
19.05	2.00	0.33	5.00	0.87	0.00	0.87
19.10	2.00	0.33	5.00	0.87	0.00	0.87
19.15	2.00	0.33	5.00	0.87	0.00	0.87
19.20	2.00	0.33	5.00	0.87	0.00	0.87
19.25	2.00	0.33	5.00	0.87	0.00	0.87
19.30	2.00	0.33	5.00	0.87	0.00	0.87
19.35	2.00	0.33	5.00	0.87	0.00	0.87
19.40	2.00	0.33	5.00	0.87	0.00	0.87
19.45	2.00	0.33	5.00	0.87	0.00	0.87
19.50	2.00	0.33	5.00	0.87	0.00	0.87
19.55	2.00	0.33	5.00	0.87	0.00	0.87
19.60	2.00	0.33	5.00	0.87	0.00	0.87
19.65	2.00	0.33	5.00	0.87	0.00	0.87
19.70	2.00	0.33	5.00	0.87	0.00	0.87

19.75	2.00	0.33	5.00	0.87	0.00	0.87
19.80	2.00	0.33	5.00	0.87	0.00	0.87
19.85	2.00	0.33	5.00	0.87	0.00	0.87
19.90	2.00	0.33	5.00	0.87	0.00	0.87
19.95	2.00	0.33	5.00	0.87	0.00	0.87
20.00	2.00	0.33	5.00	0.87	0.00	0.87
20.05	2.00	0.33	5.00	0.87	0.00	0.87
20.10	2.00	0.33	5.00	0.87	0.00	0.87
20.15	2.00	0.33	5.00	0.87	0.00	0.87
20.20	2.00	0.33	5.00	0.87	0.00	0.87
20.25	2.00	0.33	5.00	0.87	0.00	0.87
20.30	2.00	0.33	5.00	0.87	0.00	0.87
20.35	2.00	0.33	5.00	0.87	0.00	0.87
20.40	2.00	0.33	5.00	0.87	0.00	0.87
20.45	2.00	0.33	5.00	0.87	0.00	0.87
20.50	2.00	0.33	5.00	0.87	0.00	0.87
20.55	2.00	0.33	5.00	0.87	0.00	0.87
20.60	2.00	0.33	5.00	0.87	0.00	0.87
20.65	2.00	0.33	5.00	0.87	0.00	0.87
20.70	2.00	0.33	5.00	0.87	0.00	0.87
20.75	2.00	0.33	5.00	0.87	0.00	0.87
20.80	2.00	0.33	5.00	0.87	0.00	0.87
20.85	2.00	0.33	5.00	0.87	0.00	0.87
20.90	2.00	0.33	5.00	0.87	0.00	0.87
20.95	2.00	0.33	5.00	0.87	0.00	0.87
21.00	2.00	0.33	5.00	0.87	0.00	0.87
21.05	2.00	0.33	5.00	0.87	0.00	0.87
21.10	2.00	0.33	5.00	0.87	0.00	0.87
21.15	2.00	0.33	5.00	0.87	0.00	0.87
21.20	2.00	0.33	5.00	0.87	0.00	0.87
21.25	2.00	0.33	5.00	0.87	0.00	0.87
21.30	2.00	0.33	5.00	0.87	0.00	0.87
21.35	2.00	0.33	5.00	0.87	0.00	0.87
21.40	2.00	0.33	5.00	0.87	0.00	0.87
21.45	2.00	0.33	5.00	0.87	0.00	0.87
21.50	2.00	0.33	5.00	0.87	0.00	0.87
21.55	2.00	0.33	5.00	0.87	0.00	0.87
21.60	2.00	0.33	5.00	0.87	0.00	0.87
21.65	2.00	0.33	5.00	0.87	0.00	0.87
21.70	2.00	0.33	5.00	0.87	0.00	0.87
21.75	2.00	0.33	5.00	0.87	0.00	0.87
21.80	2.00	0.33	5.00	0.87	0.00	0.87
21.85	2.00	0.33	5.00	0.87	0.00	0.87
21.90	2.00	0.33	5.00	0.87	0.00	0.87
21.95	2.00	0.33	5.00	0.87	0.00	0.87
22.00	2.00	0.33	5.00	0.87	0.00	0.87
22.05	2.00	0.33	5.00	0.87	0.00	0.87
22.10	2.00	0.33	5.00	0.87	0.00	0.87
22.15	2.00	0.33	5.00	0.87	0.00	0.87
22.20	2.00	0.33	5.00	0.87	0.00	0.87
22.25	2.00	0.33	5.00	0.87	0.00	0.87
22.30	2.00	0.33	5.00	0.87	0.00	0.87
22.35	2.00	0.33	5.00	0.87	0.00	0.87
22.40	2.00	0.33	5.00	0.87	0.00	0.87
22.45	2.00	0.33	5.00	0.87	0.00	0.87
22.50	2.00	0.33	5.00	0.87	0.00	0.87
22.55	2.00	0.33	5.00	0.87	0.00	0.87
22.60	2.00	0.33	5.00	0.87	0.00	0.87
22.65	2.00	0.33	5.00	0.87	0.00	0.87
22.70	2.00	0.33	5.00	0.87	0.00	0.87
22.75	2.00	0.33	5.00	0.87	0.00	0.87
22.80	2.00	0.33	5.00	0.87	0.00	0.87
22.85	2.00	0.33	5.00	0.87	0.00	0.87
22.90	2.00	0.33	5.00	0.87	0.00	0.87
22.95	2.00	0.33	5.00	0.87	0.00	0.87
23.00	2.00	0.33	5.00	0.87	0.00	0.87
23.05	2.00	0.33	5.00	0.87	0.00	0.87
23.10	2.00	0.33	5.00	0.87	0.00	0.87
23.15	2.00	0.33	5.00	0.87	0.00	0.87
23.20	2.00	0.33	5.00	0.87	0.00	0.87
23.25	2.00	0.33	5.00	0.87	0.00	0.87

23.30	2.00	0.33	5.00	0.87	0.00	0.87
23.35	2.00	0.33	5.00	0.87	0.00	0.87
23.40	2.00	0.33	5.00	0.87	0.00	0.87
23.45	2.00	0.33	5.00	0.87	0.00	0.87
23.50	2.00	0.33	5.00	0.87	0.00	0.87
23.55	2.00	0.33	5.00	0.87	0.00	0.87
23.60	2.00	0.33	5.00	0.87	0.00	0.87
23.65	2.00	0.33	5.00	0.87	0.00	0.87
23.70	2.00	0.33	5.00	0.87	0.00	0.87
23.75	2.00	0.33	5.00	0.87	0.00	0.87
23.80	2.00	0.33	5.00	0.87	0.00	0.87
23.85	2.00	0.33	5.00	0.87	0.00	0.87
23.90	2.00	0.33	5.00	0.87	0.00	0.87
23.95	2.00	0.33	5.00	0.87	0.00	0.87
24.00	2.00	0.33	5.00	0.87	0.00	0.87
24.05	2.00	0.33	5.00	0.87	0.00	0.87
24.10	2.00	0.33	5.00	0.87	0.00	0.87
24.15	2.00	0.33	5.00	0.87	0.00	0.87
24.20	2.00	0.33	5.00	0.87	0.00	0.87
24.25	2.00	0.33	5.00	0.87	0.00	0.87
24.30	2.00	0.33	5.00	0.87	0.00	0.87
24.35	2.00	0.33	5.00	0.87	0.00	0.87
24.40	2.00	0.33	5.00	0.87	0.00	0.87
24.45	2.00	0.33	5.00	0.87	0.00	0.87
24.50	2.00	0.33	5.00	0.87	0.00	0.87
24.55	2.00	0.33	5.00	0.87	0.00	0.87
24.60	2.00	0.33	5.00	0.87	0.00	0.87
24.65	2.00	0.33	5.00	0.87	0.00	0.87
24.70	2.00	0.33	5.00	0.87	0.00	0.87
24.75	2.00	0.33	5.00	0.87	0.00	0.87
24.80	2.00	0.33	5.00	0.87	0.00	0.87
24.85	2.00	0.33	5.00	0.87	0.00	0.87
24.90	2.00	0.33	5.00	0.87	0.00	0.87
24.95	2.00	0.33	5.00	0.87	0.00	0.87
25.00	2.00	0.33	5.00	0.87	0.00	0.87
25.05	0.44	0.33	1.34	0.87	0.00	0.87
25.10	0.44	0.33	1.34	0.87	0.00	0.87
25.15	0.44	0.33	1.34	0.87	0.00	0.87
25.20	0.44	0.33	1.33	0.87	0.00	0.87
25.25	0.44	0.33	1.33	0.87	0.00	0.87
25.30	0.44	0.33	1.33	0.87	0.00	0.87
25.35	0.44	0.33	1.33	0.87	0.00	0.87
25.40	0.44	0.33	1.33	0.87	0.00	0.87
25.45	0.44	0.33	1.33	0.87	0.00	0.87
25.50	0.44	0.33	1.33	0.87	0.00	0.87
25.55	0.44	0.33	1.33	0.87	0.00	0.87
25.60	0.44	0.33	1.32	0.87	0.00	0.87
25.65	0.44	0.33	1.32	0.87	0.00	0.87
25.70	0.44	0.33	1.32	0.87	0.00	0.87
25.75	0.44	0.33	1.32	0.87	0.00	0.87
25.80	0.44	0.33	1.32	0.87	0.00	0.87
25.85	0.44	0.33	1.32	0.87	0.00	0.87
25.90	0.44	0.33	1.32	0.87	0.00	0.87
25.95	0.44	0.33	1.32	0.87	0.00	0.87
26.00	0.44	0.33	1.32	0.87	0.00	0.87
26.05	0.44	0.33	1.31	0.87	0.00	0.87
26.10	0.43	0.33	1.31	0.87	0.00	0.87
26.15	0.43	0.33	1.31	0.87	0.00	0.87
26.20	0.43	0.33	1.31	0.87	0.00	0.87
26.25	0.43	0.33	1.31	0.87	0.00	0.87
26.30	0.43	0.33	1.31	0.87	0.00	0.87
26.35	0.43	0.33	1.31	0.87	0.00	0.87
26.40	0.43	0.33	1.31	0.87	0.00	0.87
26.45	0.43	0.33	1.30	0.87	0.00	0.87
26.50	0.43	0.33	1.30	0.87	0.00	0.87
26.55	0.43	0.33	1.30	0.87	0.00	0.87
26.60	0.43	0.33	1.30	0.87	0.00	0.87
26.65	0.43	0.33	1.30	0.87	0.00	0.87
26.70	0.43	0.33	1.30	0.87	0.00	0.87
26.75	0.43	0.33	1.30	0.87	0.00	0.87
26.80	0.43	0.33	1.30	0.87	0.00	0.87

26.85	0.43	0.33	1.30	0.87	0.00	0.87
26.90	0.43	0.33	1.30	0.87	0.00	0.87
26.95	0.43	0.33	1.29	0.87	0.00	0.87
27.00	0.43	0.33	1.29	0.87	0.00	0.87
27.05	0.43	0.33	1.29	0.87	0.00	0.87
27.10	0.43	0.33	1.29	0.87	0.00	0.87
27.15	0.43	0.33	1.29	0.87	0.00	0.87
27.20	0.43	0.33	1.29	0.87	0.00	0.87
27.25	0.43	0.33	1.29	0.87	0.00	0.87
27.30	0.43	0.33	1.29	0.87	0.00	0.87
27.35	0.43	0.33	1.29	0.87	0.00	0.87
27.40	0.43	0.33	1.28	0.87	0.00	0.87
27.45	0.43	0.33	1.28	0.87	0.00	0.87
27.50	0.43	0.33	1.28	0.87	0.00	0.87
27.55	0.43	0.33	1.28	0.87	0.00	0.87
27.60	0.42	0.33	1.28	0.87	0.00	0.87
27.65	0.42	0.33	1.28	0.87	0.00	0.87
27.70	0.42	0.33	1.28	0.87	0.00	0.87
27.75	0.42	0.33	1.28	0.87	0.00	0.87
27.80	0.42	0.33	1.28	0.87	0.00	0.87
27.85	0.42	0.33	1.28	0.87	0.00	0.87
27.90	0.45	0.33	1.35	0.87	0.00	0.87
27.95	0.45	0.33	1.35	0.87	0.00	0.87
28.00	0.45	0.33	1.35	0.87	0.00	0.87
28.05	0.45	0.33	1.35	0.87	0.00	0.87
28.10	0.45	0.33	1.34	0.87	0.00	0.87
28.15	0.45	0.33	1.34	0.87	0.00	0.87
28.20	0.45	0.33	1.34	0.87	0.00	0.87
28.25	0.45	0.33	1.34	0.87	0.00	0.87
28.30	0.45	0.33	1.34	0.87	0.00	0.87
28.35	0.44	0.33	1.34	0.87	0.00	0.87
28.40	0.44	0.33	1.34	0.87	0.00	0.87
28.45	0.44	0.33	1.34	0.87	0.00	0.87
28.50	0.44	0.33	1.34	0.87	0.00	0.87
28.55	0.44	0.33	1.34	0.87	0.00	0.87
28.60	0.44	0.33	1.33	0.87	0.00	0.87
28.65	0.44	0.33	1.33	0.87	0.00	0.87
28.70	0.44	0.33	1.33	0.87	0.00	0.87
28.75	0.44	0.33	1.33	0.87	0.00	0.87
28.80	0.44	0.33	1.33	0.87	0.00	0.87
28.85	0.44	0.33	1.33	0.87	0.00	0.87
28.90	0.44	0.33	1.33	0.87	0.00	0.87
28.95	0.44	0.33	1.33	0.87	0.00	0.87
29.00	0.44	0.33	1.33	0.87	0.00	0.87
29.05	0.44	0.33	1.32	0.87	0.00	0.87
29.10	0.44	0.33	1.32	0.87	0.00	0.87
29.15	0.44	0.33	1.32	0.87	0.00	0.87
29.20	0.44	0.33	1.32	0.87	0.00	0.87
29.25	0.44	0.33	1.32	0.87	0.00	0.87
29.30	0.44	0.33	1.32	0.87	0.00	0.87
29.35	0.44	0.33	1.32	0.87	0.00	0.87
29.40	0.44	0.33	1.32	0.87	0.00	0.87
29.45	0.44	0.33	1.32	0.87	0.00	0.87
29.50	0.44	0.33	1.32	0.87	0.00	0.87
29.55	0.44	0.33	1.31	0.87	0.00	0.87
29.60	0.44	0.33	1.31	0.87	0.00	0.87
29.65	0.44	0.33	1.31	0.87	0.00	0.87
29.70	0.44	0.33	1.31	0.87	0.00	0.87
29.75	0.44	0.33	1.31	0.87	0.00	0.87
29.80	0.44	0.33	1.31	0.87	0.00	0.87
29.85	0.44	0.33	1.31	0.87	0.00	0.87
29.90	0.43	0.33	1.31	0.87	0.00	0.87
29.95	0.43	0.33	1.31	0.87	0.00	0.87
30.00	0.43	0.33	1.31	0.87	0.00	0.87
30.05	0.29	0.33	0.86*	0.87	0.00	0.87
30.10	0.29	0.33	0.86*	0.86	0.00	0.86
30.15	0.29	0.33	0.86*	0.86	0.00	0.86
30.20	0.28	0.33	0.86*	0.85	0.00	0.85
30.25	0.28	0.33	0.86*	0.84	0.00	0.84
30.30	0.28	0.33	0.86*	0.83	0.00	0.83
30.35	0.28	0.33	0.86*	0.82	0.00	0.82

30.40	0.28	0.33	0.86*	0.81	0.00	0.81
30.45	0.28	0.33	0.86*	0.81	0.00	0.81
30.50	0.28	0.33	0.86*	0.80	0.00	0.80
30.55	0.28	0.33	0.86*	0.79	0.00	0.79
30.60	0.28	0.33	0.86*	0.78	0.00	0.78
30.65	0.28	0.33	0.86*	0.77	0.00	0.77
30.70	0.28	0.33	0.86*	0.76	0.00	0.76
30.75	0.28	0.33	0.86*	0.75	0.00	0.75
30.80	0.28	0.33	0.86*	0.75	0.00	0.75
30.85	0.28	0.33	0.86*	0.74	0.00	0.74
30.90	0.28	0.33	0.86*	0.73	0.00	0.73
30.95	0.28	0.33	0.86*	0.72	0.00	0.72
31.00	0.28	0.33	0.86*	0.71	0.00	0.71
31.05	0.28	0.33	0.85*	0.70	0.00	0.70
31.10	0.28	0.33	0.85*	0.69	0.00	0.69
31.15	0.28	0.33	0.85*	0.69	0.00	0.69
31.20	0.28	0.33	0.85*	0.68	0.00	0.68
31.25	0.28	0.33	0.85*	0.67	0.00	0.67
31.30	0.28	0.33	0.85*	0.66	0.00	0.66
31.35	0.28	0.33	0.85*	0.65	0.00	0.65
31.40	0.28	0.33	0.85*	0.64	0.00	0.64
31.45	0.28	0.33	0.85*	0.63	0.00	0.63
31.50	0.28	0.33	0.85*	0.62	0.00	0.62
31.55	0.28	0.33	0.85*	0.62	0.00	0.62
31.60	0.28	0.33	0.85*	0.61	0.00	0.61
31.65	0.28	0.33	0.85*	0.60	0.00	0.60
31.70	0.28	0.33	0.85*	0.59	0.00	0.59
31.75	0.28	0.33	0.85*	0.58	0.00	0.58
31.80	0.28	0.33	0.85*	0.57	0.00	0.57
31.85	0.28	0.33	0.85*	0.56	0.00	0.56
31.90	0.28	0.33	0.85*	0.56	0.00	0.56
31.95	0.28	0.33	0.85*	0.55	0.00	0.55
32.00	0.28	0.33	0.85*	0.54	0.00	0.54
32.05	0.28	0.33	0.85*	0.53	0.00	0.53
32.10	0.28	0.33	0.85*	0.52	0.00	0.52
32.15	0.28	0.33	0.85*	0.51	0.00	0.51
32.20	0.28	0.33	0.85*	0.50	0.00	0.50
32.25	0.28	0.33	0.85*	0.49	0.00	0.49
32.30	0.28	0.33	0.85*	0.49	0.00	0.49
32.35	0.28	0.33	0.85*	0.48	0.00	0.48
32.40	0.28	0.33	0.85*	0.47	0.00	0.47
32.45	0.28	0.33	0.85*	0.46	0.00	0.46
32.50	0.28	0.33	0.85*	0.45	0.00	0.45
32.55	0.28	0.33	0.85*	0.44	0.00	0.44
32.60	0.28	0.33	0.85*	0.43	0.00	0.43
32.65	0.28	0.33	0.85*	0.42	0.00	0.42
32.70	0.28	0.33	0.85*	0.42	0.00	0.42
32.75	0.28	0.33	0.85*	0.41	0.00	0.41
32.80	0.28	0.33	0.85*	0.40	0.00	0.40
32.85	0.28	0.33	0.85*	0.39	0.00	0.39
32.90	0.28	0.33	0.85*	0.38	0.00	0.38
32.95	0.28	0.33	0.85*	0.37	0.00	0.37
33.00	0.28	0.33	0.85*	0.36	0.00	0.36
33.05	0.28	0.33	0.85*	0.35	0.00	0.35
33.10	0.28	0.33	0.85*	0.35	0.00	0.35
33.15	0.28	0.33	0.85*	0.34	0.00	0.34
33.20	0.28	0.33	0.85*	0.33	0.00	0.33
33.25	0.28	0.33	0.85*	0.32	0.00	0.32
33.30	0.28	0.33	0.85*	0.31	0.00	0.31
33.35	0.28	0.33	0.85*	0.30	0.00	0.30
33.40	0.28	0.33	0.85*	0.29	0.00	0.29
33.45	0.28	0.33	0.85*	0.28	0.00	0.28
33.50	0.28	0.33	0.85*	0.28	0.00	0.28
33.55	0.28	0.33	0.85*	0.27	0.00	0.27
33.60	0.28	0.33	0.85*	0.26	0.00	0.26
33.65	0.28	0.33	0.85*	0.25	0.00	0.25
33.70	0.28	0.33	0.85*	0.24	0.00	0.24
33.75	0.28	0.33	0.85*	0.23	0.00	0.23
33.80	0.28	0.33	0.85*	0.22	0.00	0.22
33.85	0.28	0.33	0.85*	0.21	0.00	0.21
33.90	0.28	0.33	0.85*	0.20	0.00	0.20

33.95	0.28	0.33	0.85*	0.20	0.00	0.20
34.00	0.28	0.33	0.85*	0.19	0.00	0.19
34.05	0.28	0.33	0.85*	0.18	0.00	0.18
34.10	0.28	0.33	0.85*	0.17	0.00	0.17
34.15	0.28	0.33	0.85*	0.16	0.00	0.16
34.20	0.28	0.32	0.85*	0.15	0.00	0.15
34.25	0.28	0.32	0.85*	0.14	0.00	0.14
34.30	0.28	0.32	0.85*	0.13	0.00	0.13
34.35	0.27	0.32	0.85*	0.12	0.00	0.12
34.40	0.27	0.32	0.85*	0.12	0.00	0.12
34.45	0.27	0.32	0.85*	0.11	0.00	0.11
34.50	0.27	0.32	0.85*	0.10	0.00	0.10
34.55	0.27	0.32	0.85*	0.09	0.00	0.09
34.60	0.27	0.32	0.85*	0.08	0.00	0.08
34.65	0.27	0.32	0.85*	0.07	0.00	0.07
34.70	0.27	0.32	0.85*	0.06	0.00	0.06
34.75	0.27	0.32	0.85*	0.05	0.00	0.05
34.80	0.27	0.32	0.85*	0.04	0.00	0.04
34.85	0.27	0.32	0.85*	0.04	0.00	0.04
34.90	0.27	0.32	0.85*	0.03	0.00	0.03
34.95	0.27	0.32	0.85*	0.02	0.00	0.02
35.00	0.27	0.32	0.85*	0.01	0.00	0.01
35.05	0.83	0.32	2.57	0.00	0.00	0.00
35.10	0.83	0.32	2.57	0.00	0.00	0.00
35.15	0.83	0.32	2.57	0.00	0.00	0.00
35.20	0.83	0.32	2.57	0.00	0.00	0.00
35.25	0.83	0.32	2.57	0.00	0.00	0.00
35.30	0.83	0.32	2.57	0.00	0.00	0.00
35.35	0.83	0.32	2.58	0.00	0.00	0.00
35.40	0.83	0.32	2.58	0.00	0.00	0.00
35.45	0.83	0.32	2.58	0.00	0.00	0.00
35.50	0.83	0.32	2.58	0.00	0.00	0.00
35.55	0.83	0.32	2.58	0.00	0.00	0.00
35.60	0.83	0.32	2.58	0.00	0.00	0.00
35.65	0.83	0.32	2.58	0.00	0.00	0.00
35.70	0.83	0.32	2.58	0.00	0.00	0.00
35.75	0.83	0.32	2.58	0.00	0.00	0.00
35.80	0.83	0.32	2.58	0.00	0.00	0.00
35.85	0.83	0.32	2.59	0.00	0.00	0.00
35.90	0.83	0.32	2.59	0.00	0.00	0.00
35.95	0.83	0.32	2.59	0.00	0.00	0.00
36.00	0.83	0.32	2.59	0.00	0.00	0.00
36.05	0.83	0.32	2.59	0.00	0.00	0.00
36.10	0.83	0.32	2.59	0.00	0.00	0.00
36.15	0.83	0.32	2.59	0.00	0.00	0.00
36.20	0.83	0.32	2.59	0.00	0.00	0.00
36.25	0.83	0.32	2.59	0.00	0.00	0.00
36.30	0.83	0.32	2.59	0.00	0.00	0.00
36.35	0.83	0.32	2.60	0.00	0.00	0.00
36.40	0.83	0.32	2.60	0.00	0.00	0.00
36.45	0.83	0.32	2.60	0.00	0.00	0.00
36.50	0.83	0.32	2.60	0.00	0.00	0.00
36.55	0.83	0.32	2.60	0.00	0.00	0.00
36.60	0.83	0.32	2.60	0.00	0.00	0.00
36.65	0.83	0.32	2.60	0.00	0.00	0.00
36.70	0.83	0.32	2.60	0.00	0.00	0.00
36.75	0.83	0.32	2.60	0.00	0.00	0.00
36.80	0.83	0.32	2.60	0.00	0.00	0.00
36.85	0.83	0.32	2.61	0.00	0.00	0.00
36.90	0.83	0.32	2.61	0.00	0.00	0.00
36.95	0.83	0.32	2.61	0.00	0.00	0.00
37.00	0.83	0.32	2.61	0.00	0.00	0.00
37.05	0.83	0.32	2.61	0.00	0.00	0.00
37.10	0.83	0.32	2.61	0.00	0.00	0.00
37.15	0.83	0.32	2.61	0.00	0.00	0.00
37.20	0.83	0.32	2.61	0.00	0.00	0.00
37.25	0.83	0.32	2.61	0.00	0.00	0.00
37.30	0.83	0.32	2.61	0.00	0.00	0.00
37.35	0.83	0.32	2.62	0.00	0.00	0.00
37.40	0.83	0.32	2.62	0.00	0.00	0.00
37.45	0.83	0.32	2.62	0.00	0.00	0.00

37.50	0.83	0.32	2.62	0.00	0.00	0.00
37.55	0.83	0.32	2.62	0.00	0.00	0.00
37.60	0.83	0.32	2.62	0.00	0.00	0.00
37.65	0.83	0.32	2.62	0.00	0.00	0.00
37.70	0.83	0.32	2.62	0.00	0.00	0.00
37.75	0.83	0.32	2.62	0.00	0.00	0.00
37.80	0.83	0.32	2.62	0.00	0.00	0.00
37.85	0.83	0.32	2.63	0.00	0.00	0.00
37.90	0.83	0.32	2.63	0.00	0.00	0.00
37.95	0.83	0.32	2.63	0.00	0.00	0.00
38.00	0.83	0.32	2.63	0.00	0.00	0.00
38.05	0.83	0.32	2.63	0.00	0.00	0.00
38.10	0.83	0.32	2.63	0.00	0.00	0.00
38.15	0.83	0.32	2.63	0.00	0.00	0.00
38.20	0.83	0.32	2.63	0.00	0.00	0.00
38.25	0.83	0.32	2.63	0.00	0.00	0.00
38.30	0.83	0.32	2.64	0.00	0.00	0.00
38.35	0.83	0.32	2.64	0.00	0.00	0.00
38.40	0.83	0.31	2.64	0.00	0.00	0.00
38.45	0.83	0.31	2.64	0.00	0.00	0.00
38.50	0.83	0.31	2.64	0.00	0.00	0.00
38.55	0.83	0.31	2.64	0.00	0.00	0.00
38.60	0.83	0.31	2.64	0.00	0.00	0.00
38.65	0.83	0.31	2.64	0.00	0.00	0.00
38.70	0.83	0.31	2.64	0.00	0.00	0.00
38.75	0.83	0.31	2.64	0.00	0.00	0.00
38.80	0.83	0.31	2.65	0.00	0.00	0.00
38.85	0.83	0.31	2.65	0.00	0.00	0.00
38.90	0.83	0.31	2.65	0.00	0.00	0.00
38.95	0.83	0.31	2.65	0.00	0.00	0.00
39.00	0.83	0.31	2.65	0.00	0.00	0.00
39.05	0.83	0.31	2.65	0.00	0.00	0.00
39.10	0.83	0.31	2.65	0.00	0.00	0.00
39.15	0.83	0.31	2.65	0.00	0.00	0.00
39.20	0.83	0.31	2.65	0.00	0.00	0.00
39.25	0.83	0.31	2.66	0.00	0.00	0.00
39.30	0.83	0.31	2.66	0.00	0.00	0.00
39.35	0.83	0.31	2.66	0.00	0.00	0.00
39.40	0.83	0.31	2.66	0.00	0.00	0.00
39.45	0.83	0.31	2.66	0.00	0.00	0.00
39.50	0.83	0.31	2.66	0.00	0.00	0.00
39.55	0.83	0.31	2.66	0.00	0.00	0.00
39.60	0.83	0.31	2.66	0.00	0.00	0.00
39.65	0.83	0.31	2.66	0.00	0.00	0.00
39.70	0.83	0.31	2.67	0.00	0.00	0.00
39.75	0.83	0.31	2.67	0.00	0.00	0.00
39.80	0.83	0.31	2.67	0.00	0.00	0.00
39.85	0.83	0.31	2.67	0.00	0.00	0.00
39.90	0.83	0.31	2.67	0.00	0.00	0.00
39.95	0.83	0.31	2.67	0.00	0.00	0.00
40.00	0.83	0.31	2.67	0.00	0.00	0.00
40.05	0.83	0.31	2.67	0.00	0.00	0.00
40.10	0.83	0.31	2.67	0.00	0.00	0.00
40.15	0.83	0.31	2.68	0.00	0.00	0.00
40.20	0.83	0.31	2.68	0.00	0.00	0.00
40.25	0.83	0.31	2.68	0.00	0.00	0.00
40.30	0.83	0.31	2.68	0.00	0.00	0.00
40.35	0.83	0.31	2.68	0.00	0.00	0.00
40.40	0.83	0.31	2.68	0.00	0.00	0.00
40.45	0.83	0.31	2.68	0.00	0.00	0.00
40.50	0.83	0.31	2.68	0.00	0.00	0.00
40.55	0.83	0.31	2.69	0.00	0.00	0.00
40.60	0.83	0.31	2.69	0.00	0.00	0.00
40.65	0.83	0.31	2.69	0.00	0.00	0.00
40.70	0.83	0.31	2.69	0.00	0.00	0.00
40.75	0.83	0.31	2.69	0.00	0.00	0.00
40.80	0.83	0.31	2.69	0.00	0.00	0.00
40.85	0.83	0.31	2.69	0.00	0.00	0.00
40.90	0.83	0.31	2.69	0.00	0.00	0.00
40.95	0.83	0.31	2.69	0.00	0.00	0.00
41.00	0.83	0.31	2.70	0.00	0.00	0.00

41.05	0.83	0.31	2.70	0.00	0.00	0.00
41.10	0.83	0.31	2.70	0.00	0.00	0.00
41.15	0.83	0.31	2.70	0.00	0.00	0.00
41.20	0.83	0.31	2.70	0.00	0.00	0.00
41.25	0.83	0.31	2.70	0.00	0.00	0.00
41.30	0.83	0.31	2.70	0.00	0.00	0.00
41.35	0.83	0.31	2.70	0.00	0.00	0.00
41.40	0.83	0.31	2.71	0.00	0.00	0.00
41.45	0.83	0.31	2.71	0.00	0.00	0.00
41.50	0.83	0.31	2.71	0.00	0.00	0.00
41.55	0.83	0.31	2.71	0.00	0.00	0.00
41.60	0.83	0.31	2.71	0.00	0.00	0.00
41.65	0.83	0.31	2.71	0.00	0.00	0.00
41.70	0.83	0.31	2.71	0.00	0.00	0.00
41.75	0.83	0.31	2.71	0.00	0.00	0.00
41.80	0.83	0.31	2.72	0.00	0.00	0.00
41.85	0.83	0.31	2.72	0.00	0.00	0.00
41.90	0.83	0.31	2.72	0.00	0.00	0.00
41.95	0.83	0.31	2.72	0.00	0.00	0.00
42.00	0.83	0.31	2.72	0.00	0.00	0.00
42.05	0.83	0.31	2.72	0.00	0.00	0.00
42.10	0.83	0.31	2.72	0.00	0.00	0.00
42.15	0.83	0.30	2.72	0.00	0.00	0.00
42.20	0.83	0.30	2.73	0.00	0.00	0.00
42.25	0.83	0.30	2.73	0.00	0.00	0.00
42.30	0.83	0.30	2.73	0.00	0.00	0.00
42.35	0.83	0.30	2.73	0.00	0.00	0.00
42.40	0.83	0.30	2.73	0.00	0.00	0.00
42.45	0.84	0.30	2.75	0.00	0.00	0.00
42.50	0.84	0.30	2.75	0.00	0.00	0.00
42.55	0.84	0.30	2.75	0.00	0.00	0.00
42.60	0.84	0.30	2.75	0.00	0.00	0.00
42.65	0.84	0.30	2.75	0.00	0.00	0.00
42.70	0.84	0.30	2.75	0.00	0.00	0.00
42.75	0.84	0.30	2.75	0.00	0.00	0.00
42.80	0.83	0.30	2.75	0.00	0.00	0.00
42.85	0.83	0.30	2.75	0.00	0.00	0.00
42.90	0.83	0.30	2.76	0.00	0.00	0.00
42.95	0.83	0.30	2.76	0.00	0.00	0.00
43.00	0.83	0.30	2.76	0.00	0.00	0.00
43.05	0.83	0.30	2.76	0.00	0.00	0.00
43.10	0.83	0.30	2.76	0.00	0.00	0.00
43.15	0.83	0.30	2.76	0.00	0.00	0.00
43.20	0.83	0.30	2.76	0.00	0.00	0.00
43.25	0.83	0.30	2.76	0.00	0.00	0.00
43.30	0.83	0.30	2.76	0.00	0.00	0.00
43.35	0.83	0.30	2.76	0.00	0.00	0.00
43.40	0.83	0.30	2.76	0.00	0.00	0.00
43.45	0.83	0.30	2.76	0.00	0.00	0.00
43.50	0.83	0.30	2.77	0.00	0.00	0.00
43.55	0.83	0.30	2.77	0.00	0.00	0.00
43.60	0.83	0.30	2.77	0.00	0.00	0.00
43.65	0.83	0.30	2.77	0.00	0.00	0.00
43.70	0.83	0.30	2.77	0.00	0.00	0.00
43.75	0.83	0.30	2.77	0.00	0.00	0.00
43.80	0.83	0.30	2.77	0.00	0.00	0.00
43.85	0.83	0.30	2.77	0.00	0.00	0.00
43.90	0.83	0.30	2.77	0.00	0.00	0.00
43.95	0.83	0.30	2.77	0.00	0.00	0.00
44.00	0.83	0.30	2.77	0.00	0.00	0.00
44.05	0.83	0.30	2.77	0.00	0.00	0.00
44.10	0.83	0.30	2.77	0.00	0.00	0.00
44.15	0.83	0.30	2.78	0.00	0.00	0.00
44.20	0.83	0.30	2.78	0.00	0.00	0.00
44.25	0.83	0.30	2.78	0.00	0.00	0.00
44.30	0.83	0.30	2.78	0.00	0.00	0.00
44.35	0.83	0.30	2.78	0.00	0.00	0.00
44.40	0.83	0.30	2.78	0.00	0.00	0.00
44.45	0.83	0.30	2.78	0.00	0.00	0.00
44.50	0.83	0.30	2.78	0.00	0.00	0.00
44.55	0.83	0.30	2.78	0.00	0.00	0.00

44.60	0.83	0.30	2.78	0.00	0.00	0.00
44.65	0.83	0.30	2.78	0.00	0.00	0.00
44.70	0.83	0.30	2.78	0.00	0.00	0.00
44.75	0.83	0.30	2.79	0.00	0.00	0.00
44.80	0.83	0.30	2.79	0.00	0.00	0.00
44.85	0.83	0.30	2.79	0.00	0.00	0.00
44.90	0.83	0.30	2.79	0.00	0.00	0.00
44.95	0.83	0.30	2.79	0.00	0.00	0.00
45.00	0.83	0.30	2.79	0.00	0.00	0.00
45.05	0.83	0.30	2.79	0.00	0.00	0.00
45.10	0.83	0.30	2.79	0.00	0.00	0.00
45.15	0.83	0.30	2.79	0.00	0.00	0.00
45.20	0.83	0.30	2.79	0.00	0.00	0.00
45.25	0.83	0.30	2.79	0.00	0.00	0.00
45.30	0.83	0.30	2.79	0.00	0.00	0.00
45.35	0.83	0.30	2.80	0.00	0.00	0.00
45.40	0.83	0.30	2.80	0.00	0.00	0.00
45.45	0.83	0.30	2.80	0.00	0.00	0.00
45.50	0.83	0.30	2.80	0.00	0.00	0.00
45.55	0.83	0.30	2.80	0.00	0.00	0.00
45.60	0.83	0.30	2.80	0.00	0.00	0.00
45.65	0.83	0.30	2.80	0.00	0.00	0.00
45.70	0.83	0.30	2.80	0.00	0.00	0.00
45.75	0.83	0.29	2.80	0.00	0.00	0.00
45.80	0.83	0.29	2.80	0.00	0.00	0.00
45.85	0.83	0.29	2.80	0.00	0.00	0.00
45.90	0.83	0.29	2.81	0.00	0.00	0.00
45.95	0.83	0.29	2.81	0.00	0.00	0.00
46.00	0.83	0.29	2.81	0.00	0.00	0.00
46.05	0.83	0.29	2.81	0.00	0.00	0.00
46.10	0.83	0.29	2.81	0.00	0.00	0.00
46.15	0.83	0.29	2.81	0.00	0.00	0.00
46.20	0.83	0.29	2.81	0.00	0.00	0.00
46.25	0.83	0.29	2.81	0.00	0.00	0.00
46.30	0.83	0.29	2.81	0.00	0.00	0.00
46.35	0.82	0.29	2.81	0.00	0.00	0.00
46.40	0.82	0.29	2.81	0.00	0.00	0.00
46.45	0.82	0.29	2.82	0.00	0.00	0.00
46.50	0.82	0.29	2.82	0.00	0.00	0.00
46.55	0.82	0.29	2.82	0.00	0.00	0.00
46.60	0.82	0.29	2.82	0.00	0.00	0.00
46.65	0.82	0.29	2.82	0.00	0.00	0.00
46.70	0.82	0.29	2.82	0.00	0.00	0.00
46.75	0.82	0.29	2.82	0.00	0.00	0.00
46.80	0.82	0.29	2.82	0.00	0.00	0.00
46.85	0.82	0.29	2.82	0.00	0.00	0.00
46.90	0.82	0.29	2.82	0.00	0.00	0.00
46.95	0.82	0.29	2.82	0.00	0.00	0.00
47.00	0.82	0.29	2.83	0.00	0.00	0.00
47.05	0.82	0.29	2.83	0.00	0.00	0.00
47.10	0.82	0.29	2.83	0.00	0.00	0.00
47.15	0.82	0.29	2.83	0.00	0.00	0.00
47.20	0.82	0.29	2.83	0.00	0.00	0.00
47.25	0.82	0.29	2.83	0.00	0.00	0.00
47.30	0.82	0.29	2.83	0.00	0.00	0.00
47.35	0.82	0.29	2.83	0.00	0.00	0.00
47.40	0.82	0.29	2.83	0.00	0.00	0.00
47.45	0.82	0.29	2.83	0.00	0.00	0.00
47.50	0.82	0.29	2.83	0.00	0.00	0.00
47.55	0.82	0.29	2.84	0.00	0.00	0.00
47.60	0.82	0.29	2.84	0.00	0.00	0.00
47.65	0.82	0.29	2.84	0.00	0.00	0.00
47.70	0.82	0.29	2.84	0.00	0.00	0.00
47.75	0.82	0.29	2.84	0.00	0.00	0.00
47.80	0.82	0.29	2.84	0.00	0.00	0.00
47.85	0.82	0.29	2.84	0.00	0.00	0.00
47.90	0.82	0.29	2.84	0.00	0.00	0.00
47.95	0.82	0.29	2.84	0.00	0.00	0.00
48.00	0.82	0.29	2.84	0.00	0.00	0.00
48.05	0.82	0.29	2.84	0.00	0.00	0.00
48.10	0.82	0.29	2.85	0.00	0.00	0.00

48.15	0.82	0.29	2.85	0.00	0.00	0.00
48.20	0.82	0.29	2.85	0.00	0.00	0.00
48.25	0.82	0.29	2.85	0.00	0.00	0.00
48.30	0.82	0.29	2.85	0.00	0.00	0.00
48.35	0.82	0.29	2.85	0.00	0.00	0.00
48.40	0.82	0.29	2.85	0.00	0.00	0.00
48.45	0.82	0.29	2.85	0.00	0.00	0.00
48.50	0.82	0.29	2.85	0.00	0.00	0.00
48.55	0.82	0.29	2.85	0.00	0.00	0.00
48.60	0.82	0.29	2.85	0.00	0.00	0.00
48.65	0.82	0.29	2.86	0.00	0.00	0.00
48.70	0.82	0.29	2.86	0.00	0.00	0.00
48.75	0.82	0.29	2.86	0.00	0.00	0.00
48.80	0.82	0.29	2.86	0.00	0.00	0.00
48.85	0.81	0.29	2.82	0.00	0.00	0.00
48.90	0.80	0.29	2.79	0.00	0.00	0.00
48.95	0.79	0.29	2.76	0.00	0.00	0.00
49.00	0.78	0.29	2.74	0.00	0.00	0.00
49.05	0.77	0.29	2.71	0.00	0.00	0.00
49.10	0.77	0.29	2.69	0.00	0.00	0.00
49.15	0.76	0.29	2.67	0.00	0.00	0.00
49.20	0.76	0.29	2.65	0.00	0.00	0.00
49.25	0.75	0.28	2.63	0.00	0.00	0.00
49.30	0.74	0.28	2.61	0.00	0.00	0.00
49.35	0.74	0.28	2.60	0.00	0.00	0.00
49.40	0.73	0.28	2.58	0.00	0.00	0.00
49.45	0.73	0.28	2.57	0.00	0.00	0.00
49.50	0.73	0.28	2.56	0.00	0.00	0.00
49.55	0.72	0.28	2.54	0.00	0.00	0.00
49.60	0.72	0.28	2.53	0.00	0.00	0.00
49.65	0.71	0.28	2.52	0.00	0.00	0.00
49.70	0.71	0.28	2.51	0.00	0.00	0.00
49.75	0.71	0.28	2.50	0.00	0.00	0.00
49.80	0.70	0.28	2.49	0.00	0.00	0.00
49.85	0.70	0.28	2.48	0.00	0.00	0.00
49.90	0.70	0.28	2.47	0.00	0.00	0.00
49.95	0.70	0.28	2.46	0.00	0.00	0.00
50.00	0.69	0.28	2.45	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

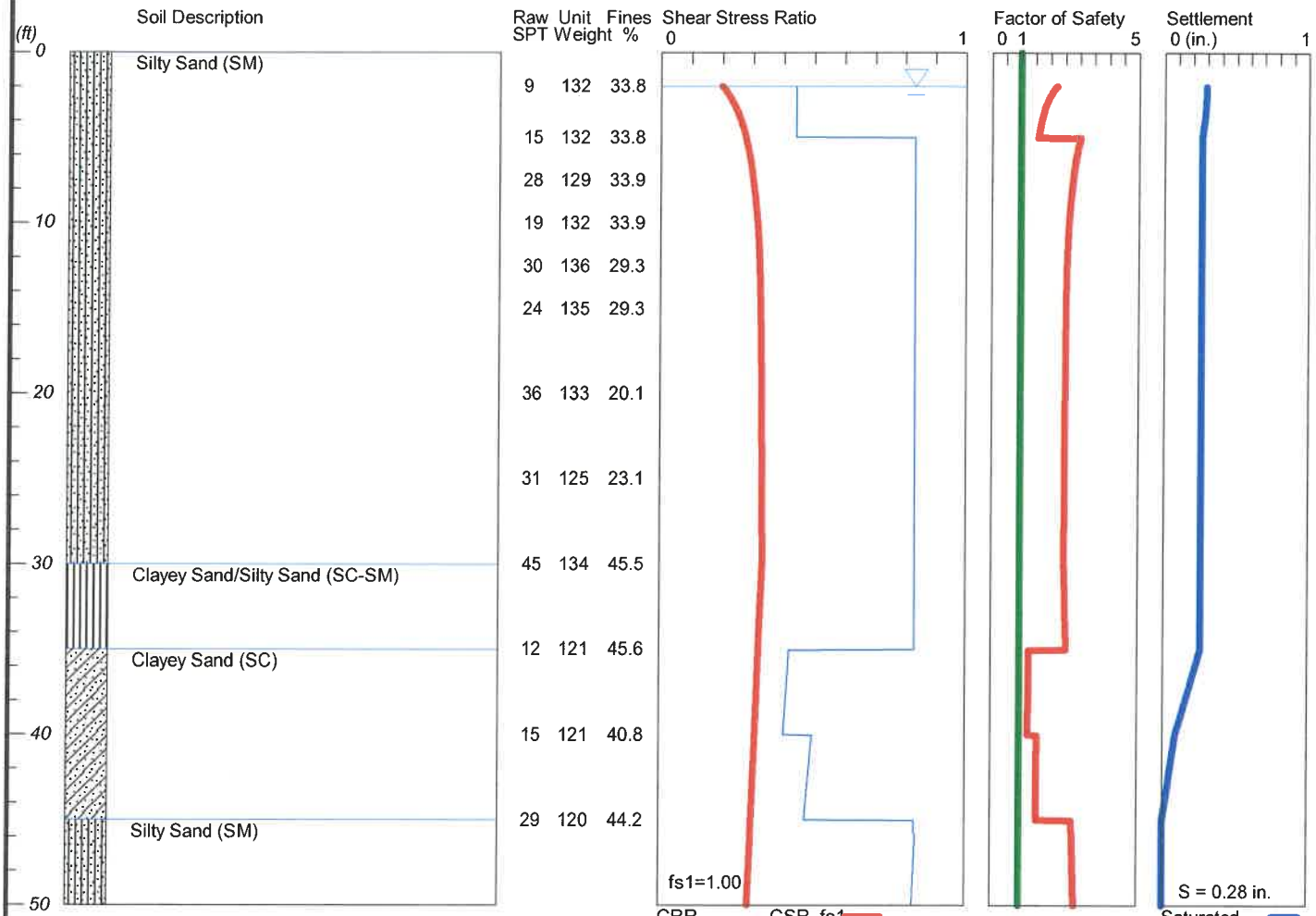
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Triangle Development

Hole No.=B18 Water Depth=2 ft

Magnitude=6.15
Acceleration=0.307g



LiquefyPro CivilTech Software USA www.civiltech.com

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*****************************************************************************************************
                                    LIQUEFACTION ANALYSIS SUMMARY
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    Input File Name: C:\Users\mweber\Documents\Krazan\Projects\012\22\165 Triangle Development\B18\B18
Liquefaction.liq
    Title:  Triangle Development
    Subtitle:  012-22165

    Surface Elev.=
    Hole No.=B18
    Depth of Hole= 50.00 ft
    Water Table during Earthquake= 2.00 ft
    Water Table during In-Situ Testing= 3.00 ft
    Max. Acceleration= 0.31 g
    Earthquake Magnitude= 6.15

 Input Data:
    Surface Elev.=
    Hole No.=B18
    Depth of Hole=50.00 ft
    Water Table during Earthquake= 2.00 ft
    Water Table during In-Situ Testing= 3.00 ft
    Max. Acceleration=0.31 g
    Earthquake Magnitude=6.15
    No-Liquefiable Soils:   CL, OL are Non-Liq. Soil

    1. SPT or BPT Calculation.
    2. Settlement Analysis Method: Ishihara / Yoshimine
    3. Fines Correction for Liquefaction: Stark/Olson et al.*
    4. Fine Correction for Settlement: During Liquefaction*
    5. Settlement Calculation in: All zones*
    6. Hammer Energy Ratio,                                    Ce = 1.4
    7. Borehole Diameter,                                          Cb= 1.05
    8. Sampling Method,                                           Cs= 1
    9. User request factor of safety (apply to CSR) ,   User= 1
       Plot one CSR curve (fs1=User)
    10. Use Curve Smoothing: No
    * Recommended Options

    In-Situ Test Data:
    Depth   SPT     gamma   Fines
    ft              pcf     %
    ____________________________________
    2.00    9.00    132.00  33.80
    5.00    15.00   132.00  33.80
    7.50    28.00   129.00  33.90
    10.00   19.00   132.00  33.90
    12.50   30.00   136.00  29.30
    15.00   24.00   135.00  29.30
    20.00   36.00   133.00  20.10
    25.00   31.00   125.00  23.10
    30.00   45.00   134.00  45.50
    35.00   12.00   121.00  45.60
    40.00   15.00   121.00  40.80
    45.00   29.00   120.00  44.20
    ____________________________________

Output Results:
    Settlement of Saturated Sands=0.28 in.
    Settlement of Unsaturated Sands=0.00 in.
    Total Settlement of Saturated and Unsaturated Sands=0.28 in.
    Differential Settlement=0.142 to 0.188 in.

    Depth   CRRm    CSRfs   F.S.    S_sat.  S_dry   S_all
    ft                              in.     in.     in.
    ____________________________________________________
```

2.00	0.44	0.20	2.21	0.28	0.00	0.28
2.05	0.44	0.20	2.18	0.28	0.00	0.28
2.10	0.44	0.20	2.16	0.28	0.00	0.28
2.15	0.44	0.21	2.14	0.28	0.00	0.28
2.20	0.44	0.21	2.11	0.28	0.00	0.28
2.25	0.44	0.21	2.09	0.28	0.00	0.28
2.30	0.44	0.21	2.07	0.28	0.00	0.28
2.35	0.44	0.21	2.05	0.28	0.00	0.28
2.40	0.44	0.22	2.04	0.28	0.00	0.28
2.45	0.44	0.22	2.02	0.28	0.00	0.28
2.50	0.44	0.22	2.00	0.28	0.00	0.28
2.55	0.44	0.22	1.99	0.28	0.00	0.28
2.60	0.44	0.22	1.97	0.28	0.00	0.28
2.65	0.44	0.22	1.96	0.28	0.00	0.28
2.70	0.44	0.23	1.94	0.28	0.00	0.28
2.75	0.44	0.23	1.93	0.28	0.00	0.28
2.80	0.44	0.23	1.91	0.28	0.00	0.28
2.85	0.44	0.23	1.90	0.28	0.00	0.28
2.90	0.44	0.23	1.89	0.28	0.00	0.28
2.95	0.44	0.23	1.88	0.28	0.00	0.28
3.00	0.44	0.24	1.86	0.28	0.00	0.28
3.05	0.44	0.24	1.85	0.28	0.00	0.28
3.10	0.44	0.24	1.84	0.28	0.00	0.28
3.15	0.44	0.24	1.83	0.28	0.00	0.28
3.20	0.44	0.24	1.82	0.28	0.00	0.28
3.25	0.44	0.24	1.81	0.28	0.00	0.28
3.30	0.44	0.24	1.80	0.28	0.00	0.28
3.35	0.44	0.24	1.79	0.28	0.00	0.28
3.40	0.44	0.25	1.78	0.28	0.00	0.28
3.45	0.44	0.25	1.78	0.28	0.00	0.28
3.50	0.44	0.25	1.77	0.28	0.00	0.28
3.55	0.44	0.25	1.76	0.28	0.00	0.28
3.60	0.44	0.25	1.75	0.28	0.00	0.28
3.65	0.44	0.25	1.74	0.28	0.00	0.28
3.70	0.44	0.25	1.74	0.28	0.00	0.28
3.75	0.44	0.25	1.73	0.28	0.00	0.28
3.80	0.44	0.25	1.72	0.28	0.00	0.28
3.85	0.44	0.26	1.71	0.28	0.00	0.28
3.90	0.44	0.26	1.71	0.27	0.00	0.27
3.95	0.44	0.26	1.70	0.27	0.00	0.27
4.00	0.44	0.26	1.69	0.27	0.00	0.27
4.05	0.44	0.26	1.69	0.27	0.00	0.27
4.10	0.44	0.26	1.68	0.27	0.00	0.27
4.15	0.44	0.26	1.68	0.27	0.00	0.27
4.20	0.44	0.26	1.67	0.27	0.00	0.27
4.25	0.44	0.26	1.66	0.27	0.00	0.27
4.30	0.44	0.26	1.66	0.27	0.00	0.27
4.35	0.44	0.27	1.65	0.27	0.00	0.27
4.40	0.44	0.27	1.65	0.27	0.00	0.27
4.45	0.44	0.27	1.64	0.27	0.00	0.27
4.50	0.44	0.27	1.64	0.27	0.00	0.27
4.55	0.44	0.27	1.63	0.27	0.00	0.27
4.60	0.44	0.27	1.63	0.26	0.00	0.26
4.65	0.44	0.27	1.62	0.26	0.00	0.26
4.70	0.44	0.27	1.62	0.26	0.00	0.26
4.75	0.44	0.27	1.61	0.26	0.00	0.26
4.80	0.44	0.27	1.61	0.26	0.00	0.26
4.85	0.44	0.27	1.61	0.26	0.00	0.26
4.90	0.44	0.27	1.60	0.26	0.00	0.26
4.95	0.44	0.27	1.60	0.26	0.00	0.26
5.00	0.83	0.28	3.02	0.26	0.00	0.26
5.05	0.83	0.28	3.01	0.26	0.00	0.26
5.10	0.83	0.28	3.00	0.26	0.00	0.26
5.15	0.83	0.28	3.00	0.26	0.00	0.26
5.20	0.83	0.28	2.99	0.26	0.00	0.26
5.25	0.83	0.28	2.98	0.26	0.00	0.26
5.30	0.83	0.28	2.97	0.26	0.00	0.26
5.35	0.83	0.28	2.97	0.26	0.00	0.26
5.40	0.83	0.28	2.96	0.26	0.00	0.26
5.45	0.83	0.28	2.95	0.26	0.00	0.26
5.50	0.83	0.28	2.95	0.26	0.00	0.26

5.55	0.83	0.28	2.94	0.26	0.00	0.26
5.60	0.83	0.28	2.94	0.26	0.00	0.26
5.65	0.83	0.28	2.93	0.26	0.00	0.26
5.70	0.83	0.28	2.92	0.26	0.00	0.26
5.75	0.83	0.28	2.92	0.26	0.00	0.26
5.80	0.83	0.29	2.91	0.26	0.00	0.26
5.85	0.83	0.29	2.91	0.26	0.00	0.26
5.90	0.83	0.29	2.90	0.26	0.00	0.26
5.95	0.83	0.29	2.90	0.26	0.00	0.26
6.00	0.83	0.29	2.89	0.26	0.00	0.26
6.05	0.83	0.29	2.89	0.26	0.00	0.26
6.10	0.83	0.29	2.88	0.26	0.00	0.26
6.15	0.83	0.29	2.88	0.26	0.00	0.26
6.20	0.83	0.29	2.87	0.26	0.00	0.26
6.25	0.83	0.29	2.87	0.26	0.00	0.26
6.30	0.83	0.29	2.86	0.26	0.00	0.26
6.35	0.83	0.29	2.86	0.26	0.00	0.26
6.40	0.83	0.29	2.85	0.26	0.00	0.26
6.45	0.83	0.29	2.85	0.26	0.00	0.26
6.50	0.83	0.29	2.84	0.26	0.00	0.26
6.55	0.83	0.29	2.84	0.26	0.00	0.26
6.60	0.83	0.29	2.83	0.26	0.00	0.26
6.65	0.83	0.29	2.83	0.26	0.00	0.26
6.70	0.83	0.29	2.83	0.26	0.00	0.26
6.75	0.83	0.29	2.82	0.26	0.00	0.26
6.80	0.83	0.29	2.82	0.26	0.00	0.26
6.85	0.83	0.30	2.81	0.26	0.00	0.26
6.90	0.83	0.30	2.81	0.26	0.00	0.26
6.95	0.83	0.30	2.81	0.26	0.00	0.26
7.00	0.83	0.30	2.80	0.26	0.00	0.26
7.05	0.83	0.30	2.80	0.26	0.00	0.26
7.10	0.83	0.30	2.80	0.26	0.00	0.26
7.15	0.83	0.30	2.79	0.26	0.00	0.26
7.20	0.83	0.30	2.79	0.26	0.00	0.26
7.25	0.83	0.30	2.78	0.26	0.00	0.26
7.30	0.83	0.30	2.78	0.26	0.00	0.26
7.35	0.83	0.30	2.78	0.26	0.00	0.26
7.40	0.83	0.30	2.77	0.26	0.00	0.26
7.45	0.83	0.30	2.77	0.26	0.00	0.26
7.50	0.83	0.30	2.77	0.26	0.00	0.26
7.55	0.83	0.30	2.76	0.26	0.00	0.26
7.60	0.83	0.30	2.76	0.26	0.00	0.26
7.65	0.83	0.30	2.76	0.26	0.00	0.26
7.70	0.83	0.30	2.75	0.26	0.00	0.26
7.75	0.83	0.30	2.75	0.26	0.00	0.26
7.80	0.83	0.30	2.75	0.26	0.00	0.26
7.85	0.83	0.30	2.75	0.26	0.00	0.26
7.90	0.83	0.30	2.74	0.26	0.00	0.26
7.95	0.83	0.30	2.74	0.26	0.00	0.26
8.00	0.83	0.30	2.74	0.26	0.00	0.26
8.05	0.83	0.30	2.73	0.26	0.00	0.26
8.10	0.83	0.30	2.73	0.26	0.00	0.26
8.15	0.83	0.30	2.73	0.26	0.00	0.26
8.20	0.83	0.30	2.72	0.26	0.00	0.26
8.25	0.83	0.31	2.72	0.26	0.00	0.26
8.30	0.83	0.31	2.72	0.26	0.00	0.26
8.35	0.83	0.31	2.72	0.26	0.00	0.26
8.40	0.83	0.31	2.71	0.26	0.00	0.26
8.45	0.83	0.31	2.71	0.26	0.00	0.26
8.50	0.83	0.31	2.71	0.26	0.00	0.26
8.55	0.83	0.31	2.71	0.26	0.00	0.26
8.60	0.83	0.31	2.70	0.26	0.00	0.26
8.65	0.83	0.31	2.70	0.26	0.00	0.26
8.70	0.83	0.31	2.70	0.26	0.00	0.26
8.75	0.83	0.31	2.69	0.26	0.00	0.26
8.80	0.83	0.31	2.69	0.26	0.00	0.26
8.85	0.83	0.31	2.69	0.26	0.00	0.26
8.90	0.83	0.31	2.69	0.26	0.00	0.26
8.95	0.83	0.31	2.69	0.26	0.00	0.26
9.00	0.83	0.31	2.68	0.26	0.00	0.26
9.05	0.83	0.31	2.68	0.26	0.00	0.26

9.10	0.83	0.31	2.68	0.26	0.00	0.26
9.15	0.83	0.31	2.68	0.26	0.00	0.26
9.20	0.83	0.31	2.67	0.26	0.00	0.26
9.25	0.83	0.31	2.67	0.26	0.00	0.26
9.30	0.83	0.31	2.67	0.26	0.00	0.26
9.35	0.83	0.31	2.67	0.26	0.00	0.26
9.40	0.83	0.31	2.66	0.26	0.00	0.26
9.45	0.83	0.31	2.66	0.26	0.00	0.26
9.50	0.83	0.31	2.66	0.26	0.00	0.26
9.55	0.83	0.31	2.66	0.26	0.00	0.26
9.60	0.83	0.31	2.66	0.26	0.00	0.26
9.65	0.83	0.31	2.65	0.26	0.00	0.26
9.70	0.83	0.31	2.65	0.26	0.00	0.26
9.75	0.83	0.31	2.65	0.26	0.00	0.26
9.80	0.83	0.31	2.65	0.26	0.00	0.26
9.85	0.83	0.31	2.65	0.26	0.00	0.26
9.90	0.83	0.31	2.64	0.26	0.00	0.26
9.95	0.83	0.31	2.64	0.26	0.00	0.26
10.00	0.83	0.31	2.64	0.26	0.00	0.26
10.05	0.83	0.31	2.64	0.26	0.00	0.26
10.10	0.83	0.31	2.64	0.26	0.00	0.26
10.15	0.83	0.32	2.64	0.26	0.00	0.26
10.20	0.83	0.32	2.63	0.26	0.00	0.26
10.25	0.83	0.32	2.63	0.26	0.00	0.26
10.30	0.83	0.32	2.63	0.26	0.00	0.26
10.35	0.83	0.32	2.63	0.26	0.00	0.26
10.40	0.83	0.32	2.63	0.26	0.00	0.26
10.45	0.83	0.32	2.63	0.26	0.00	0.26
10.50	0.83	0.32	2.63	0.26	0.00	0.26
10.55	0.83	0.32	2.62	0.26	0.00	0.26
10.60	0.83	0.32	2.62	0.26	0.00	0.26
10.65	0.83	0.32	2.62	0.26	0.00	0.26
10.70	0.83	0.32	2.62	0.26	0.00	0.26
10.75	0.83	0.32	2.62	0.26	0.00	0.26
10.80	0.83	0.32	2.62	0.26	0.00	0.26
10.85	0.83	0.32	2.62	0.26	0.00	0.26
10.90	0.83	0.32	2.61	0.26	0.00	0.26
10.95	0.83	0.32	2.61	0.26	0.00	0.26
11.00	0.83	0.32	2.61	0.26	0.00	0.26
11.05	0.83	0.32	2.61	0.26	0.00	0.26
11.10	0.83	0.32	2.61	0.26	0.00	0.26
11.15	0.83	0.32	2.61	0.26	0.00	0.26
11.20	0.83	0.32	2.61	0.26	0.00	0.26
11.25	0.83	0.32	2.60	0.26	0.00	0.26
11.30	0.83	0.32	2.60	0.26	0.00	0.26
11.35	0.83	0.32	2.60	0.26	0.00	0.26
11.40	0.83	0.32	2.60	0.26	0.00	0.26
11.45	0.83	0.32	2.60	0.26	0.00	0.26
11.50	0.83	0.32	2.60	0.26	0.00	0.26
11.55	0.83	0.32	2.60	0.26	0.00	0.26
11.60	0.83	0.32	2.60	0.26	0.00	0.26
11.65	0.83	0.32	2.60	0.26	0.00	0.26
11.70	0.83	0.32	2.59	0.26	0.00	0.26
11.75	0.83	0.32	2.59	0.26	0.00	0.26
11.80	0.83	0.32	2.59	0.26	0.00	0.26
11.85	0.83	0.32	2.59	0.26	0.00	0.26
11.90	0.83	0.32	2.59	0.26	0.00	0.26
11.95	0.83	0.32	2.59	0.26	0.00	0.26
12.00	0.83	0.32	2.59	0.26	0.00	0.26
12.05	0.83	0.32	2.59	0.26	0.00	0.26
12.10	0.83	0.32	2.59	0.26	0.00	0.26
12.15	0.83	0.32	2.58	0.26	0.00	0.26
12.20	0.83	0.32	2.58	0.26	0.00	0.26
12.25	0.83	0.32	2.58	0.26	0.00	0.26
12.30	0.83	0.32	2.58	0.26	0.00	0.26
12.35	0.83	0.32	2.58	0.26	0.00	0.26
12.40	0.83	0.32	2.58	0.26	0.00	0.26
12.45	0.83	0.32	2.58	0.26	0.00	0.26
12.50	0.83	0.32	2.58	0.26	0.00	0.26
12.55	0.83	0.32	2.58	0.26	0.00	0.26
12.60	0.83	0.32	2.58	0.26	0.00	0.26

12.65	0.83	0.32	2.58	0.26	0.00	0.26
12.70	0.83	0.32	2.57	0.26	0.00	0.26
12.75	0.83	0.32	2.57	0.26	0.00	0.26
12.80	0.83	0.32	2.57	0.26	0.00	0.26
12.85	0.83	0.32	2.57	0.26	0.00	0.26
12.90	0.83	0.32	2.57	0.26	0.00	0.26
12.95	0.83	0.32	2.57	0.26	0.00	0.26
13.00	0.83	0.32	2.57	0.26	0.00	0.26
13.05	0.83	0.32	2.57	0.26	0.00	0.26
13.10	0.83	0.32	2.57	0.26	0.00	0.26
13.15	0.83	0.32	2.57	0.26	0.00	0.26
13.20	0.83	0.32	2.57	0.26	0.00	0.26
13.25	0.83	0.32	2.57	0.26	0.00	0.26
13.30	0.83	0.32	2.57	0.26	0.00	0.26
13.35	0.83	0.32	2.57	0.26	0.00	0.26
13.40	0.83	0.32	2.57	0.26	0.00	0.26
13.45	0.83	0.32	2.56	0.26	0.00	0.26
13.50	0.83	0.32	2.56	0.26	0.00	0.26
13.55	0.83	0.32	2.56	0.26	0.00	0.26
13.60	0.83	0.32	2.56	0.26	0.00	0.26
13.65	0.83	0.32	2.56	0.26	0.00	0.26
13.70	0.83	0.32	2.56	0.26	0.00	0.26
13.75	0.83	0.32	2.56	0.26	0.00	0.26
13.80	0.83	0.32	2.56	0.26	0.00	0.26
13.85	0.83	0.32	2.56	0.26	0.00	0.26
13.90	0.83	0.32	2.56	0.26	0.00	0.26
13.95	0.83	0.32	2.56	0.26	0.00	0.26
14.00	0.83	0.32	2.56	0.26	0.00	0.26
14.05	0.83	0.32	2.56	0.26	0.00	0.26
14.10	0.83	0.32	2.56	0.26	0.00	0.26
14.15	0.83	0.32	2.56	0.26	0.00	0.26
14.20	0.83	0.32	2.56	0.26	0.00	0.26
14.25	0.83	0.33	2.56	0.26	0.00	0.26
14.30	0.83	0.33	2.56	0.26	0.00	0.26
14.35	0.83	0.33	2.55	0.26	0.00	0.26
14.40	0.83	0.33	2.55	0.26	0.00	0.26
14.45	0.83	0.33	2.55	0.26	0.00	0.26
14.50	0.83	0.33	2.55	0.26	0.00	0.26
14.55	0.83	0.33	2.55	0.26	0.00	0.26
14.60	0.83	0.33	2.55	0.26	0.00	0.26
14.65	0.83	0.33	2.55	0.26	0.00	0.26
14.70	0.83	0.33	2.55	0.26	0.00	0.26
14.75	0.83	0.33	2.55	0.26	0.00	0.26
14.80	0.83	0.33	2.55	0.26	0.00	0.26
14.85	0.83	0.33	2.55	0.26	0.00	0.26
14.90	0.83	0.33	2.55	0.26	0.00	0.26
14.95	0.83	0.33	2.55	0.26	0.00	0.26
15.00	0.83	0.33	2.55	0.26	0.00	0.26
15.05	0.83	0.33	2.55	0.26	0.00	0.26
15.10	0.83	0.33	2.55	0.26	0.00	0.26
15.15	0.83	0.33	2.55	0.26	0.00	0.26
15.20	0.83	0.33	2.55	0.26	0.00	0.26
15.25	0.83	0.33	2.55	0.26	0.00	0.26
15.30	0.83	0.33	2.55	0.26	0.00	0.26
15.35	0.83	0.33	2.55	0.26	0.00	0.26
15.40	0.83	0.33	2.55	0.26	0.00	0.26
15.45	0.83	0.33	2.54	0.26	0.00	0.26
15.50	0.83	0.33	2.54	0.26	0.00	0.26
15.55	0.83	0.33	2.54	0.26	0.00	0.26
15.60	0.83	0.33	2.54	0.26	0.00	0.26
15.65	0.83	0.33	2.54	0.26	0.00	0.26
15.70	0.83	0.33	2.54	0.26	0.00	0.26
15.75	0.83	0.33	2.54	0.26	0.00	0.26
15.80	0.83	0.33	2.54	0.26	0.00	0.26
15.85	0.83	0.33	2.54	0.26	0.00	0.26
15.90	0.83	0.33	2.54	0.26	0.00	0.26
15.95	0.83	0.33	2.54	0.26	0.00	0.26
16.00	0.83	0.33	2.54	0.26	0.00	0.26
16.05	0.83	0.33	2.54	0.26	0.00	0.26
16.10	0.83	0.33	2.54	0.26	0.00	0.26
16.15	0.83	0.33	2.54	0.26	0.00	0.26

16.20	0.83	0.33	2.54	0.26	0.00	0.26
16.25	0.83	0.33	2.54	0.26	0.00	0.26
16.30	0.83	0.33	2.54	0.26	0.00	0.26
16.35	0.83	0.33	2.54	0.26	0.00	0.26
16.40	0.83	0.33	2.54	0.26	0.00	0.26
16.45	0.83	0.33	2.54	0.26	0.00	0.26
16.50	0.83	0.33	2.54	0.26	0.00	0.26
16.55	0.83	0.33	2.54	0.26	0.00	0.26
16.60	0.83	0.33	2.54	0.26	0.00	0.26
16.65	0.83	0.33	2.54	0.26	0.00	0.26
16.70	0.83	0.33	2.54	0.26	0.00	0.26
16.75	0.83	0.33	2.54	0.26	0.00	0.26
16.80	0.83	0.33	2.53	0.26	0.00	0.26
16.85	0.83	0.33	2.53	0.26	0.00	0.26
16.90	0.83	0.33	2.53	0.26	0.00	0.26
16.95	0.83	0.33	2.53	0.26	0.00	0.26
17.00	0.83	0.33	2.53	0.26	0.00	0.26
17.05	0.83	0.33	2.53	0.26	0.00	0.26
17.10	0.83	0.33	2.53	0.26	0.00	0.26
17.15	0.83	0.33	2.53	0.26	0.00	0.26
17.20	0.83	0.33	2.53	0.26	0.00	0.26
17.25	0.83	0.33	2.53	0.26	0.00	0.26
17.30	0.83	0.33	2.53	0.26	0.00	0.26
17.35	0.83	0.33	2.53	0.26	0.00	0.26
17.40	0.83	0.33	2.53	0.26	0.00	0.26
17.45	0.83	0.33	2.53	0.26	0.00	0.26
17.50	0.83	0.33	2.53	0.26	0.00	0.26
17.55	0.83	0.33	2.53	0.26	0.00	0.26
17.60	0.83	0.33	2.53	0.26	0.00	0.26
17.65	0.83	0.33	2.53	0.26	0.00	0.26
17.70	0.83	0.33	2.53	0.26	0.00	0.26
17.75	0.83	0.33	2.53	0.26	0.00	0.26
17.80	0.83	0.33	2.53	0.26	0.00	0.26
17.85	0.83	0.33	2.53	0.26	0.00	0.26
17.90	0.83	0.33	2.53	0.26	0.00	0.26
17.95	0.83	0.33	2.53	0.26	0.00	0.26
18.00	0.83	0.33	2.53	0.26	0.00	0.26
18.05	0.83	0.33	2.53	0.26	0.00	0.26
18.10	0.83	0.33	2.53	0.26	0.00	0.26
18.15	0.83	0.33	2.53	0.26	0.00	0.26
18.20	0.83	0.33	2.53	0.26	0.00	0.26
18.25	0.83	0.33	2.53	0.26	0.00	0.26
18.30	0.83	0.33	2.53	0.26	0.00	0.26
18.35	0.83	0.33	2.53	0.26	0.00	0.26
18.40	0.83	0.33	2.53	0.26	0.00	0.26
18.45	0.83	0.33	2.53	0.26	0.00	0.26
18.50	0.83	0.33	2.53	0.26	0.00	0.26
18.55	0.83	0.33	2.53	0.26	0.00	0.26
18.60	0.83	0.33	2.53	0.26	0.00	0.26
18.65	0.83	0.33	2.53	0.26	0.00	0.26
18.70	0.83	0.33	2.53	0.26	0.00	0.26
18.75	0.83	0.33	2.53	0.26	0.00	0.26
18.80	0.83	0.33	2.52	0.26	0.00	0.26
18.85	0.83	0.33	2.52	0.26	0.00	0.26
18.90	0.83	0.33	2.52	0.26	0.00	0.26
18.95	0.83	0.33	2.52	0.26	0.00	0.26
19.00	0.83	0.33	2.52	0.26	0.00	0.26
19.05	0.83	0.33	2.52	0.26	0.00	0.26
19.10	0.83	0.33	2.52	0.26	0.00	0.26
19.15	0.83	0.33	2.52	0.26	0.00	0.26
19.20	0.83	0.33	2.52	0.26	0.00	0.26
19.25	0.83	0.33	2.52	0.26	0.00	0.26
19.30	0.83	0.33	2.52	0.26	0.00	0.26
19.35	0.83	0.33	2.52	0.26	0.00	0.26
19.40	0.83	0.33	2.52	0.26	0.00	0.26
19.45	0.83	0.33	2.52	0.26	0.00	0.26
19.50	0.83	0.33	2.52	0.26	0.00	0.26
19.55	0.83	0.33	2.52	0.26	0.00	0.26
19.60	0.83	0.33	2.52	0.26	0.00	0.26
19.65	0.83	0.33	2.52	0.26	0.00	0.26
19.70	0.83	0.33	2.52	0.26	0.00	0.26

19.75	0.83	0.33	2.52	0.26	0.00	0.26
19.80	0.83	0.33	2.52	0.26	0.00	0.26
19.85	0.83	0.33	2.52	0.26	0.00	0.26
19.90	0.83	0.33	2.52	0.26	0.00	0.26
19.95	0.83	0.33	2.52	0.26	0.00	0.26
20.00	0.83	0.33	2.52	0.26	0.00	0.26
20.05	0.83	0.33	2.52	0.26	0.00	0.26
20.10	0.83	0.33	2.52	0.26	0.00	0.26
20.15	0.83	0.33	2.52	0.26	0.00	0.26
20.20	0.83	0.33	2.52	0.26	0.00	0.26
20.25	0.83	0.33	2.52	0.26	0.00	0.26
20.30	0.83	0.33	2.52	0.26	0.00	0.26
20.35	0.83	0.33	2.52	0.26	0.00	0.26
20.40	0.83	0.33	2.52	0.26	0.00	0.26
20.45	0.83	0.33	2.52	0.26	0.00	0.26
20.50	0.83	0.33	2.52	0.26	0.00	0.26
20.55	0.83	0.33	2.52	0.26	0.00	0.26
20.60	0.83	0.33	2.52	0.26	0.00	0.26
20.65	0.83	0.33	2.52	0.26	0.00	0.26
20.70	0.83	0.33	2.52	0.26	0.00	0.26
20.75	0.83	0.33	2.52	0.26	0.00	0.26
20.80	0.83	0.33	2.52	0.26	0.00	0.26
20.85	0.83	0.33	2.52	0.26	0.00	0.26
20.90	0.83	0.33	2.52	0.26	0.00	0.26
20.95	0.83	0.33	2.52	0.26	0.00	0.26
21.00	0.83	0.33	2.52	0.26	0.00	0.26
21.05	0.83	0.33	2.52	0.26	0.00	0.26
21.10	0.83	0.33	2.52	0.26	0.00	0.26
21.15	0.83	0.33	2.52	0.26	0.00	0.26
21.20	0.83	0.33	2.52	0.26	0.00	0.26
21.25	0.83	0.33	2.52	0.26	0.00	0.26
21.30	0.83	0.33	2.52	0.26	0.00	0.26
21.35	0.83	0.33	2.52	0.26	0.00	0.26
21.40	0.83	0.33	2.52	0.26	0.00	0.26
21.45	0.83	0.33	2.52	0.26	0.00	0.26
21.50	0.83	0.33	2.52	0.26	0.00	0.26
21.55	0.83	0.33	2.52	0.26	0.00	0.26
21.60	0.83	0.33	2.52	0.26	0.00	0.26
21.65	0.83	0.33	2.52	0.26	0.00	0.26
21.70	0.83	0.33	2.52	0.26	0.00	0.26
21.75	0.83	0.33	2.52	0.26	0.00	0.26
21.80	0.83	0.33	2.52	0.26	0.00	0.26
21.85	0.83	0.33	2.52	0.26	0.00	0.26
21.90	0.83	0.33	2.52	0.26	0.00	0.26
21.95	0.83	0.33	2.52	0.26	0.00	0.26
22.00	0.83	0.33	2.51	0.26	0.00	0.26
22.05	0.83	0.33	2.51	0.26	0.00	0.26
22.10	0.83	0.33	2.51	0.26	0.00	0.26
22.15	0.83	0.33	2.51	0.26	0.00	0.26
22.20	0.83	0.33	2.51	0.26	0.00	0.26
22.25	0.83	0.33	2.51	0.26	0.00	0.26
22.30	0.83	0.33	2.51	0.26	0.00	0.26
22.35	0.83	0.33	2.51	0.26	0.00	0.26
22.40	0.83	0.33	2.51	0.26	0.00	0.26
22.45	0.83	0.33	2.51	0.26	0.00	0.26
22.50	0.83	0.33	2.51	0.26	0.00	0.26
22.55	0.83	0.33	2.51	0.26	0.00	0.26
22.60	0.83	0.33	2.51	0.26	0.00	0.26
22.65	0.83	0.33	2.51	0.26	0.00	0.26
22.70	0.83	0.33	2.51	0.26	0.00	0.26
22.75	0.83	0.33	2.51	0.26	0.00	0.26
22.80	0.83	0.33	2.51	0.26	0.00	0.26
22.85	0.83	0.33	2.51	0.26	0.00	0.26
22.90	0.83	0.33	2.51	0.26	0.00	0.26
22.95	0.83	0.33	2.51	0.26	0.00	0.26
23.00	0.83	0.33	2.51	0.26	0.00	0.26
23.05	0.83	0.33	2.51	0.26	0.00	0.26
23.10	0.83	0.33	2.51	0.26	0.00	0.26
23.15	0.83	0.33	2.51	0.26	0.00	0.26
23.20	0.83	0.33	2.51	0.26	0.00	0.26
23.25	0.83	0.33	2.51	0.26	0.00	0.26

23.30	0.83	0.33	2.51	0.26	0.00	0.26
23.35	0.83	0.33	2.51	0.26	0.00	0.26
23.40	0.83	0.33	2.51	0.26	0.00	0.26
23.45	0.83	0.33	2.51	0.26	0.00	0.26
23.50	0.83	0.33	2.51	0.26	0.00	0.26
23.55	0.83	0.33	2.51	0.26	0.00	0.26
23.60	0.83	0.33	2.51	0.26	0.00	0.26
23.65	0.83	0.33	2.51	0.26	0.00	0.26
23.70	0.83	0.33	2.51	0.26	0.00	0.26
23.75	0.83	0.33	2.51	0.26	0.00	0.26
23.80	0.83	0.33	2.51	0.26	0.00	0.26
23.85	0.83	0.33	2.51	0.26	0.00	0.26
23.90	0.83	0.33	2.51	0.26	0.00	0.26
23.95	0.83	0.33	2.51	0.26	0.00	0.26
24.00	0.83	0.33	2.51	0.26	0.00	0.26
24.05	0.83	0.33	2.51	0.26	0.00	0.26
24.10	0.83	0.33	2.51	0.26	0.00	0.26
24.15	0.83	0.33	2.51	0.26	0.00	0.26
24.20	0.83	0.33	2.51	0.26	0.00	0.26
24.25	0.83	0.33	2.51	0.26	0.00	0.26
24.30	0.83	0.33	2.51	0.26	0.00	0.26
24.35	0.83	0.33	2.51	0.26	0.00	0.26
24.40	0.83	0.33	2.51	0.26	0.00	0.26
24.45	0.83	0.33	2.51	0.26	0.00	0.26
24.50	0.83	0.33	2.51	0.26	0.00	0.26
24.55	0.83	0.33	2.51	0.26	0.00	0.26
24.60	0.83	0.33	2.51	0.26	0.00	0.26
24.65	0.83	0.33	2.51	0.26	0.00	0.26
24.70	0.83	0.33	2.51	0.26	0.00	0.26
24.75	0.83	0.33	2.51	0.26	0.00	0.26
24.80	0.83	0.33	2.51	0.26	0.00	0.26
24.85	0.83	0.33	2.51	0.26	0.00	0.26
24.90	0.83	0.33	2.51	0.26	0.00	0.26
24.95	0.83	0.33	2.51	0.26	0.00	0.26
25.00	0.83	0.33	2.51	0.26	0.00	0.26
25.05	0.83	0.33	2.51	0.26	0.00	0.26
25.10	0.83	0.33	2.51	0.26	0.00	0.26
25.15	0.83	0.33	2.51	0.26	0.00	0.26
25.20	0.83	0.33	2.51	0.26	0.00	0.26
25.25	0.83	0.33	2.51	0.26	0.00	0.26
25.30	0.83	0.33	2.51	0.26	0.00	0.26
25.35	0.83	0.33	2.51	0.26	0.00	0.26
25.40	0.83	0.33	2.51	0.26	0.00	0.26
25.45	0.83	0.33	2.51	0.26	0.00	0.26
25.50	0.83	0.33	2.51	0.26	0.00	0.26
25.55	0.83	0.33	2.51	0.26	0.00	0.26
25.60	0.83	0.33	2.51	0.26	0.00	0.26
25.65	0.83	0.33	2.51	0.26	0.00	0.26
25.70	0.83	0.33	2.51	0.26	0.00	0.26
25.75	0.83	0.33	2.51	0.26	0.00	0.26
25.80	0.83	0.33	2.51	0.26	0.00	0.26
25.85	0.83	0.33	2.51	0.26	0.00	0.26
25.90	0.83	0.33	2.51	0.26	0.00	0.26
25.95	0.83	0.33	2.51	0.26	0.00	0.26
26.00	0.83	0.33	2.51	0.26	0.00	0.26
26.05	0.83	0.33	2.51	0.26	0.00	0.26
26.10	0.83	0.33	2.51	0.26	0.00	0.26
26.15	0.83	0.33	2.51	0.26	0.00	0.26
26.20	0.83	0.33	2.51	0.26	0.00	0.26
26.25	0.83	0.33	2.51	0.26	0.00	0.26
26.30	0.83	0.33	2.51	0.26	0.00	0.26
26.35	0.83	0.33	2.51	0.26	0.00	0.26
26.40	0.83	0.33	2.51	0.26	0.00	0.26
26.45	0.83	0.33	2.50	0.26	0.00	0.26
26.50	0.83	0.33	2.50	0.26	0.00	0.26
26.55	0.83	0.33	2.50	0.26	0.00	0.26
26.60	0.83	0.33	2.50	0.26	0.00	0.26
26.65	0.83	0.33	2.50	0.26	0.00	0.26
26.70	0.83	0.33	2.50	0.26	0.00	0.26
26.75	0.83	0.33	2.50	0.26	0.00	0.26
26.80	0.83	0.33	2.50	0.26	0.00	0.26

26.85	0.83	0.33	2.50	0.26	0.00	0.26
26.90	0.83	0.33	2.50	0.26	0.00	0.26
26.95	0.83	0.33	2.50	0.26	0.00	0.26
27.00	0.83	0.33	2.50	0.26	0.00	0.26
27.05	0.83	0.33	2.50	0.26	0.00	0.26
27.10	0.83	0.33	2.50	0.26	0.00	0.26
27.15	0.83	0.33	2.50	0.26	0.00	0.26
27.20	0.83	0.33	2.50	0.26	0.00	0.26
27.25	0.83	0.33	2.50	0.26	0.00	0.26
27.30	0.83	0.33	2.50	0.26	0.00	0.26
27.35	0.83	0.33	2.50	0.26	0.00	0.26
27.40	0.83	0.33	2.50	0.26	0.00	0.26
27.45	0.83	0.33	2.50	0.26	0.00	0.26
27.50	0.83	0.33	2.50	0.26	0.00	0.26
27.55	0.83	0.33	2.50	0.26	0.00	0.26
27.60	0.83	0.33	2.50	0.26	0.00	0.26
27.65	0.83	0.33	2.50	0.26	0.00	0.26
27.70	0.83	0.33	2.50	0.26	0.00	0.26
27.75	0.83	0.33	2.50	0.26	0.00	0.26
27.80	0.83	0.33	2.50	0.26	0.00	0.26
27.85	0.83	0.33	2.50	0.26	0.00	0.26
27.90	0.83	0.33	2.50	0.26	0.00	0.26
27.95	0.83	0.33	2.50	0.26	0.00	0.26
28.00	0.83	0.33	2.50	0.26	0.00	0.26
28.05	0.83	0.33	2.50	0.26	0.00	0.26
28.10	0.83	0.33	2.50	0.26	0.00	0.26
28.15	0.83	0.33	2.50	0.26	0.00	0.26
28.20	0.83	0.33	2.50	0.26	0.00	0.26
28.25	0.83	0.33	2.50	0.26	0.00	0.26
28.30	0.83	0.33	2.50	0.26	0.00	0.26
28.35	0.83	0.33	2.50	0.26	0.00	0.26
28.40	0.83	0.33	2.50	0.26	0.00	0.26
28.45	0.83	0.33	2.50	0.26	0.00	0.26
28.50	0.83	0.33	2.50	0.26	0.00	0.26
28.55	0.83	0.33	2.50	0.26	0.00	0.26
28.60	0.83	0.33	2.50	0.26	0.00	0.26
28.65	0.83	0.33	2.50	0.26	0.00	0.26
28.70	0.83	0.33	2.50	0.26	0.00	0.26
28.75	0.83	0.33	2.50	0.26	0.00	0.26
28.80	0.83	0.33	2.50	0.26	0.00	0.26
28.85	0.83	0.33	2.50	0.26	0.00	0.26
28.90	0.83	0.33	2.50	0.26	0.00	0.26
28.95	0.83	0.33	2.50	0.26	0.00	0.26
29.00	0.83	0.33	2.50	0.26	0.00	0.26
29.05	0.83	0.33	2.50	0.26	0.00	0.26
29.10	0.83	0.33	2.50	0.26	0.00	0.26
29.15	0.83	0.33	2.50	0.26	0.00	0.26
29.20	0.83	0.33	2.50	0.26	0.00	0.26
29.25	0.83	0.33	2.50	0.26	0.00	0.26
29.30	0.83	0.33	2.50	0.26	0.00	0.26
29.35	0.83	0.33	2.50	0.26	0.00	0.26
29.40	0.83	0.33	2.50	0.26	0.00	0.26
29.45	0.83	0.33	2.50	0.26	0.00	0.26
29.50	0.83	0.33	2.50	0.26	0.00	0.26
29.55	0.83	0.33	2.50	0.26	0.00	0.26
29.60	0.83	0.33	2.50	0.26	0.00	0.26
29.65	0.83	0.33	2.50	0.26	0.00	0.26
29.70	0.83	0.33	2.50	0.26	0.00	0.26
29.75	0.83	0.33	2.50	0.26	0.00	0.26
29.80	0.83	0.33	2.50	0.26	0.00	0.26
29.85	0.83	0.33	2.50	0.26	0.00	0.26
29.90	0.83	0.33	2.50	0.26	0.00	0.26
29.95	0.83	0.33	2.50	0.26	0.00	0.26
30.00	0.83	0.33	2.50	0.26	0.00	0.26
30.05	0.83	0.33	2.50	0.26	0.00	0.26
30.10	0.83	0.33	2.50	0.26	0.00	0.26
30.15	0.83	0.33	2.50	0.26	0.00	0.26
30.20	0.83	0.33	2.50	0.26	0.00	0.26
30.25	0.83	0.33	2.50	0.26	0.00	0.26
30.30	0.83	0.33	2.50	0.26	0.00	0.26
30.35	0.83	0.33	2.50	0.26	0.00	0.26

30.40	0.83	0.33	2.50	0.26	0.00	0.26
30.45	0.83	0.33	2.50	0.26	0.00	0.26
30.50	0.83	0.33	2.50	0.26	0.00	0.26
30.55	0.83	0.33	2.51	0.26	0.00	0.26
30.60	0.83	0.33	2.51	0.26	0.00	0.26
30.65	0.83	0.33	2.51	0.26	0.00	0.26
30.70	0.83	0.33	2.51	0.26	0.00	0.26
30.75	0.83	0.33	2.51	0.26	0.00	0.26
30.80	0.83	0.33	2.51	0.26	0.00	0.26
30.85	0.83	0.33	2.51	0.26	0.00	0.26
30.90	0.83	0.33	2.51	0.26	0.00	0.26
30.95	0.83	0.33	2.51	0.26	0.00	0.26
31.00	0.83	0.33	2.51	0.26	0.00	0.26
31.05	0.83	0.33	2.51	0.26	0.00	0.26
31.10	0.83	0.33	2.52	0.26	0.00	0.26
31.15	0.83	0.33	2.52	0.26	0.00	0.26
31.20	0.83	0.33	2.52	0.26	0.00	0.26
31.25	0.83	0.33	2.52	0.26	0.00	0.26
31.30	0.83	0.33	2.52	0.26	0.00	0.26
31.35	0.83	0.33	2.52	0.26	0.00	0.26
31.40	0.83	0.33	2.52	0.26	0.00	0.26
31.45	0.83	0.33	2.52	0.26	0.00	0.26
31.50	0.83	0.33	2.52	0.26	0.00	0.26
31.55	0.83	0.33	2.52	0.26	0.00	0.26
31.60	0.83	0.33	2.53	0.26	0.00	0.26
31.65	0.83	0.33	2.53	0.26	0.00	0.26
31.70	0.83	0.33	2.53	0.26	0.00	0.26
31.75	0.83	0.33	2.53	0.26	0.00	0.26
31.80	0.83	0.33	2.53	0.26	0.00	0.26
31.85	0.83	0.33	2.53	0.26	0.00	0.26
31.90	0.83	0.33	2.53	0.26	0.00	0.26
31.95	0.83	0.33	2.53	0.26	0.00	0.26
32.00	0.83	0.33	2.53	0.26	0.00	0.26
32.05	0.83	0.33	2.53	0.26	0.00	0.26
32.10	0.83	0.33	2.54	0.26	0.00	0.26
32.15	0.83	0.33	2.54	0.26	0.00	0.26
32.20	0.83	0.33	2.54	0.26	0.00	0.26
32.25	0.83	0.33	2.54	0.26	0.00	0.26
32.30	0.83	0.33	2.54	0.26	0.00	0.26
32.35	0.83	0.33	2.54	0.26	0.00	0.26
32.40	0.83	0.33	2.54	0.26	0.00	0.26
32.45	0.83	0.33	2.54	0.26	0.00	0.26
32.50	0.83	0.33	2.54	0.26	0.00	0.26
32.55	0.83	0.33	2.54	0.26	0.00	0.26
32.60	0.83	0.33	2.54	0.26	0.00	0.26
32.65	0.83	0.33	2.55	0.26	0.00	0.26
32.70	0.83	0.33	2.55	0.26	0.00	0.26
32.75	0.83	0.33	2.55	0.26	0.00	0.26
32.80	0.83	0.33	2.55	0.26	0.00	0.26
32.85	0.83	0.33	2.55	0.26	0.00	0.26
32.90	0.83	0.33	2.55	0.26	0.00	0.26
32.95	0.83	0.33	2.55	0.26	0.00	0.26
33.00	0.83	0.33	2.55	0.26	0.00	0.26
33.05	0.83	0.33	2.55	0.26	0.00	0.26
33.10	0.83	0.33	2.55	0.26	0.00	0.26
33.15	0.83	0.33	2.56	0.26	0.00	0.26
33.20	0.83	0.32	2.56	0.26	0.00	0.26
33.25	0.83	0.32	2.56	0.26	0.00	0.26
33.30	0.83	0.32	2.56	0.26	0.00	0.26
33.35	0.83	0.32	2.56	0.26	0.00	0.26
33.40	0.83	0.32	2.56	0.26	0.00	0.26
33.45	0.83	0.32	2.56	0.26	0.00	0.26
33.50	0.83	0.32	2.56	0.26	0.00	0.26
33.55	0.83	0.32	2.56	0.26	0.00	0.26
33.60	0.83	0.32	2.56	0.26	0.00	0.26
33.65	0.83	0.32	2.57	0.26	0.00	0.26
33.70	0.83	0.32	2.57	0.26	0.00	0.26
33.75	0.83	0.32	2.57	0.26	0.00	0.26
33.80	0.83	0.32	2.57	0.26	0.00	0.26
33.85	0.83	0.32	2.57	0.26	0.00	0.26
33.90	0.83	0.32	2.57	0.26	0.00	0.26

33.95	0.83	0.32	2.57	0.26	0.00	0.26
34.00	0.83	0.32	2.57	0.26	0.00	0.26
34.05	0.83	0.32	2.57	0.26	0.00	0.26
34.10	0.83	0.32	2.58	0.26	0.00	0.26
34.15	0.83	0.32	2.58	0.26	0.00	0.26
34.20	0.83	0.32	2.58	0.26	0.00	0.26
34.25	0.83	0.32	2.58	0.26	0.00	0.26
34.30	0.83	0.32	2.58	0.26	0.00	0.26
34.35	0.83	0.32	2.58	0.26	0.00	0.26
34.40	0.83	0.32	2.58	0.26	0.00	0.26
34.45	0.83	0.32	2.58	0.26	0.00	0.26
34.50	0.83	0.32	2.58	0.26	0.00	0.26
34.55	0.83	0.32	2.58	0.26	0.00	0.26
34.60	0.83	0.32	2.59	0.26	0.00	0.26
34.65	0.83	0.32	2.59	0.26	0.00	0.26
34.70	0.83	0.32	2.59	0.26	0.00	0.26
34.75	0.83	0.32	2.59	0.26	0.00	0.26
34.80	0.83	0.32	2.59	0.26	0.00	0.26
34.85	0.83	0.32	2.59	0.26	0.00	0.26
34.90	0.83	0.32	2.59	0.26	0.00	0.26
34.95	0.83	0.32	2.59	0.26	0.00	0.26
35.00	0.83	0.32	2.59	0.26	0.00	0.26
35.05	0.42	0.32	1.32	0.26	0.00	0.26
35.10	0.42	0.32	1.32	0.26	0.00	0.26
35.15	0.42	0.32	1.32	0.25	0.00	0.25
35.20	0.42	0.32	1.32	0.25	0.00	0.25
35.25	0.42	0.32	1.32	0.25	0.00	0.25
35.30	0.42	0.32	1.31	0.25	0.00	0.25
35.35	0.42	0.32	1.31	0.25	0.00	0.25
35.40	0.42	0.32	1.31	0.25	0.00	0.25
35.45	0.42	0.32	1.31	0.24	0.00	0.24
35.50	0.42	0.32	1.31	0.24	0.00	0.24
35.55	0.42	0.32	1.31	0.24	0.00	0.24
35.60	0.42	0.32	1.31	0.24	0.00	0.24
35.65	0.42	0.32	1.31	0.24	0.00	0.24
35.70	0.42	0.32	1.31	0.24	0.00	0.24
35.75	0.42	0.32	1.31	0.23	0.00	0.23
35.80	0.42	0.32	1.31	0.23	0.00	0.23
35.85	0.42	0.32	1.31	0.23	0.00	0.23
35.90	0.42	0.32	1.31	0.23	0.00	0.23
35.95	0.42	0.32	1.31	0.23	0.00	0.23
36.00	0.42	0.32	1.31	0.23	0.00	0.23
36.05	0.42	0.32	1.31	0.22	0.00	0.22
36.10	0.42	0.32	1.31	0.22	0.00	0.22
36.15	0.42	0.32	1.31	0.22	0.00	0.22
36.20	0.42	0.32	1.31	0.22	0.00	0.22
36.25	0.42	0.32	1.31	0.22	0.00	0.22
36.30	0.42	0.32	1.31	0.22	0.00	0.22
36.35	0.42	0.32	1.31	0.21	0.00	0.21
36.40	0.42	0.32	1.31	0.21	0.00	0.21
36.45	0.42	0.32	1.31	0.21	0.00	0.21
36.50	0.42	0.32	1.31	0.21	0.00	0.21
36.55	0.42	0.32	1.31	0.21	0.00	0.21
36.60	0.42	0.32	1.31	0.21	0.00	0.21
36.65	0.42	0.32	1.31	0.20	0.00	0.20
36.70	0.41	0.32	1.31	0.20	0.00	0.20
36.75	0.41	0.32	1.31	0.20	0.00	0.20
36.80	0.41	0.32	1.31	0.20	0.00	0.20
36.85	0.41	0.32	1.31	0.20	0.00	0.20
36.90	0.41	0.32	1.31	0.19	0.00	0.19
36.95	0.41	0.32	1.31	0.19	0.00	0.19
37.00	0.41	0.32	1.31	0.19	0.00	0.19
37.05	0.41	0.32	1.31	0.19	0.00	0.19
37.10	0.41	0.32	1.31	0.19	0.00	0.19
37.15	0.41	0.32	1.31	0.19	0.00	0.19
37.20	0.41	0.32	1.31	0.18	0.00	0.18
37.25	0.41	0.32	1.31	0.18	0.00	0.18
37.30	0.41	0.32	1.31	0.18	0.00	0.18
37.35	0.41	0.32	1.31	0.18	0.00	0.18
37.40	0.41	0.32	1.31	0.18	0.00	0.18
37.45	0.41	0.32	1.31	0.18	0.00	0.18

37.50	0.41	0.32	1.31	0.17	0.00	0.17
37.55	0.41	0.32	1.31	0.17	0.00	0.17
37.60	0.41	0.32	1.31	0.17	0.00	0.17
37.65	0.41	0.32	1.31	0.17	0.00	0.17
37.70	0.41	0.31	1.31	0.17	0.00	0.17
37.75	0.41	0.31	1.31	0.17	0.00	0.17
37.80	0.41	0.31	1.31	0.16	0.00	0.16
37.85	0.41	0.31	1.31	0.16	0.00	0.16
37.90	0.41	0.31	1.31	0.16	0.00	0.16
37.95	0.41	0.31	1.31	0.16	0.00	0.16
38.00	0.41	0.31	1.31	0.16	0.00	0.16
38.05	0.41	0.31	1.31	0.16	0.00	0.16
38.10	0.41	0.31	1.31	0.15	0.00	0.15
38.15	0.41	0.31	1.31	0.15	0.00	0.15
38.20	0.41	0.31	1.30	0.15	0.00	0.15
38.25	0.41	0.31	1.30	0.15	0.00	0.15
38.30	0.41	0.31	1.30	0.15	0.00	0.15
38.35	0.41	0.31	1.30	0.15	0.00	0.15
38.40	0.41	0.31	1.30	0.14	0.00	0.14
38.45	0.41	0.31	1.30	0.14	0.00	0.14
38.50	0.41	0.31	1.30	0.14	0.00	0.14
38.55	0.41	0.31	1.30	0.14	0.00	0.14
38.60	0.41	0.31	1.30	0.14	0.00	0.14
38.65	0.41	0.31	1.30	0.13	0.00	0.13
38.70	0.41	0.31	1.30	0.13	0.00	0.13
38.75	0.41	0.31	1.30	0.13	0.00	0.13
38.80	0.41	0.31	1.30	0.13	0.00	0.13
38.85	0.41	0.31	1.30	0.13	0.00	0.13
38.90	0.41	0.31	1.30	0.13	0.00	0.13
38.95	0.41	0.31	1.30	0.12	0.00	0.12
39.00	0.41	0.31	1.30	0.12	0.00	0.12
39.05	0.41	0.31	1.30	0.12	0.00	0.12
39.10	0.41	0.31	1.30	0.12	0.00	0.12
39.15	0.41	0.31	1.30	0.12	0.00	0.12
39.20	0.41	0.31	1.30	0.12	0.00	0.12
39.25	0.41	0.31	1.30	0.11	0.00	0.11
39.30	0.41	0.31	1.30	0.11	0.00	0.11
39.35	0.41	0.31	1.30	0.11	0.00	0.11
39.40	0.41	0.31	1.30	0.11	0.00	0.11
39.45	0.41	0.31	1.30	0.11	0.00	0.11
39.50	0.41	0.31	1.30	0.11	0.00	0.11
39.55	0.41	0.31	1.30	0.10	0.00	0.10
39.60	0.40	0.31	1.30	0.10	0.00	0.10
39.65	0.40	0.31	1.30	0.10	0.00	0.10
39.70	0.40	0.31	1.30	0.10	0.00	0.10
39.75	0.40	0.31	1.30	0.10	0.00	0.10
39.80	0.40	0.31	1.30	0.09	0.00	0.09
39.85	0.40	0.31	1.30	0.09	0.00	0.09
39.90	0.40	0.31	1.30	0.09	0.00	0.09
39.95	0.40	0.31	1.30	0.09	0.00	0.09
40.00	0.40	0.31	1.30	0.09	0.00	0.09
40.05	0.50	0.31	1.60	0.09	0.00	0.09
40.10	0.50	0.31	1.60	0.09	0.00	0.09
40.15	0.50	0.31	1.60	0.08	0.00	0.08
40.20	0.50	0.31	1.60	0.08	0.00	0.08
40.25	0.50	0.31	1.60	0.08	0.00	0.08
40.30	0.50	0.31	1.60	0.08	0.00	0.08
40.35	0.50	0.31	1.60	0.08	0.00	0.08
40.40	0.50	0.31	1.60	0.08	0.00	0.08
40.45	0.49	0.31	1.60	0.08	0.00	0.08
40.50	0.49	0.31	1.60	0.08	0.00	0.08
40.55	0.49	0.31	1.60	0.08	0.00	0.08
40.60	0.49	0.31	1.60	0.08	0.00	0.08
40.65	0.49	0.31	1.60	0.08	0.00	0.08
40.70	0.49	0.31	1.60	0.08	0.00	0.08
40.75	0.49	0.31	1.60	0.07	0.00	0.07
40.80	0.49	0.31	1.60	0.07	0.00	0.07
40.85	0.49	0.31	1.60	0.07	0.00	0.07
40.90	0.49	0.31	1.60	0.07	0.00	0.07
40.95	0.49	0.31	1.60	0.07	0.00	0.07
41.00	0.49	0.31	1.60	0.07	0.00	0.07

41.05	0.49	0.31	1.60	0.07	0.00	0.07
41.10	0.49	0.31	1.60	0.07	0.00	0.07
41.15	0.49	0.31	1.60	0.07	0.00	0.07
41.20	0.49	0.31	1.60	0.07	0.00	0.07
41.25	0.49	0.31	1.60	0.07	0.00	0.07
41.30	0.49	0.31	1.60	0.07	0.00	0.07
41.35	0.49	0.31	1.60	0.06	0.00	0.06
41.40	0.49	0.31	1.60	0.06	0.00	0.06
41.45	0.49	0.31	1.60	0.06	0.00	0.06
41.50	0.49	0.31	1.59	0.06	0.00	0.06
41.55	0.49	0.31	1.59	0.06	0.00	0.06
41.60	0.49	0.31	1.59	0.06	0.00	0.06
41.65	0.49	0.31	1.59	0.06	0.00	0.06
41.70	0.49	0.31	1.59	0.06	0.00	0.06
41.75	0.49	0.31	1.59	0.06	0.00	0.06
41.80	0.49	0.31	1.59	0.06	0.00	0.06
41.85	0.49	0.31	1.59	0.06	0.00	0.06
41.90	0.49	0.31	1.59	0.05	0.00	0.05
41.95	0.49	0.31	1.59	0.05	0.00	0.05
42.00	0.49	0.31	1.59	0.05	0.00	0.05
42.05	0.49	0.31	1.59	0.05	0.00	0.05
42.10	0.49	0.31	1.59	0.05	0.00	0.05
42.15	0.49	0.31	1.59	0.05	0.00	0.05
42.20	0.49	0.31	1.59	0.05	0.00	0.05
42.25	0.49	0.31	1.59	0.05	0.00	0.05
42.30	0.49	0.30	1.59	0.05	0.00	0.05
42.35	0.48	0.30	1.59	0.05	0.00	0.05
42.40	0.48	0.30	1.59	0.05	0.00	0.05
42.45	0.48	0.30	1.59	0.05	0.00	0.05
42.50	0.48	0.30	1.59	0.04	0.00	0.04
42.55	0.48	0.30	1.59	0.04	0.00	0.04
42.60	0.48	0.30	1.59	0.04	0.00	0.04
42.65	0.48	0.30	1.59	0.04	0.00	0.04
42.70	0.48	0.30	1.59	0.04	0.00	0.04
42.75	0.48	0.30	1.59	0.04	0.00	0.04
42.80	0.48	0.30	1.59	0.04	0.00	0.04
42.85	0.48	0.30	1.59	0.04	0.00	0.04
42.90	0.48	0.30	1.59	0.04	0.00	0.04
42.95	0.48	0.30	1.59	0.04	0.00	0.04
43.00	0.48	0.30	1.59	0.04	0.00	0.04
43.05	0.48	0.30	1.59	0.04	0.00	0.04
43.10	0.48	0.30	1.59	0.03	0.00	0.03
43.15	0.48	0.30	1.59	0.03	0.00	0.03
43.20	0.48	0.30	1.59	0.03	0.00	0.03
43.25	0.48	0.30	1.59	0.03	0.00	0.03
43.30	0.48	0.30	1.59	0.03	0.00	0.03
43.35	0.48	0.30	1.59	0.03	0.00	0.03
43.40	0.48	0.30	1.59	0.03	0.00	0.03
43.45	0.48	0.30	1.59	0.03	0.00	0.03
43.50	0.48	0.30	1.59	0.03	0.00	0.03
43.55	0.48	0.30	1.59	0.03	0.00	0.03
43.60	0.48	0.30	1.59	0.03	0.00	0.03
43.65	0.48	0.30	1.59	0.02	0.00	0.02
43.70	0.48	0.30	1.59	0.02	0.00	0.02
43.75	0.48	0.30	1.58	0.02	0.00	0.02
43.80	0.48	0.30	1.58	0.02	0.00	0.02
43.85	0.48	0.30	1.58	0.02	0.00	0.02
43.90	0.48	0.30	1.58	0.02	0.00	0.02
43.95	0.48	0.30	1.58	0.02	0.00	0.02
44.00	0.48	0.30	1.58	0.02	0.00	0.02
44.05	0.48	0.30	1.58	0.02	0.00	0.02
44.10	0.48	0.30	1.58	0.02	0.00	0.02
44.15	0.48	0.30	1.58	0.02	0.00	0.02
44.20	0.48	0.30	1.58	0.02	0.00	0.02
44.25	0.48	0.30	1.58	0.01	0.00	0.01
44.30	0.48	0.30	1.58	0.01	0.00	0.01
44.35	0.48	0.30	1.58	0.01	0.00	0.01
44.40	0.48	0.30	1.58	0.01	0.00	0.01
44.45	0.47	0.30	1.58	0.01	0.00	0.01
44.50	0.47	0.30	1.58	0.01	0.00	0.01
44.55	0.47	0.30	1.58	0.01	0.00	0.01

44.60	0.47	0.30	1.58	0.01	0.00	0.01
44.65	0.47	0.30	1.58	0.01	0.00	0.01
44.70	0.47	0.30	1.58	0.01	0.00	0.01
44.75	0.47	0.30	1.58	0.01	0.00	0.01
44.80	0.47	0.30	1.58	0.00	0.00	0.00
44.85	0.47	0.30	1.58	0.00	0.00	0.00
44.90	0.47	0.30	1.58	0.00	0.00	0.00
44.95	0.47	0.30	1.58	0.00	0.00	0.00
45.00	0.47	0.30	1.58	0.00	0.00	0.00
45.05	0.83	0.30	2.78	0.00	0.00	0.00
45.10	0.83	0.30	2.78	0.00	0.00	0.00
45.15	0.83	0.30	2.78	0.00	0.00	0.00
45.20	0.83	0.30	2.79	0.00	0.00	0.00
45.25	0.83	0.30	2.79	0.00	0.00	0.00
45.30	0.83	0.30	2.79	0.00	0.00	0.00
45.35	0.83	0.30	2.79	0.00	0.00	0.00
45.40	0.83	0.30	2.79	0.00	0.00	0.00
45.45	0.83	0.30	2.79	0.00	0.00	0.00
45.50	0.83	0.30	2.79	0.00	0.00	0.00
45.55	0.83	0.30	2.79	0.00	0.00	0.00
45.60	0.83	0.30	2.79	0.00	0.00	0.00
45.65	0.83	0.30	2.80	0.00	0.00	0.00
45.70	0.83	0.30	2.80	0.00	0.00	0.00
45.75	0.83	0.30	2.80	0.00	0.00	0.00
45.80	0.84	0.30	2.82	0.00	0.00	0.00
45.85	0.84	0.30	2.82	0.00	0.00	0.00
45.90	0.84	0.30	2.82	0.00	0.00	0.00
45.95	0.84	0.30	2.82	0.00	0.00	0.00
46.00	0.84	0.30	2.82	0.00	0.00	0.00
46.05	0.84	0.30	2.82	0.00	0.00	0.00
46.10	0.84	0.30	2.82	0.00	0.00	0.00
46.15	0.84	0.30	2.82	0.00	0.00	0.00
46.20	0.83	0.30	2.82	0.00	0.00	0.00
46.25	0.83	0.30	2.82	0.00	0.00	0.00
46.30	0.83	0.30	2.82	0.00	0.00	0.00
46.35	0.83	0.30	2.82	0.00	0.00	0.00
46.40	0.83	0.30	2.82	0.00	0.00	0.00
46.45	0.83	0.30	2.83	0.00	0.00	0.00
46.50	0.83	0.30	2.83	0.00	0.00	0.00
46.55	0.83	0.30	2.83	0.00	0.00	0.00
46.60	0.83	0.29	2.83	0.00	0.00	0.00
46.65	0.83	0.29	2.83	0.00	0.00	0.00
46.70	0.83	0.29	2.83	0.00	0.00	0.00
46.75	0.83	0.29	2.83	0.00	0.00	0.00
46.80	0.83	0.29	2.83	0.00	0.00	0.00
46.85	0.83	0.29	2.83	0.00	0.00	0.00
46.90	0.83	0.29	2.83	0.00	0.00	0.00
46.95	0.83	0.29	2.83	0.00	0.00	0.00
47.00	0.83	0.29	2.83	0.00	0.00	0.00
47.05	0.83	0.29	2.83	0.00	0.00	0.00
47.10	0.83	0.29	2.84	0.00	0.00	0.00
47.15	0.83	0.29	2.84	0.00	0.00	0.00
47.20	0.83	0.29	2.84	0.00	0.00	0.00
47.25	0.83	0.29	2.84	0.00	0.00	0.00
47.30	0.83	0.29	2.84	0.00	0.00	0.00
47.35	0.83	0.29	2.84	0.00	0.00	0.00
47.40	0.83	0.29	2.84	0.00	0.00	0.00
47.45	0.83	0.29	2.84	0.00	0.00	0.00
47.50	0.83	0.29	2.84	0.00	0.00	0.00
47.55	0.83	0.29	2.84	0.00	0.00	0.00
47.60	0.83	0.29	2.84	0.00	0.00	0.00
47.65	0.83	0.29	2.84	0.00	0.00	0.00
47.70	0.83	0.29	2.84	0.00	0.00	0.00
47.75	0.83	0.29	2.85	0.00	0.00	0.00
47.80	0.83	0.29	2.85	0.00	0.00	0.00
47.85	0.83	0.29	2.85	0.00	0.00	0.00
47.90	0.83	0.29	2.85	0.00	0.00	0.00
47.95	0.83	0.29	2.85	0.00	0.00	0.00
48.00	0.83	0.29	2.85	0.00	0.00	0.00
48.05	0.83	0.29	2.85	0.00	0.00	0.00
48.10	0.83	0.29	2.85	0.00	0.00	0.00

48.15	0.83	0.29	2.85	0.00	0.00	0.00
48.20	0.83	0.29	2.85	0.00	0.00	0.00
48.25	0.83	0.29	2.85	0.00	0.00	0.00
48.30	0.83	0.29	2.85	0.00	0.00	0.00
48.35	0.83	0.29	2.85	0.00	0.00	0.00
48.40	0.83	0.29	2.86	0.00	0.00	0.00
48.45	0.83	0.29	2.86	0.00	0.00	0.00
48.50	0.83	0.29	2.86	0.00	0.00	0.00
48.55	0.83	0.29	2.86	0.00	0.00	0.00
48.60	0.83	0.29	2.86	0.00	0.00	0.00
48.65	0.83	0.29	2.86	0.00	0.00	0.00
48.70	0.83	0.29	2.86	0.00	0.00	0.00
48.75	0.83	0.29	2.86	0.00	0.00	0.00
48.80	0.83	0.29	2.86	0.00	0.00	0.00
48.85	0.83	0.29	2.86	0.00	0.00	0.00
48.90	0.83	0.29	2.86	0.00	0.00	0.00
48.95	0.83	0.29	2.86	0.00	0.00	0.00
49.00	0.83	0.29	2.87	0.00	0.00	0.00
49.05	0.83	0.29	2.87	0.00	0.00	0.00
49.10	0.83	0.29	2.87	0.00	0.00	0.00
49.15	0.83	0.29	2.87	0.00	0.00	0.00
49.20	0.83	0.29	2.87	0.00	0.00	0.00
49.25	0.83	0.29	2.87	0.00	0.00	0.00
49.30	0.83	0.29	2.87	0.00	0.00	0.00
49.35	0.83	0.29	2.87	0.00	0.00	0.00
49.40	0.83	0.29	2.87	0.00	0.00	0.00
49.45	0.83	0.29	2.87	0.00	0.00	0.00
49.50	0.83	0.29	2.87	0.00	0.00	0.00
49.55	0.83	0.29	2.87	0.00	0.00	0.00
49.60	0.83	0.29	2.88	0.00	0.00	0.00
49.65	0.83	0.29	2.88	0.00	0.00	0.00
49.70	0.83	0.29	2.88	0.00	0.00	0.00
49.75	0.83	0.29	2.88	0.00	0.00	0.00
49.80	0.83	0.29	2.88	0.00	0.00	0.00
49.85	0.83	0.29	2.88	0.00	0.00	0.00
49.90	0.83	0.29	2.88	0.00	0.00	0.00
49.95	0.83	0.29	2.88	0.00	0.00	0.00
50.00	0.83	0.29	2.88	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

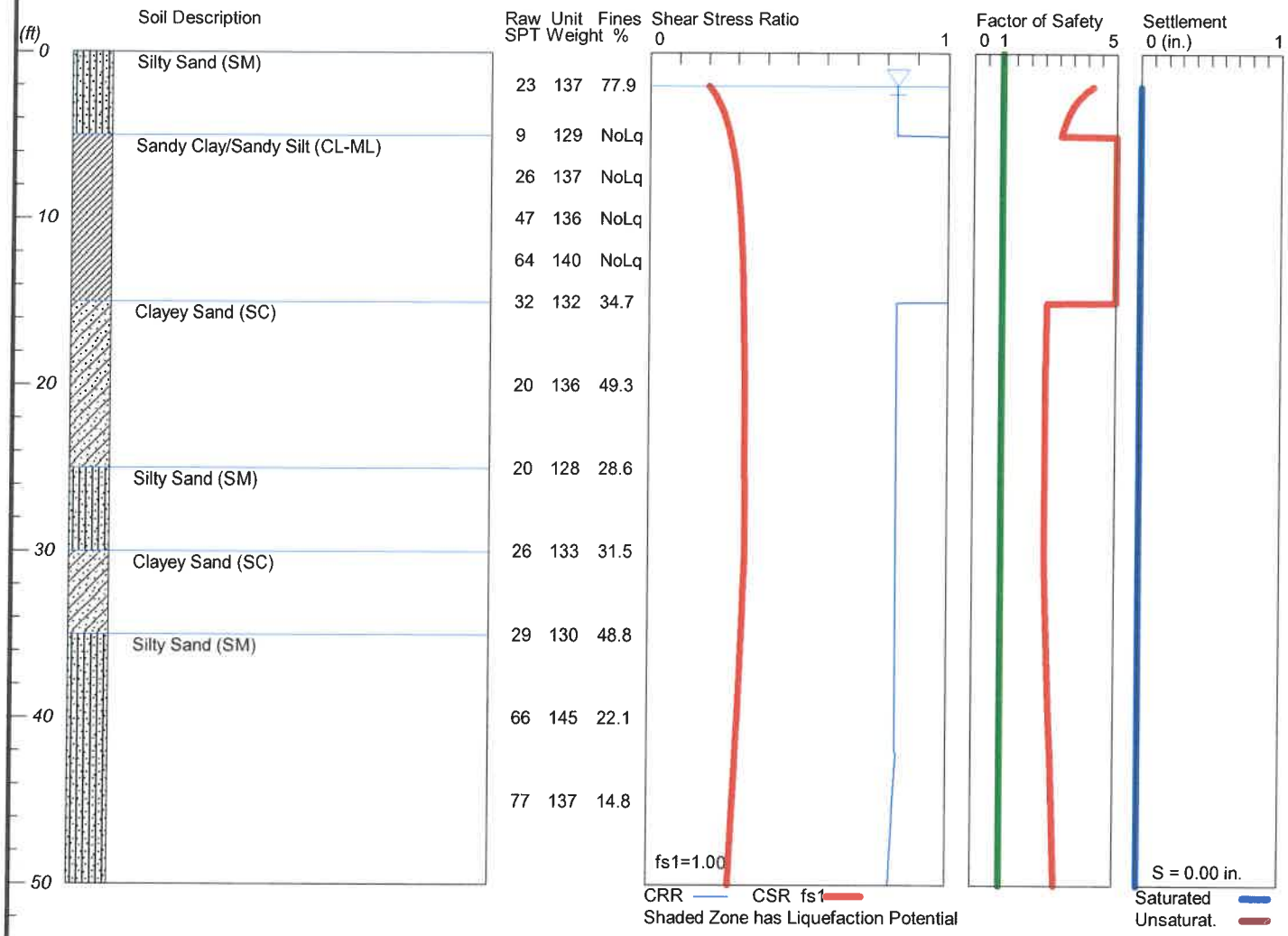
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Triangle Development

Hole No.=B19 Water Depth=2 ft

Magnitude=6.15
Acceleration=0.307g



LiquefyPro CivilTech Software USA www.civiltech.com

Krazan

012-22165

Plate A-1

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*****************************************************************************************************
                                    LIQUEFACTION ANALYSIS SUMMARY
                                  Copyright by CivilTech Software
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      Input File Name: C:\Users\mweber\Documents\Krazan\Projects\012\22\165 Triangle Development\B19\B19
Liquefaction.liq
      Title:  Triangle Development
      Subtitle:  012-22165

      Surface Elev.=
      Hole No.=B19
      Depth of Hole= 50.00 ft
      Water Table during Earthquake= 2.00 ft
      Water Table during In-Situ Testing= 4.00 ft
      Max. Acceleration= 0.31 g
      Earthquake Magnitude= 6.15

 Input Data:
      Surface Elev.=
      Hole No.=B19
      Depth of Hole=50.00 ft
      Water Table during Earthquake= 2.00 ft
      Water Table during In-Situ Testing= 4.00 ft
      Max. Acceleration=0.31 g
      Earthquake Magnitude=6.15
      No-Liquefiable Soils:   CL, OL are Non-Liq. Soil

      1. SPT or BPT Calculation.
      2. Settlement Analysis Method: Ishihara / Yoshimine
      3. Fines Correction for Liquefaction: Stark/Olson et al.*
      4. Fine Correction for Settlement: During Liquefaction*
      5. Settlement Calculation in: All zones*
      6. Hammer Energy Ratio,                                    Ce = 1.4
      7. Borehole Diameter,                                          Cb= 1.05
      8. Sampling Method,                                           Cs= 1
      9. User request factor of safety (apply to CSR) ,   User= 1
         Plot one CSR curve (fs1=User)
      10. Use Curve Smoothing: No
      * Recommended Options

      In-Situ Test Data:
      Depth   SPT     gamma   Fines
      ft              pcf     %
      ____________________________________
      2.00    23.00   137.00  77.90
      5.00    9.00    129.00  NoLiq
      7.50    26.00   137.00  NoLiq
      10.00   47.00   136.00  NoLiq
      12.50   64.00   140.00  NoLiq
      15.00   32.00   132.00  34.70
      20.00   20.00   136.00  49.30
      25.00   20.00   128.00  28.60
      30.00   26.00   133.00  31.50
      35.00   29.00   130.00  48.80
      40.00   66.00   145.00  22.10
      45.00   77.00   137.00  14.80
      ____________________________________

Output Results:
      Settlement of Saturated Sands=0.00 in.
      Settlement of Unsaturated Sands=0.00 in.
      Total Settlement of Saturated and Unsaturated Sands=0.00 in.
      Differential Settlement=0.000 to 0.000 in.

      Depth   CRRm    CSRfs   F.S.    S_sat.  S_dry   S_all
      ft                              in.     in.     in.
      ____________________________________________________
```

2.00	0.83	0.20	4.18	0.00	0.00	0.00
2.05	0.83	0.20	4.14	0.00	0.00	0.00
2.10	0.83	0.20	4.09	0.00	0.00	0.00
2.15	0.83	0.21	4.05	0.00	0.00	0.00
2.20	0.83	0.21	4.01	0.00	0.00	0.00
2.25	0.83	0.21	3.97	0.00	0.00	0.00
2.30	0.83	0.21	3.94	0.00	0.00	0.00
2.35	0.83	0.21	3.90	0.00	0.00	0.00
2.40	0.83	0.21	3.87	0.00	0.00	0.00
2.45	0.83	0.22	3.84	0.00	0.00	0.00
2.50	0.83	0.22	3.81	0.00	0.00	0.00
2.55	0.83	0.22	3.78	0.00	0.00	0.00
2.60	0.83	0.22	3.75	0.00	0.00	0.00
2.65	0.83	0.22	3.72	0.00	0.00	0.00
2.70	0.83	0.22	3.69	0.00	0.00	0.00
2.75	0.83	0.23	3.67	0.00	0.00	0.00
2.80	0.83	0.23	3.64	0.00	0.00	0.00
2.85	0.83	0.23	3.62	0.00	0.00	0.00
2.90	0.83	0.23	3.60	0.00	0.00	0.00
2.95	0.83	0.23	3.58	0.00	0.00	0.00
3.00	0.83	0.23	3.56	0.00	0.00	0.00
3.05	0.83	0.23	3.54	0.00	0.00	0.00
3.10	0.83	0.24	3.52	0.00	0.00	0.00
3.15	0.83	0.24	3.50	0.00	0.00	0.00
3.20	0.83	0.24	3.48	0.00	0.00	0.00
3.25	0.83	0.24	3.46	0.00	0.00	0.00
3.30	0.83	0.24	3.44	0.00	0.00	0.00
3.35	0.83	0.24	3.43	0.00	0.00	0.00
3.40	0.83	0.24	3.41	0.00	0.00	0.00
3.45	0.83	0.24	3.39	0.00	0.00	0.00
3.50	0.83	0.25	3.38	0.00	0.00	0.00
3.55	0.83	0.25	3.36	0.00	0.00	0.00
3.60	0.83	0.25	3.35	0.00	0.00	0.00
3.65	0.83	0.25	3.33	0.00	0.00	0.00
3.70	0.83	0.25	3.32	0.00	0.00	0.00
3.75	0.83	0.25	3.31	0.00	0.00	0.00
3.80	0.83	0.25	3.29	0.00	0.00	0.00
3.85	0.83	0.25	3.28	0.00	0.00	0.00
3.90	0.83	0.25	3.27	0.00	0.00	0.00
3.95	0.83	0.26	3.26	0.00	0.00	0.00
4.00	0.83	0.26	3.25	0.00	0.00	0.00
4.05	0.83	0.26	3.23	0.00	0.00	0.00
4.10	0.83	0.26	3.22	0.00	0.00	0.00
4.15	0.83	0.26	3.21	0.00	0.00	0.00
4.20	0.83	0.26	3.20	0.00	0.00	0.00
4.25	0.83	0.26	3.19	0.00	0.00	0.00
4.30	0.83	0.26	3.18	0.00	0.00	0.00
4.35	0.83	0.26	3.17	0.00	0.00	0.00
4.40	0.83	0.26	3.16	0.00	0.00	0.00
4.45	0.83	0.26	3.15	0.00	0.00	0.00
4.50	0.83	0.26	3.14	0.00	0.00	0.00
4.55	0.83	0.27	3.13	0.00	0.00	0.00
4.60	0.83	0.27	3.12	0.00	0.00	0.00
4.65	0.83	0.27	3.12	0.00	0.00	0.00
4.70	0.83	0.27	3.11	0.00	0.00	0.00
4.75	0.83	0.27	3.10	0.00	0.00	0.00
4.80	0.83	0.27	3.09	0.00	0.00	0.00
4.85	0.83	0.27	3.08	0.00	0.00	0.00
4.90	0.83	0.27	3.08	0.00	0.00	0.00
4.95	0.83	0.27	3.07	0.00	0.00	0.00
5.00	2.00	0.27	5.00	0.00	0.00	0.00
5.05	2.00	0.27	5.00	0.00	0.00	0.00
5.10	2.00	0.27	5.00	0.00	0.00	0.00
5.15	2.00	0.27	5.00	0.00	0.00	0.00
5.20	2.00	0.27	5.00	0.00	0.00	0.00
5.25	2.00	0.27	5.00	0.00	0.00	0.00
5.30	2.00	0.28	5.00	0.00	0.00	0.00
5.35	2.00	0.28	5.00	0.00	0.00	0.00
5.40	2.00	0.28	5.00	0.00	0.00	0.00
5.45	2.00	0.28	5.00	0.00	0.00	0.00
5.50	2.00	0.28	5.00	0.00	0.00	0.00

5.55	2.00	0.28	5.00	0.00	0.00	0.00
5.60	2.00	0.28	5.00	0.00	0.00	0.00
5.65	2.00	0.28	5.00	0.00	0.00	0.00
5.70	2.00	0.28	5.00	0.00	0.00	0.00
5.75	2.00	0.28	5.00	0.00	0.00	0.00
5.80	2.00	0.28	5.00	0.00	0.00	0.00
5.85	2.00	0.28	5.00	0.00	0.00	0.00
5.90	2.00	0.28	5.00	0.00	0.00	0.00
5.95	2.00	0.28	5.00	0.00	0.00	0.00
6.00	2.00	0.28	5.00	0.00	0.00	0.00
6.05	2.00	0.28	5.00	0.00	0.00	0.00
6.10	2.00	0.28	5.00	0.00	0.00	0.00
6.15	2.00	0.29	5.00	0.00	0.00	0.00
6.20	2.00	0.29	5.00	0.00	0.00	0.00
6.25	2.00	0.29	5.00	0.00	0.00	0.00
6.30	2.00	0.29	5.00	0.00	0.00	0.00
6.35	2.00	0.29	5.00	0.00	0.00	0.00
6.40	2.00	0.29	5.00	0.00	0.00	0.00
6.45	2.00	0.29	5.00	0.00	0.00	0.00
6.50	2.00	0.29	5.00	0.00	0.00	0.00
6.55	2.00	0.29	5.00	0.00	0.00	0.00
6.60	2.00	0.29	5.00	0.00	0.00	0.00
6.65	2.00	0.29	5.00	0.00	0.00	0.00
6.70	2.00	0.29	5.00	0.00	0.00	0.00
6.75	2.00	0.29	5.00	0.00	0.00	0.00
6.80	2.00	0.29	5.00	0.00	0.00	0.00
6.85	2.00	0.29	5.00	0.00	0.00	0.00
6.90	2.00	0.29	5.00	0.00	0.00	0.00
6.95	2.00	0.29	5.00	0.00	0.00	0.00
7.00	2.00	0.29	5.00	0.00	0.00	0.00
7.05	2.00	0.29	5.00	0.00	0.00	0.00
7.10	2.00	0.29	5.00	0.00	0.00	0.00
7.15	2.00	0.29	5.00	0.00	0.00	0.00
7.20	2.00	0.30	5.00	0.00	0.00	0.00
7.25	2.00	0.30	5.00	0.00	0.00	0.00
7.30	2.00	0.30	5.00	0.00	0.00	0.00
7.35	2.00	0.30	5.00	0.00	0.00	0.00
7.40	2.00	0.30	5.00	0.00	0.00	0.00
7.45	2.00	0.30	5.00	0.00	0.00	0.00
7.50	2.00	0.30	5.00	0.00	0.00	0.00
7.55	2.00	0.30	5.00	0.00	0.00	0.00
7.60	2.00	0.30	5.00	0.00	0.00	0.00
7.65	2.00	0.30	5.00	0.00	0.00	0.00
7.70	2.00	0.30	5.00	0.00	0.00	0.00
7.75	2.00	0.30	5.00	0.00	0.00	0.00
7.80	2.00	0.30	5.00	0.00	0.00	0.00
7.85	2.00	0.30	5.00	0.00	0.00	0.00
7.90	2.00	0.30	5.00	0.00	0.00	0.00
7.95	2.00	0.30	5.00	0.00	0.00	0.00
8.00	2.00	0.30	5.00	0.00	0.00	0.00
8.05	2.00	0.30	5.00	0.00	0.00	0.00
8.10	2.00	0.30	5.00	0.00	0.00	0.00
8.15	2.00	0.30	5.00	0.00	0.00	0.00
8.20	2.00	0.30	5.00	0.00	0.00	0.00
8.25	2.00	0.30	5.00	0.00	0.00	0.00
8.30	2.00	0.30	5.00	0.00	0.00	0.00
8.35	2.00	0.30	5.00	0.00	0.00	0.00
8.40	2.00	0.30	5.00	0.00	0.00	0.00
8.45	2.00	0.30	5.00	0.00	0.00	0.00
8.50	2.00	0.30	5.00	0.00	0.00	0.00
8.55	2.00	0.30	5.00	0.00	0.00	0.00
8.60	2.00	0.30	5.00	0.00	0.00	0.00
8.65	2.00	0.30	5.00	0.00	0.00	0.00
8.70	2.00	0.30	5.00	0.00	0.00	0.00
8.75	2.00	0.30	5.00	0.00	0.00	0.00
8.80	2.00	0.30	5.00	0.00	0.00	0.00
8.85	2.00	0.30	5.00	0.00	0.00	0.00
8.90	2.00	0.30	5.00	0.00	0.00	0.00
8.95	2.00	0.31	5.00	0.00	0.00	0.00
9.00	2.00	0.31	5.00	0.00	0.00	0.00
9.05	2.00	0.31	5.00	0.00	0.00	0.00

9.10	2.00	0.31	5.00	0.00	0.00	0.00
9.15	2.00	0.31	5.00	0.00	0.00	0.00
9.20	2.00	0.31	5.00	0.00	0.00	0.00
9.25	2.00	0.31	5.00	0.00	0.00	0.00
9.30	2.00	0.31	5.00	0.00	0.00	0.00
9.35	2.00	0.31	5.00	0.00	0.00	0.00
9.40	2.00	0.31	5.00	0.00	0.00	0.00
9.45	2.00	0.31	5.00	0.00	0.00	0.00
9.50	2.00	0.31	5.00	0.00	0.00	0.00
9.55	2.00	0.31	5.00	0.00	0.00	0.00
9.60	2.00	0.31	5.00	0.00	0.00	0.00
9.65	2.00	0.31	5.00	0.00	0.00	0.00
9.70	2.00	0.31	5.00	0.00	0.00	0.00
9.75	2.00	0.31	5.00	0.00	0.00	0.00
9.80	2.00	0.31	5.00	0.00	0.00	0.00
9.85	2.00	0.31	5.00	0.00	0.00	0.00
9.90	2.00	0.31	5.00	0.00	0.00	0.00
9.95	2.00	0.31	5.00	0.00	0.00	0.00
10.00	2.00	0.31	5.00	0.00	0.00	0.00
10.05	2.00	0.31	5.00	0.00	0.00	0.00
10.10	2.00	0.31	5.00	0.00	0.00	0.00
10.15	2.00	0.31	5.00	0.00	0.00	0.00
10.20	2.00	0.31	5.00	0.00	0.00	0.00
10.25	2.00	0.31	5.00	0.00	0.00	0.00
10.30	2.00	0.31	5.00	0.00	0.00	0.00
10.35	2.00	0.31	5.00	0.00	0.00	0.00
10.40	2.00	0.31	5.00	0.00	0.00	0.00
10.45	2.00	0.31	5.00	0.00	0.00	0.00
10.50	2.00	0.31	5.00	0.00	0.00	0.00
10.55	2.00	0.31	5.00	0.00	0.00	0.00
10.60	2.00	0.31	5.00	0.00	0.00	0.00
10.65	2.00	0.31	5.00	0.00	0.00	0.00
10.70	2.00	0.31	5.00	0.00	0.00	0.00
10.75	2.00	0.31	5.00	0.00	0.00	0.00
10.80	2.00	0.31	5.00	0.00	0.00	0.00
10.85	2.00	0.31	5.00	0.00	0.00	0.00
10.90	2.00	0.31	5.00	0.00	0.00	0.00
10.95	2.00	0.31	5.00	0.00	0.00	0.00
11.00	2.00	0.31	5.00	0.00	0.00	0.00
11.05	2.00	0.31	5.00	0.00	0.00	0.00
11.10	2.00	0.31	5.00	0.00	0.00	0.00
11.15	2.00	0.31	5.00	0.00	0.00	0.00
11.20	2.00	0.31	5.00	0.00	0.00	0.00
11.25	2.00	0.31	5.00	0.00	0.00	0.00
11.30	2.00	0.31	5.00	0.00	0.00	0.00
11.35	2.00	0.31	5.00	0.00	0.00	0.00
11.40	2.00	0.31	5.00	0.00	0.00	0.00
11.45	2.00	0.31	5.00	0.00	0.00	0.00
11.50	2.00	0.31	5.00	0.00	0.00	0.00
11.55	2.00	0.31	5.00	0.00	0.00	0.00
11.60	2.00	0.31	5.00	0.00	0.00	0.00
11.65	2.00	0.31	5.00	0.00	0.00	0.00
11.70	2.00	0.31	5.00	0.00	0.00	0.00
11.75	2.00	0.31	5.00	0.00	0.00	0.00
11.80	2.00	0.31	5.00	0.00	0.00	0.00
11.85	2.00	0.31	5.00	0.00	0.00	0.00
11.90	2.00	0.31	5.00	0.00	0.00	0.00
11.95	2.00	0.32	5.00	0.00	0.00	0.00
12.00	2.00	0.32	5.00	0.00	0.00	0.00
12.05	2.00	0.32	5.00	0.00	0.00	0.00
12.10	2.00	0.32	5.00	0.00	0.00	0.00
12.15	2.00	0.32	5.00	0.00	0.00	0.00
12.20	2.00	0.32	5.00	0.00	0.00	0.00
12.25	2.00	0.32	5.00	0.00	0.00	0.00
12.30	2.00	0.32	5.00	0.00	0.00	0.00
12.35	2.00	0.32	5.00	0.00	0.00	0.00
12.40	2.00	0.32	5.00	0.00	0.00	0.00
12.45	2.00	0.32	5.00	0.00	0.00	0.00
12.50	2.00	0.32	5.00	0.00	0.00	0.00
12.55	2.00	0.32	5.00	0.00	0.00	0.00
12.60	2.00	0.32	5.00	0.00	0.00	0.00

12.65	2.00	0.32	5.00	0.00	0.00	0.00
12.70	2.00	0.32	5.00	0.00	0.00	0.00
12.75	2.00	0.32	5.00	0.00	0.00	0.00
12.80	2.00	0.32	5.00	0.00	0.00	0.00
12.85	2.00	0.32	5.00	0.00	0.00	0.00
12.90	2.00	0.32	5.00	0.00	0.00	0.00
12.95	2.00	0.32	5.00	0.00	0.00	0.00
13.00	2.00	0.32	5.00	0.00	0.00	0.00
13.05	2.00	0.32	5.00	0.00	0.00	0.00
13.10	2.00	0.32	5.00	0.00	0.00	0.00
13.15	2.00	0.32	5.00	0.00	0.00	0.00
13.20	2.00	0.32	5.00	0.00	0.00	0.00
13.25	2.00	0.32	5.00	0.00	0.00	0.00
13.30	2.00	0.32	5.00	0.00	0.00	0.00
13.35	2.00	0.32	5.00	0.00	0.00	0.00
13.40	2.00	0.32	5.00	0.00	0.00	0.00
13.45	2.00	0.32	5.00	0.00	0.00	0.00
13.50	2.00	0.32	5.00	0.00	0.00	0.00
13.55	2.00	0.32	5.00	0.00	0.00	0.00
13.60	2.00	0.32	5.00	0.00	0.00	0.00
13.65	2.00	0.32	5.00	0.00	0.00	0.00
13.70	2.00	0.32	5.00	0.00	0.00	0.00
13.75	2.00	0.32	5.00	0.00	0.00	0.00
13.80	2.00	0.32	5.00	0.00	0.00	0.00
13.85	2.00	0.32	5.00	0.00	0.00	0.00
13.90	2.00	0.32	5.00	0.00	0.00	0.00
13.95	2.00	0.32	5.00	0.00	0.00	0.00
14.00	2.00	0.32	5.00	0.00	0.00	0.00
14.05	2.00	0.32	5.00	0.00	0.00	0.00
14.10	2.00	0.32	5.00	0.00	0.00	0.00
14.15	2.00	0.32	5.00	0.00	0.00	0.00
14.20	2.00	0.32	5.00	0.00	0.00	0.00
14.25	2.00	0.32	5.00	0.00	0.00	0.00
14.30	2.00	0.32	5.00	0.00	0.00	0.00
14.35	2.00	0.32	5.00	0.00	0.00	0.00
14.40	2.00	0.32	5.00	0.00	0.00	0.00
14.45	2.00	0.32	5.00	0.00	0.00	0.00
14.50	2.00	0.32	5.00	0.00	0.00	0.00
14.55	2.00	0.32	5.00	0.00	0.00	0.00
14.60	2.00	0.32	5.00	0.00	0.00	0.00
14.65	2.00	0.32	5.00	0.00	0.00	0.00
14.70	2.00	0.32	5.00	0.00	0.00	0.00
14.75	2.00	0.32	5.00	0.00	0.00	0.00
14.80	2.00	0.32	5.00	0.00	0.00	0.00
14.85	2.00	0.32	5.00	0.00	0.00	0.00
14.90	2.00	0.32	5.00	0.00	0.00	0.00
14.95	2.00	0.32	5.00	0.00	0.00	0.00
15.00	0.83	0.32	2.60	0.00	0.00	0.00
15.05	0.83	0.32	2.60	0.00	0.00	0.00
15.10	0.83	0.32	2.60	0.00	0.00	0.00
15.15	0.83	0.32	2.60	0.00	0.00	0.00
15.20	0.83	0.32	2.60	0.00	0.00	0.00
15.25	0.83	0.32	2.59	0.00	0.00	0.00
15.30	0.83	0.32	2.59	0.00	0.00	0.00
15.35	0.83	0.32	2.59	0.00	0.00	0.00
15.40	0.83	0.32	2.59	0.00	0.00	0.00
15.45	0.83	0.32	2.59	0.00	0.00	0.00
15.50	0.83	0.32	2.59	0.00	0.00	0.00
15.55	0.83	0.32	2.59	0.00	0.00	0.00
15.60	0.83	0.32	2.59	0.00	0.00	0.00
15.65	0.83	0.32	2.59	0.00	0.00	0.00
15.70	0.83	0.32	2.59	0.00	0.00	0.00
15.75	0.83	0.32	2.59	0.00	0.00	0.00
15.80	0.83	0.32	2.59	0.00	0.00	0.00
15.85	0.83	0.32	2.59	0.00	0.00	0.00
15.90	0.83	0.32	2.59	0.00	0.00	0.00
15.95	0.83	0.32	2.59	0.00	0.00	0.00
16.00	0.83	0.32	2.58	0.00	0.00	0.00
16.05	0.83	0.32	2.58	0.00	0.00	0.00
16.10	0.83	0.32	2.58	0.00	0.00	0.00
16.15	0.83	0.32	2.58	0.00	0.00	0.00

16.20	0.83	0.32	2.58	0.00	0.00	0.00
16.25	0.83	0.32	2.58	0.00	0.00	0.00
16.30	0.83	0.32	2.58	0.00	0.00	0.00
16.35	0.83	0.32	2.58	0.00	0.00	0.00
16.40	0.83	0.32	2.58	0.00	0.00	0.00
16.45	0.83	0.32	2.58	0.00	0.00	0.00
16.50	0.83	0.32	2.58	0.00	0.00	0.00
16.55	0.83	0.32	2.58	0.00	0.00	0.00
16.60	0.83	0.32	2.58	0.00	0.00	0.00
16.65	0.83	0.32	2.58	0.00	0.00	0.00
16.70	0.83	0.32	2.58	0.00	0.00	0.00
16.75	0.83	0.32	2.58	0.00	0.00	0.00
16.80	0.83	0.32	2.58	0.00	0.00	0.00
16.85	0.83	0.32	2.58	0.00	0.00	0.00
16.90	0.83	0.32	2.57	0.00	0.00	0.00
16.95	0.83	0.32	2.57	0.00	0.00	0.00
17.00	0.83	0.32	2.57	0.00	0.00	0.00
17.05	0.83	0.32	2.57	0.00	0.00	0.00
17.10	0.83	0.32	2.57	0.00	0.00	0.00
17.15	0.83	0.32	2.57	0.00	0.00	0.00
17.20	0.83	0.32	2.57	0.00	0.00	0.00
17.25	0.83	0.32	2.57	0.00	0.00	0.00
17.30	0.83	0.32	2.57	0.00	0.00	0.00
17.35	0.83	0.32	2.57	0.00	0.00	0.00
17.40	0.83	0.32	2.57	0.00	0.00	0.00
17.45	0.83	0.32	2.57	0.00	0.00	0.00
17.50	0.83	0.32	2.57	0.00	0.00	0.00
17.55	0.83	0.32	2.57	0.00	0.00	0.00
17.60	0.83	0.32	2.57	0.00	0.00	0.00
17.65	0.83	0.32	2.57	0.00	0.00	0.00
17.70	0.83	0.32	2.57	0.00	0.00	0.00
17.75	0.83	0.32	2.57	0.00	0.00	0.00
17.80	0.83	0.32	2.57	0.00	0.00	0.00
17.85	0.83	0.32	2.57	0.00	0.00	0.00
17.90	0.83	0.32	2.57	0.00	0.00	0.00
17.95	0.83	0.32	2.56	0.00	0.00	0.00
18.00	0.83	0.32	2.56	0.00	0.00	0.00
18.05	0.83	0.32	2.56	0.00	0.00	0.00
18.10	0.83	0.32	2.56	0.00	0.00	0.00
18.15	0.83	0.32	2.56	0.00	0.00	0.00
18.20	0.83	0.32	2.56	0.00	0.00	0.00
18.25	0.83	0.32	2.56	0.00	0.00	0.00
18.30	0.83	0.32	2.56	0.00	0.00	0.00
18.35	0.83	0.32	2.56	0.00	0.00	0.00
18.40	0.83	0.32	2.56	0.00	0.00	0.00
18.45	0.83	0.32	2.56	0.00	0.00	0.00
18.50	0.83	0.32	2.56	0.00	0.00	0.00
18.55	0.83	0.32	2.56	0.00	0.00	0.00
18.60	0.83	0.32	2.56	0.00	0.00	0.00
18.65	0.83	0.32	2.56	0.00	0.00	0.00
18.70	0.83	0.32	2.56	0.00	0.00	0.00
18.75	0.83	0.32	2.56	0.00	0.00	0.00
18.80	0.83	0.32	2.56	0.00	0.00	0.00
18.85	0.83	0.32	2.56	0.00	0.00	0.00
18.90	0.83	0.32	2.56	0.00	0.00	0.00
18.95	0.83	0.32	2.56	0.00	0.00	0.00
19.00	0.83	0.32	2.56	0.00	0.00	0.00
19.05	0.83	0.32	2.56	0.00	0.00	0.00
19.10	0.83	0.33	2.56	0.00	0.00	0.00
19.15	0.83	0.33	2.56	0.00	0.00	0.00
19.20	0.83	0.33	2.56	0.00	0.00	0.00
19.25	0.83	0.33	2.55	0.00	0.00	0.00
19.30	0.83	0.33	2.55	0.00	0.00	0.00
19.35	0.83	0.33	2.55	0.00	0.00	0.00
19.40	0.83	0.33	2.55	0.00	0.00	0.00
19.45	0.83	0.33	2.55	0.00	0.00	0.00
19.50	0.83	0.33	2.55	0.00	0.00	0.00
19.55	0.83	0.33	2.55	0.00	0.00	0.00
19.60	0.83	0.33	2.55	0.00	0.00	0.00
19.65	0.83	0.33	2.55	0.00	0.00	0.00
19.70	0.83	0.33	2.55	0.00	0.00	0.00

19.75	0.83	0.33	2.55	0.00	0.00	0.00
19.80	0.83	0.33	2.55	0.00	0.00	0.00
19.85	0.83	0.33	2.55	0.00	0.00	0.00
19.90	0.83	0.33	2.55	0.00	0.00	0.00
19.95	0.83	0.33	2.55	0.00	0.00	0.00
20.00	0.83	0.33	2.55	0.00	0.00	0.00
20.05	0.83	0.33	2.55	0.00	0.00	0.00
20.10	0.83	0.33	2.55	0.00	0.00	0.00
20.15	0.83	0.33	2.55	0.00	0.00	0.00
20.20	0.83	0.33	2.55	0.00	0.00	0.00
20.25	0.83	0.33	2.55	0.00	0.00	0.00
20.30	0.83	0.33	2.55	0.00	0.00	0.00
20.35	0.83	0.33	2.55	0.00	0.00	0.00
20.40	0.83	0.33	2.55	0.00	0.00	0.00
20.45	0.83	0.33	2.55	0.00	0.00	0.00
20.50	0.83	0.33	2.55	0.00	0.00	0.00
20.55	0.83	0.33	2.55	0.00	0.00	0.00
20.60	0.83	0.33	2.55	0.00	0.00	0.00
20.65	0.83	0.33	2.55	0.00	0.00	0.00
20.70	0.83	0.33	2.55	0.00	0.00	0.00
20.75	0.83	0.33	2.55	0.00	0.00	0.00
20.80	0.83	0.33	2.55	0.00	0.00	0.00
20.85	0.83	0.33	2.55	0.00	0.00	0.00
20.90	0.83	0.33	2.55	0.00	0.00	0.00
20.95	0.83	0.33	2.55	0.00	0.00	0.00
21.00	0.83	0.33	2.55	0.00	0.00	0.00
21.05	0.83	0.33	2.55	0.00	0.00	0.00
21.10	0.83	0.33	2.55	0.00	0.00	0.00
21.15	0.83	0.33	2.55	0.00	0.00	0.00
21.20	0.83	0.33	2.55	0.00	0.00	0.00
21.25	0.83	0.33	2.55	0.00	0.00	0.00
21.30	0.83	0.33	2.55	0.00	0.00	0.00
21.35	0.83	0.33	2.55	0.00	0.00	0.00
21.40	0.83	0.33	2.55	0.00	0.00	0.00
21.45	0.83	0.33	2.55	0.00	0.00	0.00
21.50	0.83	0.33	2.55	0.00	0.00	0.00
21.55	0.83	0.33	2.55	0.00	0.00	0.00
21.60	0.83	0.33	2.55	0.00	0.00	0.00
21.65	0.83	0.33	2.55	0.00	0.00	0.00
21.70	0.83	0.33	2.55	0.00	0.00	0.00
21.75	0.83	0.33	2.55	0.00	0.00	0.00
21.80	0.83	0.33	2.55	0.00	0.00	0.00
21.85	0.83	0.33	2.55	0.00	0.00	0.00
21.90	0.83	0.33	2.55	0.00	0.00	0.00
21.95	0.83	0.33	2.55	0.00	0.00	0.00
22.00	0.83	0.33	2.55	0.00	0.00	0.00
22.05	0.83	0.33	2.55	0.00	0.00	0.00
22.10	0.83	0.33	2.55	0.00	0.00	0.00
22.15	0.83	0.33	2.55	0.00	0.00	0.00
22.20	0.83	0.33	2.54	0.00	0.00	0.00
22.25	0.83	0.33	2.54	0.00	0.00	0.00
22.30	0.83	0.33	2.54	0.00	0.00	0.00
22.35	0.83	0.33	2.54	0.00	0.00	0.00
22.40	0.83	0.33	2.54	0.00	0.00	0.00
22.45	0.83	0.33	2.54	0.00	0.00	0.00
22.50	0.83	0.33	2.54	0.00	0.00	0.00
22.55	0.83	0.33	2.54	0.00	0.00	0.00
22.60	0.83	0.33	2.54	0.00	0.00	0.00
22.65	0.83	0.33	2.54	0.00	0.00	0.00
22.70	0.83	0.33	2.54	0.00	0.00	0.00
22.75	0.83	0.33	2.54	0.00	0.00	0.00
22.80	0.83	0.33	2.54	0.00	0.00	0.00
22.85	0.83	0.33	2.54	0.00	0.00	0.00
22.90	0.83	0.33	2.54	0.00	0.00	0.00
22.95	0.83	0.33	2.54	0.00	0.00	0.00
23.00	0.83	0.33	2.54	0.00	0.00	0.00
23.05	0.83	0.33	2.54	0.00	0.00	0.00
23.10	0.83	0.33	2.54	0.00	0.00	0.00
23.15	0.83	0.33	2.54	0.00	0.00	0.00
23.20	0.83	0.33	2.54	0.00	0.00	0.00
23.25	0.83	0.33	2.54	0.00	0.00	0.00

23.30	0.83	0.33	2.54	0.00	0.00	0.00
23.35	0.83	0.33	2.54	0.00	0.00	0.00
23.40	0.83	0.33	2.54	0.00	0.00	0.00
23.45	0.83	0.33	2.54	0.00	0.00	0.00
23.50	0.83	0.33	2.54	0.00	0.00	0.00
23.55	0.83	0.33	2.54	0.00	0.00	0.00
23.60	0.83	0.33	2.54	0.00	0.00	0.00
23.65	0.83	0.33	2.54	0.00	0.00	0.00
23.70	0.83	0.33	2.54	0.00	0.00	0.00
23.75	0.83	0.33	2.54	0.00	0.00	0.00
23.80	0.83	0.33	2.54	0.00	0.00	0.00
23.85	0.83	0.33	2.54	0.00	0.00	0.00
23.90	0.83	0.33	2.54	0.00	0.00	0.00
23.95	0.83	0.33	2.54	0.00	0.00	0.00
24.00	0.83	0.33	2.54	0.00	0.00	0.00
24.05	0.83	0.33	2.54	0.00	0.00	0.00
24.10	0.83	0.33	2.54	0.00	0.00	0.00
24.15	0.83	0.33	2.54	0.00	0.00	0.00
24.20	0.83	0.33	2.54	0.00	0.00	0.00
24.25	0.83	0.33	2.54	0.00	0.00	0.00
24.30	0.83	0.33	2.54	0.00	0.00	0.00
24.35	0.83	0.33	2.54	0.00	0.00	0.00
24.40	0.83	0.33	2.54	0.00	0.00	0.00
24.45	0.83	0.33	2.54	0.00	0.00	0.00
24.50	0.83	0.33	2.54	0.00	0.00	0.00
24.55	0.83	0.33	2.54	0.00	0.00	0.00
24.60	0.83	0.33	2.54	0.00	0.00	0.00
24.65	0.83	0.33	2.54	0.00	0.00	0.00
24.70	0.83	0.33	2.54	0.00	0.00	0.00
24.75	0.83	0.33	2.54	0.00	0.00	0.00
24.80	0.83	0.33	2.54	0.00	0.00	0.00
24.85	0.83	0.33	2.54	0.00	0.00	0.00
24.90	0.83	0.33	2.54	0.00	0.00	0.00
24.95	0.83	0.33	2.54	0.00	0.00	0.00
25.00	0.83	0.33	2.54	0.00	0.00	0.00
25.05	0.83	0.33	2.54	0.00	0.00	0.00
25.10	0.83	0.33	2.54	0.00	0.00	0.00
25.15	0.83	0.33	2.54	0.00	0.00	0.00
25.20	0.83	0.33	2.54	0.00	0.00	0.00
25.25	0.83	0.33	2.54	0.00	0.00	0.00
25.30	0.83	0.33	2.54	0.00	0.00	0.00
25.35	0.83	0.33	2.54	0.00	0.00	0.00
25.40	0.83	0.33	2.54	0.00	0.00	0.00
25.45	0.83	0.33	2.54	0.00	0.00	0.00
25.50	0.83	0.33	2.54	0.00	0.00	0.00
25.55	0.83	0.33	2.54	0.00	0.00	0.00
25.60	0.83	0.33	2.54	0.00	0.00	0.00
25.65	0.83	0.33	2.54	0.00	0.00	0.00
25.70	0.83	0.33	2.54	0.00	0.00	0.00
25.75	0.83	0.33	2.54	0.00	0.00	0.00
25.80	0.83	0.33	2.54	0.00	0.00	0.00
25.85	0.83	0.33	2.54	0.00	0.00	0.00
25.90	0.83	0.33	2.54	0.00	0.00	0.00
25.95	0.83	0.33	2.54	0.00	0.00	0.00
26.00	0.83	0.33	2.54	0.00	0.00	0.00
26.05	0.83	0.33	2.54	0.00	0.00	0.00
26.10	0.83	0.33	2.54	0.00	0.00	0.00
26.15	0.83	0.33	2.54	0.00	0.00	0.00
26.20	0.83	0.33	2.54	0.00	0.00	0.00
26.25	0.83	0.33	2.54	0.00	0.00	0.00
26.30	0.83	0.33	2.54	0.00	0.00	0.00
26.35	0.83	0.33	2.54	0.00	0.00	0.00
26.40	0.83	0.33	2.54	0.00	0.00	0.00
26.45	0.83	0.33	2.54	0.00	0.00	0.00
26.50	0.83	0.33	2.54	0.00	0.00	0.00
26.55	0.83	0.33	2.54	0.00	0.00	0.00
26.60	0.83	0.33	2.54	0.00	0.00	0.00
26.65	0.83	0.33	2.54	0.00	0.00	0.00
26.70	0.83	0.33	2.54	0.00	0.00	0.00
26.75	0.83	0.33	2.54	0.00	0.00	0.00
26.80	0.83	0.33	2.54	0.00	0.00	0.00

26.85	0.83	0.33	2.54	0.00	0.00	0.00
26.90	0.83	0.33	2.54	0.00	0.00	0.00
26.95	0.83	0.33	2.54	0.00	0.00	0.00
27.00	0.83	0.33	2.54	0.00	0.00	0.00
27.05	0.83	0.33	2.54	0.00	0.00	0.00
27.10	0.83	0.33	2.54	0.00	0.00	0.00
27.15	0.83	0.33	2.54	0.00	0.00	0.00
27.20	0.83	0.33	2.54	0.00	0.00	0.00
27.25	0.83	0.33	2.54	0.00	0.00	0.00
27.30	0.83	0.33	2.54	0.00	0.00	0.00
27.35	0.83	0.33	2.54	0.00	0.00	0.00
27.40	0.83	0.33	2.54	0.00	0.00	0.00
27.45	0.83	0.33	2.54	0.00	0.00	0.00
27.50	0.83	0.33	2.54	0.00	0.00	0.00
27.55	0.83	0.33	2.54	0.00	0.00	0.00
27.60	0.83	0.33	2.54	0.00	0.00	0.00
27.65	0.83	0.33	2.53	0.00	0.00	0.00
27.70	0.83	0.33	2.53	0.00	0.00	0.00
27.75	0.83	0.33	2.53	0.00	0.00	0.00
27.80	0.83	0.33	2.53	0.00	0.00	0.00
27.85	0.83	0.33	2.53	0.00	0.00	0.00
27.90	0.83	0.33	2.53	0.00	0.00	0.00
27.95	0.83	0.33	2.53	0.00	0.00	0.00
28.00	0.83	0.33	2.53	0.00	0.00	0.00
28.05	0.83	0.33	2.53	0.00	0.00	0.00
28.10	0.83	0.33	2.53	0.00	0.00	0.00
28.15	0.83	0.33	2.53	0.00	0.00	0.00
28.20	0.83	0.33	2.53	0.00	0.00	0.00
28.25	0.83	0.33	2.53	0.00	0.00	0.00
28.30	0.83	0.33	2.53	0.00	0.00	0.00
28.35	0.83	0.33	2.53	0.00	0.00	0.00
28.40	0.83	0.33	2.53	0.00	0.00	0.00
28.45	0.83	0.33	2.53	0.00	0.00	0.00
28.50	0.83	0.33	2.53	0.00	0.00	0.00
28.55	0.83	0.33	2.53	0.00	0.00	0.00
28.60	0.83	0.33	2.53	0.00	0.00	0.00
28.65	0.83	0.33	2.53	0.00	0.00	0.00
28.70	0.83	0.33	2.53	0.00	0.00	0.00
28.75	0.83	0.33	2.53	0.00	0.00	0.00
28.80	0.83	0.33	2.53	0.00	0.00	0.00
28.85	0.83	0.33	2.53	0.00	0.00	0.00
28.90	0.83	0.33	2.53	0.00	0.00	0.00
28.95	0.83	0.33	2.53	0.00	0.00	0.00
29.00	0.83	0.33	2.53	0.00	0.00	0.00
29.05	0.83	0.33	2.53	0.00	0.00	0.00
29.10	0.83	0.33	2.53	0.00	0.00	0.00
29.15	0.83	0.33	2.53	0.00	0.00	0.00
29.20	0.83	0.33	2.53	0.00	0.00	0.00
29.25	0.83	0.33	2.53	0.00	0.00	0.00
29.30	0.83	0.33	2.53	0.00	0.00	0.00
29.35	0.83	0.33	2.53	0.00	0.00	0.00
29.40	0.83	0.33	2.53	0.00	0.00	0.00
29.45	0.83	0.33	2.53	0.00	0.00	0.00
29.50	0.83	0.33	2.53	0.00	0.00	0.00
29.55	0.83	0.33	2.53	0.00	0.00	0.00
29.60	0.83	0.33	2.53	0.00	0.00	0.00
29.65	0.83	0.33	2.53	0.00	0.00	0.00
29.70	0.83	0.33	2.53	0.00	0.00	0.00
29.75	0.83	0.33	2.53	0.00	0.00	0.00
29.80	0.83	0.33	2.53	0.00	0.00	0.00
29.85	0.83	0.33	2.53	0.00	0.00	0.00
29.90	0.83	0.33	2.53	0.00	0.00	0.00
29.95	0.83	0.33	2.53	0.00	0.00	0.00
30.00	0.83	0.33	2.53	0.00	0.00	0.00
30.05	0.83	0.33	2.53	0.00	0.00	0.00
30.10	0.83	0.33	2.53	0.00	0.00	0.00
30.15	0.83	0.33	2.53	0.00	0.00	0.00
30.20	0.83	0.33	2.53	0.00	0.00	0.00
30.25	0.83	0.33	2.54	0.00	0.00	0.00
30.30	0.83	0.33	2.54	0.00	0.00	0.00
30.35	0.83	0.33	2.54	0.00	0.00	0.00

30.40	0.83	0.33	2.54	0.00	0.00	0.00
30.45	0.83	0.33	2.54	0.00	0.00	0.00
30.50	0.83	0.33	2.54	0.00	0.00	0.00
30.55	0.83	0.33	2.54	0.00	0.00	0.00
30.60	0.83	0.33	2.54	0.00	0.00	0.00
30.65	0.83	0.33	2.54	0.00	0.00	0.00
30.70	0.83	0.33	2.54	0.00	0.00	0.00
30.75	0.83	0.33	2.54	0.00	0.00	0.00
30.80	0.83	0.33	2.54	0.00	0.00	0.00
30.85	0.83	0.33	2.55	0.00	0.00	0.00
30.90	0.83	0.33	2.55	0.00	0.00	0.00
30.95	0.83	0.33	2.55	0.00	0.00	0.00
31.00	0.83	0.33	2.55	0.00	0.00	0.00
31.05	0.83	0.33	2.55	0.00	0.00	0.00
31.10	0.83	0.33	2.55	0.00	0.00	0.00
31.15	0.83	0.33	2.55	0.00	0.00	0.00
31.20	0.83	0.33	2.55	0.00	0.00	0.00
31.25	0.83	0.33	2.55	0.00	0.00	0.00
31.30	0.83	0.33	2.55	0.00	0.00	0.00
31.35	0.83	0.33	2.55	0.00	0.00	0.00
31.40	0.83	0.33	2.56	0.00	0.00	0.00
31.45	0.83	0.32	2.56	0.00	0.00	0.00
31.50	0.83	0.32	2.56	0.00	0.00	0.00
31.55	0.83	0.32	2.56	0.00	0.00	0.00
31.60	0.83	0.32	2.56	0.00	0.00	0.00
31.65	0.83	0.32	2.56	0.00	0.00	0.00
31.70	0.83	0.32	2.56	0.00	0.00	0.00
31.75	0.83	0.32	2.56	0.00	0.00	0.00
31.80	0.83	0.32	2.56	0.00	0.00	0.00
31.85	0.83	0.32	2.56	0.00	0.00	0.00
31.90	0.83	0.32	2.56	0.00	0.00	0.00
31.95	0.83	0.32	2.57	0.00	0.00	0.00
32.00	0.83	0.32	2.57	0.00	0.00	0.00
32.05	0.83	0.32	2.57	0.00	0.00	0.00
32.10	0.83	0.32	2.57	0.00	0.00	0.00
32.15	0.83	0.32	2.57	0.00	0.00	0.00
32.20	0.83	0.32	2.57	0.00	0.00	0.00
32.25	0.83	0.32	2.57	0.00	0.00	0.00
32.30	0.83	0.32	2.57	0.00	0.00	0.00
32.35	0.83	0.32	2.57	0.00	0.00	0.00
32.40	0.83	0.32	2.57	0.00	0.00	0.00
32.45	0.83	0.32	2.57	0.00	0.00	0.00
32.50	0.83	0.32	2.58	0.00	0.00	0.00
32.55	0.83	0.32	2.58	0.00	0.00	0.00
32.60	0.83	0.32	2.58	0.00	0.00	0.00
32.65	0.83	0.32	2.58	0.00	0.00	0.00
32.70	0.83	0.32	2.58	0.00	0.00	0.00
32.75	0.83	0.32	2.58	0.00	0.00	0.00
32.80	0.83	0.32	2.58	0.00	0.00	0.00
32.85	0.83	0.32	2.58	0.00	0.00	0.00
32.90	0.83	0.32	2.58	0.00	0.00	0.00
32.95	0.83	0.32	2.58	0.00	0.00	0.00
33.00	0.83	0.32	2.58	0.00	0.00	0.00
33.05	0.83	0.32	2.59	0.00	0.00	0.00
33.10	0.83	0.32	2.59	0.00	0.00	0.00
33.15	0.83	0.32	2.59	0.00	0.00	0.00
33.20	0.83	0.32	2.59	0.00	0.00	0.00
33.25	0.83	0.32	2.59	0.00	0.00	0.00
33.30	0.83	0.32	2.59	0.00	0.00	0.00
33.35	0.83	0.32	2.59	0.00	0.00	0.00
33.40	0.83	0.32	2.59	0.00	0.00	0.00
33.45	0.83	0.32	2.59	0.00	0.00	0.00
33.50	0.83	0.32	2.59	0.00	0.00	0.00
33.55	0.83	0.32	2.60	0.00	0.00	0.00
33.60	0.83	0.32	2.60	0.00	0.00	0.00
33.65	0.83	0.32	2.60	0.00	0.00	0.00
33.70	0.83	0.32	2.60	0.00	0.00	0.00
33.75	0.83	0.32	2.60	0.00	0.00	0.00
33.80	0.83	0.32	2.60	0.00	0.00	0.00
33.85	0.83	0.32	2.60	0.00	0.00	0.00
33.90	0.83	0.32	2.60	0.00	0.00	0.00

33.95	0.83	0.32	2.60	0.00	0.00	0.00
34.00	0.83	0.32	2.60	0.00	0.00	0.00
34.05	0.83	0.32	2.61	0.00	0.00	0.00
34.10	0.83	0.32	2.61	0.00	0.00	0.00
34.15	0.83	0.32	2.61	0.00	0.00	0.00
34.20	0.83	0.32	2.61	0.00	0.00	0.00
34.25	0.83	0.32	2.61	0.00	0.00	0.00
34.30	0.83	0.32	2.61	0.00	0.00	0.00
34.35	0.83	0.32	2.61	0.00	0.00	0.00
34.40	0.83	0.32	2.61	0.00	0.00	0.00
34.45	0.83	0.32	2.61	0.00	0.00	0.00
34.50	0.83	0.32	2.61	0.00	0.00	0.00
34.55	0.83	0.32	2.61	0.00	0.00	0.00
34.60	0.83	0.32	2.62	0.00	0.00	0.00
34.65	0.83	0.32	2.62	0.00	0.00	0.00
34.70	0.83	0.32	2.62	0.00	0.00	0.00
34.75	0.83	0.32	2.62	0.00	0.00	0.00
34.80	0.83	0.32	2.62	0.00	0.00	0.00
34.85	0.83	0.32	2.62	0.00	0.00	0.00
34.90	0.83	0.32	2.62	0.00	0.00	0.00
34.95	0.83	0.32	2.62	0.00	0.00	0.00
35.00	0.83	0.32	2.62	0.00	0.00	0.00
35.05	0.83	0.32	2.62	0.00	0.00	0.00
35.10	0.83	0.32	2.63	0.00	0.00	0.00
35.15	0.83	0.32	2.63	0.00	0.00	0.00
35.20	0.83	0.32	2.63	0.00	0.00	0.00
35.25	0.83	0.32	2.63	0.00	0.00	0.00
35.30	0.83	0.32	2.63	0.00	0.00	0.00
35.35	0.83	0.32	2.63	0.00	0.00	0.00
35.40	0.83	0.32	2.63	0.00	0.00	0.00
35.45	0.83	0.32	2.63	0.00	0.00	0.00
35.50	0.83	0.32	2.63	0.00	0.00	0.00
35.55	0.83	0.32	2.63	0.00	0.00	0.00
35.60	0.83	0.32	2.64	0.00	0.00	0.00
35.65	0.83	0.32	2.64	0.00	0.00	0.00
35.70	0.83	0.31	2.64	0.00	0.00	0.00
35.75	0.83	0.31	2.64	0.00	0.00	0.00
35.80	0.83	0.31	2.64	0.00	0.00	0.00
35.85	0.83	0.31	2.64	0.00	0.00	0.00
35.90	0.83	0.31	2.64	0.00	0.00	0.00
35.95	0.83	0.31	2.64	0.00	0.00	0.00
36.00	0.83	0.31	2.64	0.00	0.00	0.00
36.05	0.83	0.31	2.64	0.00	0.00	0.00
36.10	0.83	0.31	2.65	0.00	0.00	0.00
36.15	0.83	0.31	2.65	0.00	0.00	0.00
36.20	0.83	0.31	2.65	0.00	0.00	0.00
36.25	0.83	0.31	2.65	0.00	0.00	0.00
36.30	0.83	0.31	2.65	0.00	0.00	0.00
36.35	0.83	0.31	2.65	0.00	0.00	0.00
36.40	0.83	0.31	2.65	0.00	0.00	0.00
36.45	0.83	0.31	2.65	0.00	0.00	0.00
36.50	0.83	0.31	2.65	0.00	0.00	0.00
36.55	0.83	0.31	2.65	0.00	0.00	0.00
36.60	0.83	0.31	2.65	0.00	0.00	0.00
36.65	0.83	0.31	2.66	0.00	0.00	0.00
36.70	0.83	0.31	2.66	0.00	0.00	0.00
36.75	0.83	0.31	2.66	0.00	0.00	0.00
36.80	0.83	0.31	2.66	0.00	0.00	0.00
36.85	0.83	0.31	2.66	0.00	0.00	0.00
36.90	0.83	0.31	2.66	0.00	0.00	0.00
36.95	0.83	0.31	2.66	0.00	0.00	0.00
37.00	0.83	0.31	2.66	0.00	0.00	0.00
37.05	0.83	0.31	2.66	0.00	0.00	0.00
37.10	0.83	0.31	2.66	0.00	0.00	0.00
37.15	0.83	0.31	2.67	0.00	0.00	0.00
37.20	0.83	0.31	2.67	0.00	0.00	0.00
37.25	0.83	0.31	2.67	0.00	0.00	0.00
37.30	0.83	0.31	2.67	0.00	0.00	0.00
37.35	0.83	0.31	2.67	0.00	0.00	0.00
37.40	0.83	0.31	2.67	0.00	0.00	0.00
37.45	0.83	0.31	2.67	0.00	0.00	0.00

37.50	0.83	0.31	2.67	0.00	0.00	0.00
37.55	0.83	0.31	2.67	0.00	0.00	0.00
37.60	0.83	0.31	2.67	0.00	0.00	0.00
37.65	0.83	0.31	2.68	0.00	0.00	0.00
37.70	0.83	0.31	2.68	0.00	0.00	0.00
37.75	0.83	0.31	2.68	0.00	0.00	0.00
37.80	0.83	0.31	2.68	0.00	0.00	0.00
37.85	0.83	0.31	2.68	0.00	0.00	0.00
37.90	0.83	0.31	2.68	0.00	0.00	0.00
37.95	0.83	0.31	2.68	0.00	0.00	0.00
38.00	0.83	0.31	2.68	0.00	0.00	0.00
38.05	0.83	0.31	2.68	0.00	0.00	0.00
38.10	0.83	0.31	2.69	0.00	0.00	0.00
38.15	0.83	0.31	2.69	0.00	0.00	0.00
38.20	0.83	0.31	2.69	0.00	0.00	0.00
38.25	0.83	0.31	2.69	0.00	0.00	0.00
38.30	0.83	0.31	2.69	0.00	0.00	0.00
38.35	0.83	0.31	2.69	0.00	0.00	0.00
38.40	0.83	0.31	2.69	0.00	0.00	0.00
38.45	0.83	0.31	2.69	0.00	0.00	0.00
38.50	0.83	0.31	2.69	0.00	0.00	0.00
38.55	0.83	0.31	2.69	0.00	0.00	0.00
38.60	0.83	0.31	2.70	0.00	0.00	0.00
38.65	0.83	0.31	2.70	0.00	0.00	0.00
38.70	0.83	0.31	2.70	0.00	0.00	0.00
38.75	0.83	0.31	2.70	0.00	0.00	0.00
38.80	0.83	0.31	2.70	0.00	0.00	0.00
38.85	0.83	0.31	2.70	0.00	0.00	0.00
38.90	0.83	0.31	2.70	0.00	0.00	0.00
38.95	0.83	0.31	2.70	0.00	0.00	0.00
39.00	0.83	0.31	2.70	0.00	0.00	0.00
39.05	0.83	0.31	2.71	0.00	0.00	0.00
39.10	0.83	0.31	2.71	0.00	0.00	0.00
39.15	0.83	0.31	2.71	0.00	0.00	0.00
39.20	0.83	0.31	2.71	0.00	0.00	0.00
39.25	0.83	0.31	2.71	0.00	0.00	0.00
39.30	0.83	0.31	2.71	0.00	0.00	0.00
39.35	0.83	0.31	2.71	0.00	0.00	0.00
39.40	0.83	0.31	2.71	0.00	0.00	0.00
39.45	0.83	0.31	2.71	0.00	0.00	0.00
39.50	0.83	0.31	2.71	0.00	0.00	0.00
39.55	0.83	0.31	2.72	0.00	0.00	0.00
39.60	0.83	0.31	2.72	0.00	0.00	0.00
39.65	0.83	0.31	2.72	0.00	0.00	0.00
39.70	0.83	0.31	2.72	0.00	0.00	0.00
39.75	0.83	0.31	2.72	0.00	0.00	0.00
39.80	0.83	0.31	2.72	0.00	0.00	0.00
39.85	0.83	0.31	2.72	0.00	0.00	0.00
39.90	0.83	0.31	2.72	0.00	0.00	0.00
39.95	0.83	0.30	2.72	0.00	0.00	0.00
40.00	0.83	0.30	2.73	0.00	0.00	0.00
40.05	0.83	0.30	2.73	0.00	0.00	0.00
40.10	0.83	0.30	2.73	0.00	0.00	0.00
40.15	0.83	0.30	2.73	0.00	0.00	0.00
40.20	0.83	0.30	2.73	0.00	0.00	0.00
40.25	0.83	0.30	2.73	0.00	0.00	0.00
40.30	0.83	0.30	2.73	0.00	0.00	0.00
40.35	0.83	0.30	2.74	0.00	0.00	0.00
40.40	0.83	0.30	2.74	0.00	0.00	0.00
40.45	0.83	0.30	2.74	0.00	0.00	0.00
40.50	0.83	0.30	2.74	0.00	0.00	0.00
40.55	0.83	0.30	2.74	0.00	0.00	0.00
40.60	0.83	0.30	2.74	0.00	0.00	0.00
40.65	0.83	0.30	2.74	0.00	0.00	0.00
40.70	0.83	0.30	2.75	0.00	0.00	0.00
40.75	0.83	0.30	2.75	0.00	0.00	0.00
40.80	0.83	0.30	2.75	0.00	0.00	0.00
40.85	0.83	0.30	2.75	0.00	0.00	0.00
40.90	0.83	0.30	2.75	0.00	0.00	0.00
40.95	0.83	0.30	2.75	0.00	0.00	0.00
41.00	0.83	0.30	2.75	0.00	0.00	0.00

41.05	0.83	0.30	2.76	0.00	0.00	0.00
41.10	0.83	0.30	2.76	0.00	0.00	0.00
41.15	0.83	0.30	2.76	0.00	0.00	0.00
41.20	0.83	0.30	2.76	0.00	0.00	0.00
41.25	0.83	0.30	2.76	0.00	0.00	0.00
41.30	0.83	0.30	2.76	0.00	0.00	0.00
41.35	0.83	0.30	2.76	0.00	0.00	0.00
41.40	0.83	0.30	2.77	0.00	0.00	0.00
41.45	0.83	0.30	2.77	0.00	0.00	0.00
41.50	0.83	0.30	2.77	0.00	0.00	0.00
41.55	0.83	0.30	2.77	0.00	0.00	0.00
41.60	0.83	0.30	2.77	0.00	0.00	0.00
41.65	0.83	0.30	2.77	0.00	0.00	0.00
41.70	0.83	0.30	2.77	0.00	0.00	0.00
41.75	0.83	0.30	2.78	0.00	0.00	0.00
41.80	0.83	0.30	2.78	0.00	0.00	0.00
41.85	0.83	0.30	2.78	0.00	0.00	0.00
41.90	0.83	0.30	2.78	0.00	0.00	0.00
41.95	0.83	0.30	2.78	0.00	0.00	0.00
42.00	0.84	0.30	2.80	0.00	0.00	0.00
42.05	0.84	0.30	2.80	0.00	0.00	0.00
42.10	0.84	0.30	2.80	0.00	0.00	0.00
42.15	0.84	0.30	2.80	0.00	0.00	0.00
42.20	0.84	0.30	2.80	0.00	0.00	0.00
42.25	0.84	0.30	2.80	0.00	0.00	0.00
42.30	0.83	0.30	2.80	0.00	0.00	0.00
42.35	0.83	0.30	2.81	0.00	0.00	0.00
42.40	0.83	0.30	2.81	0.00	0.00	0.00
42.45	0.83	0.30	2.81	0.00	0.00	0.00
42.50	0.83	0.30	2.81	0.00	0.00	0.00
42.55	0.83	0.30	2.81	0.00	0.00	0.00
42.60	0.83	0.30	2.81	0.00	0.00	0.00
42.65	0.83	0.30	2.81	0.00	0.00	0.00
42.70	0.83	0.30	2.81	0.00	0.00	0.00
42.75	0.83	0.30	2.81	0.00	0.00	0.00
42.80	0.83	0.30	2.81	0.00	0.00	0.00
42.85	0.83	0.30	2.81	0.00	0.00	0.00
42.90	0.83	0.30	2.82	0.00	0.00	0.00
42.95	0.83	0.30	2.82	0.00	0.00	0.00
43.00	0.83	0.30	2.82	0.00	0.00	0.00
43.05	0.83	0.30	2.82	0.00	0.00	0.00
43.10	0.83	0.30	2.82	0.00	0.00	0.00
43.15	0.83	0.30	2.82	0.00	0.00	0.00
43.20	0.83	0.29	2.82	0.00	0.00	0.00
43.25	0.83	0.29	2.82	0.00	0.00	0.00
43.30	0.83	0.29	2.82	0.00	0.00	0.00
43.35	0.83	0.29	2.82	0.00	0.00	0.00
43.40	0.83	0.29	2.82	0.00	0.00	0.00
43.45	0.83	0.29	2.83	0.00	0.00	0.00
43.50	0.83	0.29	2.83	0.00	0.00	0.00
43.55	0.83	0.29	2.83	0.00	0.00	0.00
43.60	0.83	0.29	2.83	0.00	0.00	0.00
43.65	0.83	0.29	2.83	0.00	0.00	0.00
43.70	0.83	0.29	2.83	0.00	0.00	0.00
43.75	0.83	0.29	2.83	0.00	0.00	0.00
43.80	0.83	0.29	2.83	0.00	0.00	0.00
43.85	0.83	0.29	2.83	0.00	0.00	0.00
43.90	0.83	0.29	2.83	0.00	0.00	0.00
43.95	0.83	0.29	2.83	0.00	0.00	0.00
44.00	0.83	0.29	2.84	0.00	0.00	0.00
44.05	0.83	0.29	2.84	0.00	0.00	0.00
44.10	0.83	0.29	2.84	0.00	0.00	0.00
44.15	0.83	0.29	2.84	0.00	0.00	0.00
44.20	0.83	0.29	2.84	0.00	0.00	0.00
44.25	0.83	0.29	2.84	0.00	0.00	0.00
44.30	0.83	0.29	2.84	0.00	0.00	0.00
44.35	0.83	0.29	2.84	0.00	0.00	0.00
44.40	0.83	0.29	2.84	0.00	0.00	0.00
44.45	0.83	0.29	2.84	0.00	0.00	0.00
44.50	0.83	0.29	2.85	0.00	0.00	0.00
44.55	0.83	0.29	2.85	0.00	0.00	0.00

44.60	0.83	0.29	2.85	0.00	0.00	0.00
44.65	0.83	0.29	2.85	0.00	0.00	0.00
44.70	0.83	0.29	2.85	0.00	0.00	0.00
44.75	0.83	0.29	2.85	0.00	0.00	0.00
44.80	0.83	0.29	2.85	0.00	0.00	0.00
44.85	0.83	0.29	2.85	0.00	0.00	0.00
44.90	0.83	0.29	2.85	0.00	0.00	0.00
44.95	0.83	0.29	2.85	0.00	0.00	0.00
45.00	0.83	0.29	2.85	0.00	0.00	0.00
45.05	0.83	0.29	2.86	0.00	0.00	0.00
45.10	0.83	0.29	2.86	0.00	0.00	0.00
45.15	0.83	0.29	2.86	0.00	0.00	0.00
45.20	0.83	0.29	2.86	0.00	0.00	0.00
45.25	0.83	0.29	2.86	0.00	0.00	0.00
45.30	0.82	0.29	2.86	0.00	0.00	0.00
45.35	0.82	0.29	2.86	0.00	0.00	0.00
45.40	0.82	0.29	2.86	0.00	0.00	0.00
45.45	0.82	0.29	2.86	0.00	0.00	0.00
45.50	0.82	0.29	2.86	0.00	0.00	0.00
45.55	0.82	0.29	2.86	0.00	0.00	0.00
45.60	0.82	0.29	2.86	0.00	0.00	0.00
45.65	0.82	0.29	2.87	0.00	0.00	0.00
45.70	0.82	0.29	2.87	0.00	0.00	0.00
45.75	0.82	0.29	2.87	0.00	0.00	0.00
45.80	0.82	0.29	2.87	0.00	0.00	0.00
45.85	0.82	0.29	2.87	0.00	0.00	0.00
45.90	0.82	0.29	2.87	0.00	0.00	0.00
45.95	0.82	0.29	2.87	0.00	0.00	0.00
46.00	0.82	0.29	2.87	0.00	0.00	0.00
46.05	0.82	0.29	2.87	0.00	0.00	0.00
46.10	0.82	0.29	2.87	0.00	0.00	0.00
46.15	0.82	0.29	2.87	0.00	0.00	0.00
46.20	0.82	0.29	2.88	0.00	0.00	0.00
46.25	0.82	0.29	2.88	0.00	0.00	0.00
46.30	0.82	0.29	2.88	0.00	0.00	0.00
46.35	0.82	0.29	2.88	0.00	0.00	0.00
46.40	0.82	0.29	2.88	0.00	0.00	0.00
46.45	0.82	0.29	2.88	0.00	0.00	0.00
46.50	0.82	0.29	2.88	0.00	0.00	0.00
46.55	0.82	0.28	2.88	0.00	0.00	0.00
46.60	0.82	0.28	2.88	0.00	0.00	0.00
46.65	0.82	0.28	2.88	0.00	0.00	0.00
46.70	0.82	0.28	2.88	0.00	0.00	0.00
46.75	0.82	0.28	2.89	0.00	0.00	0.00
46.80	0.82	0.28	2.89	0.00	0.00	0.00
46.85	0.82	0.28	2.89	0.00	0.00	0.00
46.90	0.82	0.28	2.89	0.00	0.00	0.00
46.95	0.82	0.28	2.89	0.00	0.00	0.00
47.00	0.82	0.28	2.89	0.00	0.00	0.00
47.05	0.82	0.28	2.89	0.00	0.00	0.00
47.10	0.82	0.28	2.89	0.00	0.00	0.00
47.15	0.82	0.28	2.89	0.00	0.00	0.00
47.20	0.82	0.28	2.89	0.00	0.00	0.00
47.25	0.82	0.28	2.89	0.00	0.00	0.00
47.30	0.82	0.28	2.90	0.00	0.00	0.00
47.35	0.82	0.28	2.90	0.00	0.00	0.00
47.40	0.82	0.28	2.90	0.00	0.00	0.00
47.45	0.82	0.28	2.90	0.00	0.00	0.00
47.50	0.82	0.28	2.90	0.00	0.00	0.00
47.55	0.82	0.28	2.90	0.00	0.00	0.00
47.60	0.82	0.28	2.90	0.00	0.00	0.00
47.65	0.82	0.28	2.90	0.00	0.00	0.00
47.70	0.82	0.28	2.90	0.00	0.00	0.00
47.75	0.82	0.28	2.90	0.00	0.00	0.00
47.80	0.82	0.28	2.90	0.00	0.00	0.00
47.85	0.82	0.28	2.91	0.00	0.00	0.00
47.90	0.82	0.28	2.91	0.00	0.00	0.00
47.95	0.82	0.28	2.91	0.00	0.00	0.00
48.00	0.82	0.28	2.91	0.00	0.00	0.00
48.05	0.82	0.28	2.91	0.00	0.00	0.00
48.10	0.82	0.28	2.91	0.00	0.00	0.00

48.15	0.82	0.28	2.91	0.00	0.00	0.00
48.20	0.82	0.28	2.91	0.00	0.00	0.00
48.25	0.82	0.28	2.91	0.00	0.00	0.00
48.30	0.82	0.28	2.91	0.00	0.00	0.00
48.35	0.82	0.28	2.91	0.00	0.00	0.00
48.40	0.82	0.28	2.92	0.00	0.00	0.00
48.45	0.82	0.28	2.92	0.00	0.00	0.00
48.50	0.82	0.28	2.92	0.00	0.00	0.00
48.55	0.82	0.28	2.92	0.00	0.00	0.00
48.60	0.82	0.28	2.92	0.00	0.00	0.00
48.65	0.82	0.28	2.92	0.00	0.00	0.00
48.70	0.82	0.28	2.92	0.00	0.00	0.00
48.75	0.81	0.28	2.92	0.00	0.00	0.00
48.80	0.81	0.28	2.92	0.00	0.00	0.00
48.85	0.81	0.28	2.92	0.00	0.00	0.00
48.90	0.81	0.28	2.92	0.00	0.00	0.00
48.95	0.81	0.28	2.93	0.00	0.00	0.00
49.00	0.81	0.28	2.93	0.00	0.00	0.00
49.05	0.81	0.28	2.93	0.00	0.00	0.00
49.10	0.81	0.28	2.93	0.00	0.00	0.00
49.15	0.81	0.28	2.93	0.00	0.00	0.00
49.20	0.81	0.28	2.93	0.00	0.00	0.00
49.25	0.81	0.28	2.93	0.00	0.00	0.00
49.30	0.81	0.28	2.93	0.00	0.00	0.00
49.35	0.81	0.28	2.93	0.00	0.00	0.00
49.40	0.81	0.28	2.93	0.00	0.00	0.00
49.45	0.81	0.28	2.94	0.00	0.00	0.00
49.50	0.81	0.28	2.94	0.00	0.00	0.00
49.55	0.81	0.28	2.94	0.00	0.00	0.00
49.60	0.81	0.28	2.94	0.00	0.00	0.00
49.65	0.81	0.28	2.94	0.00	0.00	0.00
49.70	0.81	0.28	2.94	0.00	0.00	0.00
49.75	0.81	0.28	2.94	0.00	0.00	0.00
49.80	0.81	0.28	2.94	0.00	0.00	0.00
49.85	0.81	0.28	2.94	0.00	0.00	0.00
49.90	0.81	0.28	2.94	0.00	0.00	0.00
49.95	0.81	0.28	2.95	0.00	0.00	0.00
50.00	0.81	0.28	2.95	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

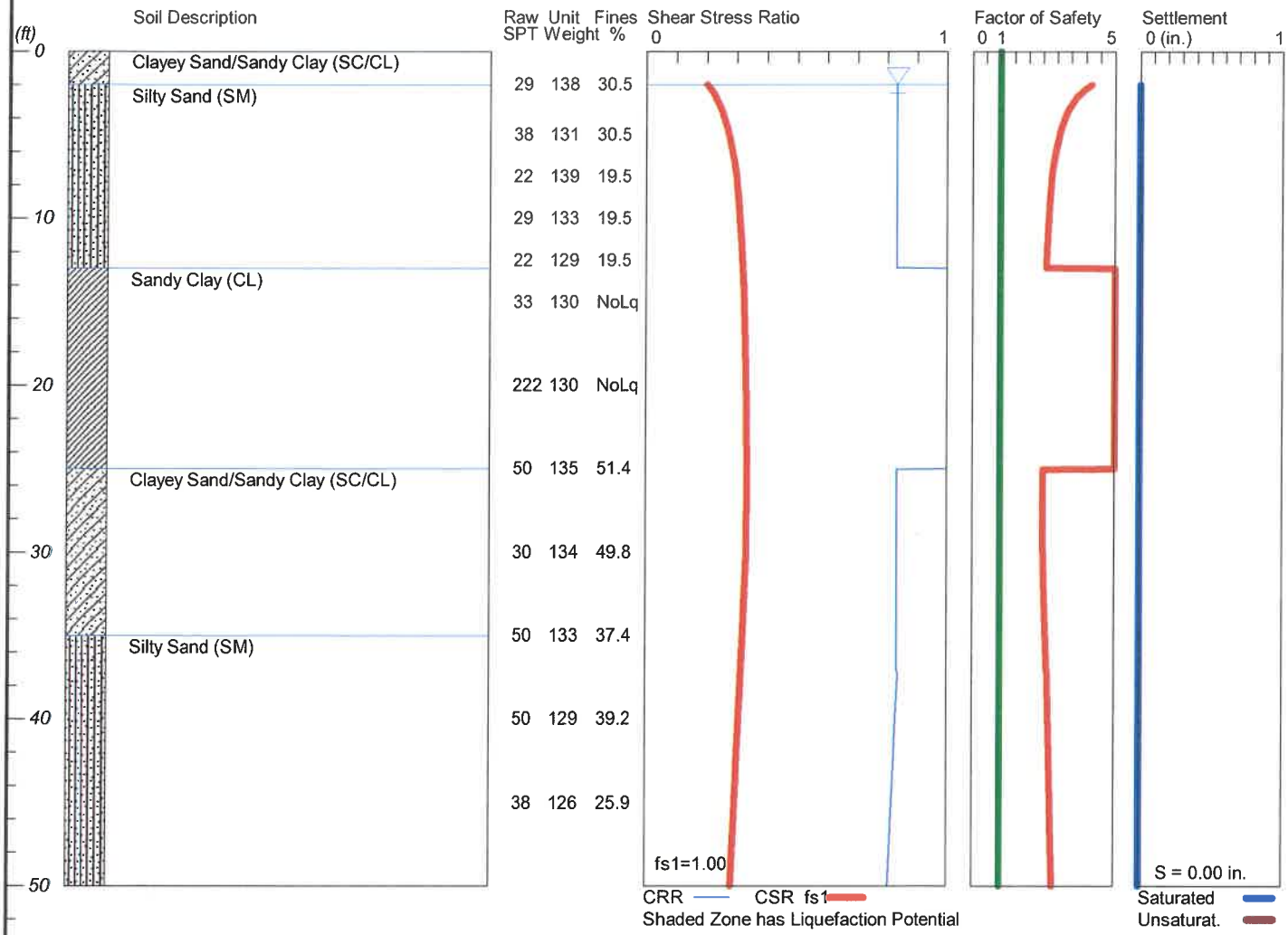
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Triangle Development

Hole No.=B20 Water Depth=2 ft

Magnitude=6.15
Acceleration=0.307g



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Krazan

012-22165

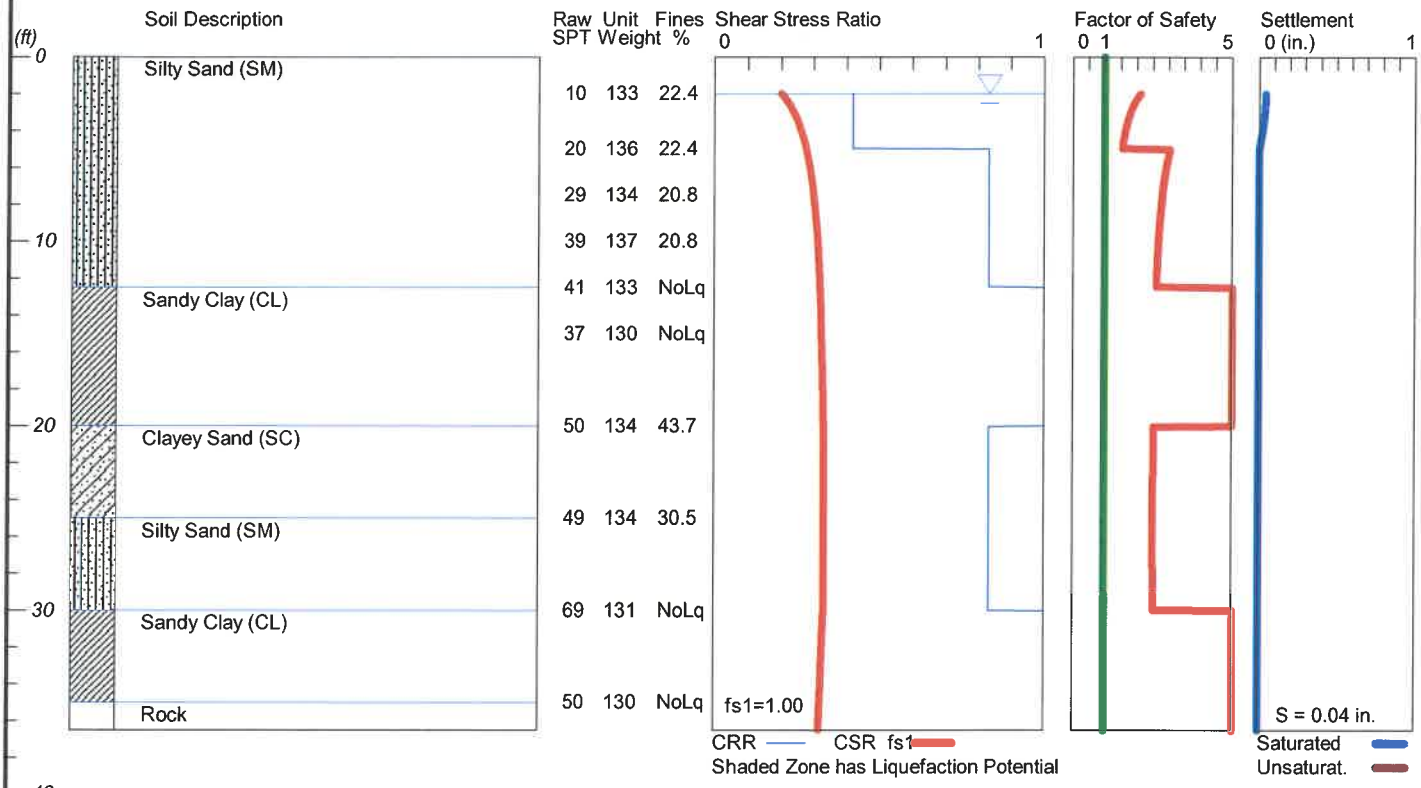
Plate A-1

LIQUEFACTION ANALYSIS

Triangle Development

Hole No.=B21 Water Depth=2 ft

Magnitude=6.15
Acceleration=0.307g



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Krazan

012-22165

Plate A-1

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*****************************************************************************************************
                                    LIQUEFACTION ANALYSIS SUMMARY
                                  Copyright by CivilTech Software
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      Font: Courier New, Regular, Size 8 is recommended for this report.
      Licensed to ,   8/9/2023        3:52:06 PM

      Input File Name: C:\Users\mweber\Documents\Krazan\Projects\012\22\165 Triangle Development\B21\B21
Liquefaction.liq
      Title:  Triangle Development
      Subtitle:  012-22165

      Surface Elev.=
      Hole No.=B21
      Depth of Hole= 36.50 ft
      Water Table during Earthquake= 2.00 ft
      Water Table during In-Situ Testing= 3.00 ft
      Max. Acceleration= 0.31 g
      Earthquake Magnitude= 6.15

 Input Data:
      Surface Elev.=
      Hole No.=B21
      Depth of Hole=36.50 ft
      Water Table during Earthquake= 2.00 ft
      Water Table during In-Situ Testing= 3.00 ft
      Max. Acceleration=0.31 g
      Earthquake Magnitude=6.15
      No-Liquefiable Soils:   CL, OL are Non-Liq. Soil

      1. SPT or BPT Calculation.
      2. Settlement Analysis Method: Ishihara / Yoshimine
      3. Fines Correction for Liquefaction: Stark/Olson et al.*
      4. Fine Correction for Settlement: During Liquefaction*
      5. Settlement Calculation in: All zones*
      6. Hammer Energy Ratio,                                    Ce = 1.4
      7. Borehole Diameter,                                          Cb= 1.05
      8. Sampling Method,                                           Cs= 1
      9. User request factor of safety (apply to CSR) ,   User= 1
         Plot one CSR curve (fs1=User)
      10. Use Curve Smoothing: No
      * Recommended Options

      In-Situ Test Data:
      Depth   SPT     gamma   Fines
      ft              pcf     %
      ____________________________________
      2.00    10.00   133.00  22.40
      5.00    20.00   136.00  22.40
      7.50    29.00   134.00  20.80
      10.00   39.00   137.00  20.80
      12.50   41.00   133.00  NoLiq
      15.00   37.00   130.00  NoLiq
      20.00   50.00   134.00  43.70
      25.00   49.00   134.00  30.50
      30.00   69.00   131.00  NoLiq
      35.00   50.00   130.00  NoLiq
      ____________________________________

Output Results:
      Settlement of Saturated Sands=0.04 in.
      Settlement of Unsaturated Sands=0.00 in.
      Total Settlement of Saturated and Unsaturated Sands=0.04 in.
      Differential Settlement=0.019 to 0.025 in.

      Depth   CRRm    CSRfs   F.S.    S_sat.  S_dry   S_all
      ft                              in.     in.     in.
      ____________________________________________________
      2.00    0.42    0.20    2.11    0.04    0.00    0.04
      2.05    0.42    0.20    2.08    0.04    0.00    0.04
```

2.10	0.42	0.20	2.06	0.04	0.00	0.04
2.15	0.42	0.21	2.04	0.04	0.00	0.04
2.20	0.42	0.21	2.02	0.04	0.00	0.04
2.25	0.42	0.21	2.00	0.04	0.00	0.04
2.30	0.42	0.21	1.98	0.04	0.00	0.04
2.35	0.42	0.21	1.96	0.04	0.00	0.04
2.40	0.42	0.22	1.95	0.04	0.00	0.04
2.45	0.42	0.22	1.93	0.04	0.00	0.04
2.50	0.42	0.22	1.91	0.04	0.00	0.04
2.55	0.42	0.22	1.90	0.04	0.00	0.04
2.60	0.42	0.22	1.88	0.04	0.00	0.04
2.65	0.42	0.22	1.87	0.04	0.00	0.04
2.70	0.42	0.23	1.85	0.04	0.00	0.04
2.75	0.42	0.23	1.84	0.04	0.00	0.04
2.80	0.42	0.23	1.83	0.04	0.00	0.04
2.85	0.42	0.23	1.82	0.04	0.00	0.04
2.90	0.42	0.23	1.81	0.04	0.00	0.04
2.95	0.42	0.23	1.79	0.03	0.00	0.03
3.00	0.42	0.23	1.78	0.03	0.00	0.03
3.05	0.42	0.24	1.77	0.03	0.00	0.03
3.10	0.42	0.24	1.76	0.03	0.00	0.03
3.15	0.42	0.24	1.75	0.03	0.00	0.03
3.20	0.42	0.24	1.74	0.03	0.00	0.03
3.25	0.42	0.24	1.73	0.03	0.00	0.03
3.30	0.42	0.24	1.72	0.03	0.00	0.03
3.35	0.42	0.24	1.72	0.03	0.00	0.03
3.40	0.42	0.25	1.71	0.03	0.00	0.03
3.45	0.42	0.25	1.70	0.03	0.00	0.03
3.50	0.42	0.25	1.69	0.03	0.00	0.03
3.55	0.42	0.25	1.68	0.03	0.00	0.03
3.60	0.42	0.25	1.67	0.03	0.00	0.03
3.65	0.42	0.25	1.67	0.03	0.00	0.03
3.70	0.42	0.25	1.66	0.02	0.00	0.02
3.75	0.42	0.25	1.65	0.02	0.00	0.02
3.80	0.42	0.25	1.65	0.02	0.00	0.02
3.85	0.42	0.26	1.64	0.02	0.00	0.02
3.90	0.42	0.26	1.63	0.02	0.00	0.02
3.95	0.42	0.26	1.63	0.02	0.00	0.02
4.00	0.42	0.26	1.62	0.02	0.00	0.02
4.05	0.42	0.26	1.62	0.02	0.00	0.02
4.10	0.42	0.26	1.61	0.02	0.00	0.02
4.15	0.42	0.26	1.60	0.02	0.00	0.02
4.20	0.42	0.26	1.60	0.02	0.00	0.02
4.25	0.42	0.26	1.59	0.02	0.00	0.02
4.30	0.42	0.26	1.59	0.01	0.00	0.01
4.35	0.42	0.26	1.58	0.01	0.00	0.01
4.40	0.42	0.27	1.58	0.01	0.00	0.01
4.45	0.42	0.27	1.57	0.01	0.00	0.01
4.50	0.42	0.27	1.57	0.01	0.00	0.01
4.55	0.42	0.27	1.56	0.01	0.00	0.01
4.60	0.42	0.27	1.56	0.01	0.00	0.01
4.65	0.42	0.27	1.55	0.01	0.00	0.01
4.70	0.42	0.27	1.55	0.01	0.00	0.01
4.75	0.42	0.27	1.55	0.01	0.00	0.01
4.80	0.42	0.27	1.54	0.00	0.00	0.00
4.85	0.42	0.27	1.54	0.00	0.00	0.00
4.90	0.42	0.27	1.53	0.00	0.00	0.00
4.95	0.42	0.27	1.53	0.00	0.00	0.00
5.00	0.83	0.27	3.03	0.00	0.00	0.00
5.05	0.83	0.28	3.02	0.00	0.00	0.00
5.10	0.83	0.28	3.01	0.00	0.00	0.00
5.15	0.83	0.28	3.01	0.00	0.00	0.00
5.20	0.83	0.28	3.00	0.00	0.00	0.00
5.25	0.83	0.28	2.99	0.00	0.00	0.00
5.30	0.83	0.28	2.99	0.00	0.00	0.00
5.35	0.83	0.28	2.98	0.00	0.00	0.00
5.40	0.83	0.28	2.97	0.00	0.00	0.00
5.45	0.83	0.28	2.97	0.00	0.00	0.00
5.50	0.83	0.28	2.96	0.00	0.00	0.00
5.55	0.83	0.28	2.95	0.00	0.00	0.00
5.60	0.83	0.28	2.95	0.00	0.00	0.00

5.65	0.83	0.28	2.94	0.00	0.00	0.00
5.70	0.83	0.28	2.94	0.00	0.00	0.00
5.75	0.83	0.28	2.93	0.00	0.00	0.00
5.80	0.83	0.28	2.93	0.00	0.00	0.00
5.85	0.83	0.28	2.92	0.00	0.00	0.00
5.90	0.83	0.28	2.92	0.00	0.00	0.00
5.95	0.83	0.29	2.91	0.00	0.00	0.00
6.00	0.83	0.29	2.91	0.00	0.00	0.00
6.05	0.83	0.29	2.90	0.00	0.00	0.00
6.10	0.83	0.29	2.90	0.00	0.00	0.00
6.15	0.83	0.29	2.89	0.00	0.00	0.00
6.20	0.83	0.29	2.89	0.00	0.00	0.00
6.25	0.83	0.29	2.88	0.00	0.00	0.00
6.30	0.83	0.29	2.88	0.00	0.00	0.00
6.35	0.83	0.29	2.87	0.00	0.00	0.00
6.40	0.83	0.29	2.87	0.00	0.00	0.00
6.45	0.83	0.29	2.87	0.00	0.00	0.00
6.50	0.83	0.29	2.86	0.00	0.00	0.00
6.55	0.83	0.29	2.86	0.00	0.00	0.00
6.60	0.83	0.29	2.85	0.00	0.00	0.00
6.65	0.83	0.29	2.85	0.00	0.00	0.00
6.70	0.83	0.29	2.85	0.00	0.00	0.00
6.75	0.83	0.29	2.84	0.00	0.00	0.00
6.80	0.83	0.29	2.84	0.00	0.00	0.00
6.85	0.83	0.29	2.83	0.00	0.00	0.00
6.90	0.83	0.29	2.83	0.00	0.00	0.00
6.95	0.83	0.29	2.83	0.00	0.00	0.00
7.00	0.83	0.29	2.82	0.00	0.00	0.00
7.05	0.83	0.29	2.82	0.00	0.00	0.00
7.10	0.83	0.30	2.82	0.00	0.00	0.00
7.15	0.83	0.30	2.81	0.00	0.00	0.00
7.20	0.83	0.30	2.81	0.00	0.00	0.00
7.25	0.83	0.30	2.81	0.00	0.00	0.00
7.30	0.83	0.30	2.80	0.00	0.00	0.00
7.35	0.83	0.30	2.80	0.00	0.00	0.00
7.40	0.83	0.30	2.80	0.00	0.00	0.00
7.45	0.83	0.30	2.79	0.00	0.00	0.00
7.50	0.83	0.30	2.79	0.00	0.00	0.00
7.55	0.83	0.30	2.79	0.00	0.00	0.00
7.60	0.83	0.30	2.78	0.00	0.00	0.00
7.65	0.83	0.30	2.78	0.00	0.00	0.00
7.70	0.83	0.30	2.78	0.00	0.00	0.00
7.75	0.83	0.30	2.77	0.00	0.00	0.00
7.80	0.83	0.30	2.77	0.00	0.00	0.00
7.85	0.83	0.30	2.77	0.00	0.00	0.00
7.90	0.83	0.30	2.77	0.00	0.00	0.00
7.95	0.83	0.30	2.76	0.00	0.00	0.00
8.00	0.83	0.30	2.76	0.00	0.00	0.00
8.05	0.83	0.30	2.76	0.00	0.00	0.00
8.10	0.83	0.30	2.76	0.00	0.00	0.00
8.15	0.83	0.30	2.75	0.00	0.00	0.00
8.20	0.83	0.30	2.75	0.00	0.00	0.00
8.25	0.83	0.30	2.75	0.00	0.00	0.00
8.30	0.83	0.30	2.74	0.00	0.00	0.00
8.35	0.83	0.30	2.74	0.00	0.00	0.00
8.40	0.83	0.30	2.74	0.00	0.00	0.00
8.45	0.83	0.30	2.74	0.00	0.00	0.00
8.50	0.83	0.30	2.73	0.00	0.00	0.00
8.55	0.83	0.30	2.73	0.00	0.00	0.00
8.60	0.83	0.30	2.73	0.00	0.00	0.00
8.65	0.83	0.30	2.73	0.00	0.00	0.00
8.70	0.83	0.30	2.73	0.00	0.00	0.00
8.75	0.83	0.31	2.72	0.00	0.00	0.00
8.80	0.83	0.31	2.72	0.00	0.00	0.00
8.85	0.83	0.31	2.72	0.00	0.00	0.00
8.90	0.83	0.31	2.72	0.00	0.00	0.00
8.95	0.83	0.31	2.71	0.00	0.00	0.00
9.00	0.83	0.31	2.71	0.00	0.00	0.00
9.05	0.83	0.31	2.71	0.00	0.00	0.00
9.10	0.83	0.31	2.71	0.00	0.00	0.00
9.15	0.83	0.31	2.71	0.00	0.00	0.00

9.20	0.83	0.31	2.70	0.00	0.00	0.00
9.25	0.83	0.31	2.70	0.00	0.00	0.00
9.30	0.83	0.31	2.70	0.00	0.00	0.00
9.35	0.83	0.31	2.70	0.00	0.00	0.00
9.40	0.83	0.31	2.70	0.00	0.00	0.00
9.45	0.83	0.31	2.69	0.00	0.00	0.00
9.50	0.83	0.31	2.69	0.00	0.00	0.00
9.55	0.83	0.31	2.69	0.00	0.00	0.00
9.60	0.83	0.31	2.69	0.00	0.00	0.00
9.65	0.83	0.31	2.69	0.00	0.00	0.00
9.70	0.83	0.31	2.68	0.00	0.00	0.00
9.75	0.83	0.31	2.68	0.00	0.00	0.00
9.80	0.83	0.31	2.68	0.00	0.00	0.00
9.85	0.83	0.31	2.68	0.00	0.00	0.00
9.90	0.83	0.31	2.68	0.00	0.00	0.00
9.95	0.83	0.31	2.68	0.00	0.00	0.00
10.00	0.83	0.31	2.67	0.00	0.00	0.00
10.05	0.83	0.31	2.67	0.00	0.00	0.00
10.10	0.83	0.31	2.67	0.00	0.00	0.00
10.15	0.83	0.31	2.67	0.00	0.00	0.00
10.20	0.83	0.31	2.67	0.00	0.00	0.00
10.25	0.83	0.31	2.67	0.00	0.00	0.00
10.30	0.83	0.31	2.67	0.00	0.00	0.00
10.35	0.83	0.31	2.66	0.00	0.00	0.00
10.40	0.83	0.31	2.66	0.00	0.00	0.00
10.45	0.83	0.31	2.66	0.00	0.00	0.00
10.50	0.83	0.31	2.66	0.00	0.00	0.00
10.55	0.83	0.31	2.66	0.00	0.00	0.00
10.60	0.83	0.31	2.66	0.00	0.00	0.00
10.65	0.83	0.31	2.66	0.00	0.00	0.00
10.70	0.83	0.31	2.66	0.00	0.00	0.00
10.75	0.83	0.31	2.65	0.00	0.00	0.00
10.80	0.83	0.31	2.65	0.00	0.00	0.00
10.85	0.83	0.31	2.65	0.00	0.00	0.00
10.90	0.83	0.31	2.65	0.00	0.00	0.00
10.95	0.83	0.31	2.65	0.00	0.00	0.00
11.00	0.83	0.31	2.65	0.00	0.00	0.00
11.05	0.83	0.31	2.65	0.00	0.00	0.00
11.10	0.83	0.31	2.65	0.00	0.00	0.00
11.15	0.83	0.31	2.64	0.00	0.00	0.00
11.20	0.83	0.31	2.64	0.00	0.00	0.00
11.25	0.83	0.31	2.64	0.00	0.00	0.00
11.30	0.83	0.31	2.64	0.00	0.00	0.00
11.35	0.83	0.31	2.64	0.00	0.00	0.00
11.40	0.83	0.31	2.64	0.00	0.00	0.00
11.45	0.83	0.31	2.64	0.00	0.00	0.00
11.50	0.83	0.32	2.64	0.00	0.00	0.00
11.55	0.83	0.32	2.64	0.00	0.00	0.00
11.60	0.83	0.32	2.63	0.00	0.00	0.00
11.65	0.83	0.32	2.63	0.00	0.00	0.00
11.70	0.83	0.32	2.63	0.00	0.00	0.00
11.75	0.83	0.32	2.63	0.00	0.00	0.00
11.80	0.83	0.32	2.63	0.00	0.00	0.00
11.85	0.83	0.32	2.63	0.00	0.00	0.00
11.90	0.83	0.32	2.63	0.00	0.00	0.00
11.95	0.83	0.32	2.63	0.00	0.00	0.00
12.00	0.83	0.32	2.63	0.00	0.00	0.00
12.05	0.83	0.32	2.63	0.00	0.00	0.00
12.10	0.83	0.32	2.63	0.00	0.00	0.00
12.15	0.83	0.32	2.62	0.00	0.00	0.00
12.20	0.83	0.32	2.62	0.00	0.00	0.00
12.25	0.83	0.32	2.62	0.00	0.00	0.00
12.30	0.83	0.32	2.62	0.00	0.00	0.00
12.35	0.83	0.32	2.62	0.00	0.00	0.00
12.40	0.83	0.32	2.62	0.00	0.00	0.00
12.45	0.83	0.32	2.62	0.00	0.00	0.00
12.50	2.00	0.32	5.00	0.00	0.00	0.00
12.55	2.00	0.32	5.00	0.00	0.00	0.00
12.60	2.00	0.32	5.00	0.00	0.00	0.00
12.65	2.00	0.32	5.00	0.00	0.00	0.00
12.70	2.00	0.32	5.00	0.00	0.00	0.00

12.75	2.00	0.32	5.00	0.00	0.00	0.00
12.80	2.00	0.32	5.00	0.00	0.00	0.00
12.85	2.00	0.32	5.00	0.00	0.00	0.00
12.90	2.00	0.32	5.00	0.00	0.00	0.00
12.95	2.00	0.32	5.00	0.00	0.00	0.00
13.00	2.00	0.32	5.00	0.00	0.00	0.00
13.05	2.00	0.32	5.00	0.00	0.00	0.00
13.10	2.00	0.32	5.00	0.00	0.00	0.00
13.15	2.00	0.32	5.00	0.00	0.00	0.00
13.20	2.00	0.32	5.00	0.00	0.00	0.00
13.25	2.00	0.32	5.00	0.00	0.00	0.00
13.30	2.00	0.32	5.00	0.00	0.00	0.00
13.35	2.00	0.32	5.00	0.00	0.00	0.00
13.40	2.00	0.32	5.00	0.00	0.00	0.00
13.45	2.00	0.32	5.00	0.00	0.00	0.00
13.50	2.00	0.32	5.00	0.00	0.00	0.00
13.55	2.00	0.32	5.00	0.00	0.00	0.00
13.60	2.00	0.32	5.00	0.00	0.00	0.00
13.65	2.00	0.32	5.00	0.00	0.00	0.00
13.70	2.00	0.32	5.00	0.00	0.00	0.00
13.75	2.00	0.32	5.00	0.00	0.00	0.00
13.80	2.00	0.32	5.00	0.00	0.00	0.00
13.85	2.00	0.32	5.00	0.00	0.00	0.00
13.90	2.00	0.32	5.00	0.00	0.00	0.00
13.95	2.00	0.32	5.00	0.00	0.00	0.00
14.00	2.00	0.32	5.00	0.00	0.00	0.00
14.05	2.00	0.32	5.00	0.00	0.00	0.00
14.10	2.00	0.32	5.00	0.00	0.00	0.00
14.15	2.00	0.32	5.00	0.00	0.00	0.00
14.20	2.00	0.32	5.00	0.00	0.00	0.00
14.25	2.00	0.32	5.00	0.00	0.00	0.00
14.30	2.00	0.32	5.00	0.00	0.00	0.00
14.35	2.00	0.32	5.00	0.00	0.00	0.00
14.40	2.00	0.32	5.00	0.00	0.00	0.00
14.45	2.00	0.32	5.00	0.00	0.00	0.00
14.50	2.00	0.32	5.00	0.00	0.00	0.00
14.55	2.00	0.32	5.00	0.00	0.00	0.00
14.60	2.00	0.32	5.00	0.00	0.00	0.00
14.65	2.00	0.32	5.00	0.00	0.00	0.00
14.70	2.00	0.32	5.00	0.00	0.00	0.00
14.75	2.00	0.32	5.00	0.00	0.00	0.00
14.80	2.00	0.32	5.00	0.00	0.00	0.00
14.85	2.00	0.32	5.00	0.00	0.00	0.00
14.90	2.00	0.32	5.00	0.00	0.00	0.00
14.95	2.00	0.32	5.00	0.00	0.00	0.00
15.00	2.00	0.32	5.00	0.00	0.00	0.00
15.05	2.00	0.32	5.00	0.00	0.00	0.00
15.10	2.00	0.32	5.00	0.00	0.00	0.00
15.15	2.00	0.32	5.00	0.00	0.00	0.00
15.20	2.00	0.32	5.00	0.00	0.00	0.00
15.25	2.00	0.32	5.00	0.00	0.00	0.00
15.30	2.00	0.32	5.00	0.00	0.00	0.00
15.35	2.00	0.32	5.00	0.00	0.00	0.00
15.40	2.00	0.32	5.00	0.00	0.00	0.00
15.45	2.00	0.32	5.00	0.00	0.00	0.00
15.50	2.00	0.32	5.00	0.00	0.00	0.00
15.55	2.00	0.32	5.00	0.00	0.00	0.00
15.60	2.00	0.32	5.00	0.00	0.00	0.00
15.65	2.00	0.32	5.00	0.00	0.00	0.00
15.70	2.00	0.32	5.00	0.00	0.00	0.00
15.75	2.00	0.32	5.00	0.00	0.00	0.00
15.80	2.00	0.32	5.00	0.00	0.00	0.00
15.85	2.00	0.32	5.00	0.00	0.00	0.00
15.90	2.00	0.32	5.00	0.00	0.00	0.00
15.95	2.00	0.32	5.00	0.00	0.00	0.00
16.00	2.00	0.32	5.00	0.00	0.00	0.00
16.05	2.00	0.32	5.00	0.00	0.00	0.00
16.10	2.00	0.32	5.00	0.00	0.00	0.00
16.15	2.00	0.32	5.00	0.00	0.00	0.00
16.20	2.00	0.32	5.00	0.00	0.00	0.00
16.25	2.00	0.32	5.00	0.00	0.00	0.00

16.30	2.00	0.32	5.00	0.00	0.00	0.00
16.35	2.00	0.32	5.00	0.00	0.00	0.00
16.40	2.00	0.32	5.00	0.00	0.00	0.00
16.45	2.00	0.32	5.00	0.00	0.00	0.00
16.50	2.00	0.32	5.00	0.00	0.00	0.00
16.55	2.00	0.32	5.00	0.00	0.00	0.00
16.60	2.00	0.33	5.00	0.00	0.00	0.00
16.65	2.00	0.33	5.00	0.00	0.00	0.00
16.70	2.00	0.33	5.00	0.00	0.00	0.00
16.75	2.00	0.33	5.00	0.00	0.00	0.00
16.80	2.00	0.33	5.00	0.00	0.00	0.00
16.85	2.00	0.33	5.00	0.00	0.00	0.00
16.90	2.00	0.33	5.00	0.00	0.00	0.00
16.95	2.00	0.33	5.00	0.00	0.00	0.00
17.00	2.00	0.33	5.00	0.00	0.00	0.00
17.05	2.00	0.33	5.00	0.00	0.00	0.00
17.10	2.00	0.33	5.00	0.00	0.00	0.00
17.15	2.00	0.33	5.00	0.00	0.00	0.00
17.20	2.00	0.33	5.00	0.00	0.00	0.00
17.25	2.00	0.33	5.00	0.00	0.00	0.00
17.30	2.00	0.33	5.00	0.00	0.00	0.00
17.35	2.00	0.33	5.00	0.00	0.00	0.00
17.40	2.00	0.33	5.00	0.00	0.00	0.00
17.45	2.00	0.33	5.00	0.00	0.00	0.00
17.50	2.00	0.33	5.00	0.00	0.00	0.00
17.55	2.00	0.33	5.00	0.00	0.00	0.00
17.60	2.00	0.33	5.00	0.00	0.00	0.00
17.65	2.00	0.33	5.00	0.00	0.00	0.00
17.70	2.00	0.33	5.00	0.00	0.00	0.00
17.75	2.00	0.33	5.00	0.00	0.00	0.00
17.80	2.00	0.33	5.00	0.00	0.00	0.00
17.85	2.00	0.33	5.00	0.00	0.00	0.00
17.90	2.00	0.33	5.00	0.00	0.00	0.00
17.95	2.00	0.33	5.00	0.00	0.00	0.00
18.00	2.00	0.33	5.00	0.00	0.00	0.00
18.05	2.00	0.33	5.00	0.00	0.00	0.00
18.10	2.00	0.33	5.00	0.00	0.00	0.00
18.15	2.00	0.33	5.00	0.00	0.00	0.00
18.20	2.00	0.33	5.00	0.00	0.00	0.00
18.25	2.00	0.33	5.00	0.00	0.00	0.00
18.30	2.00	0.33	5.00	0.00	0.00	0.00
18.35	2.00	0.33	5.00	0.00	0.00	0.00
18.40	2.00	0.33	5.00	0.00	0.00	0.00
18.45	2.00	0.33	5.00	0.00	0.00	0.00
18.50	2.00	0.33	5.00	0.00	0.00	0.00
18.55	2.00	0.33	5.00	0.00	0.00	0.00
18.60	2.00	0.33	5.00	0.00	0.00	0.00
18.65	2.00	0.33	5.00	0.00	0.00	0.00
18.70	2.00	0.33	5.00	0.00	0.00	0.00
18.75	2.00	0.33	5.00	0.00	0.00	0.00
18.80	2.00	0.33	5.00	0.00	0.00	0.00
18.85	2.00	0.33	5.00	0.00	0.00	0.00
18.90	2.00	0.33	5.00	0.00	0.00	0.00
18.95	2.00	0.33	5.00	0.00	0.00	0.00
19.00	2.00	0.33	5.00	0.00	0.00	0.00
19.05	2.00	0.33	5.00	0.00	0.00	0.00
19.10	2.00	0.33	5.00	0.00	0.00	0.00
19.15	2.00	0.33	5.00	0.00	0.00	0.00
19.20	2.00	0.33	5.00	0.00	0.00	0.00
19.25	2.00	0.33	5.00	0.00	0.00	0.00
19.30	2.00	0.33	5.00	0.00	0.00	0.00
19.35	2.00	0.33	5.00	0.00	0.00	0.00
19.40	2.00	0.33	5.00	0.00	0.00	0.00
19.45	2.00	0.33	5.00	0.00	0.00	0.00
19.50	2.00	0.33	5.00	0.00	0.00	0.00
19.55	2.00	0.33	5.00	0.00	0.00	0.00
19.60	2.00	0.33	5.00	0.00	0.00	0.00
19.65	2.00	0.33	5.00	0.00	0.00	0.00
19.70	2.00	0.33	5.00	0.00	0.00	0.00
19.75	2.00	0.33	5.00	0.00	0.00	0.00
19.80	2.00	0.33	5.00	0.00	0.00	0.00

19.85	2.00	0.33	5.00	0.00	0.00	0.00
19.90	2.00	0.33	5.00	0.00	0.00	0.00
19.95	2.00	0.33	5.00	0.00	0.00	0.00
20.00	2.00	0.33	5.00	0.00	0.00	0.00
20.05	0.83	0.33	2.53	0.00	0.00	0.00
20.10	0.83	0.33	2.53	0.00	0.00	0.00
20.15	0.83	0.33	2.53	0.00	0.00	0.00
20.20	0.83	0.33	2.53	0.00	0.00	0.00
20.25	0.83	0.33	2.53	0.00	0.00	0.00
20.30	0.83	0.33	2.53	0.00	0.00	0.00
20.35	0.83	0.33	2.52	0.00	0.00	0.00
20.40	0.83	0.33	2.52	0.00	0.00	0.00
20.45	0.83	0.33	2.52	0.00	0.00	0.00
20.50	0.83	0.33	2.52	0.00	0.00	0.00
20.55	0.83	0.33	2.52	0.00	0.00	0.00
20.60	0.83	0.33	2.52	0.00	0.00	0.00
20.65	0.83	0.33	2.52	0.00	0.00	0.00
20.70	0.83	0.33	2.52	0.00	0.00	0.00
20.75	0.83	0.33	2.52	0.00	0.00	0.00
20.80	0.83	0.33	2.52	0.00	0.00	0.00
20.85	0.83	0.33	2.52	0.00	0.00	0.00
20.90	0.83	0.33	2.52	0.00	0.00	0.00
20.95	0.83	0.33	2.52	0.00	0.00	0.00
21.00	0.83	0.33	2.52	0.00	0.00	0.00
21.05	0.83	0.33	2.52	0.00	0.00	0.00
21.10	0.83	0.33	2.52	0.00	0.00	0.00
21.15	0.83	0.33	2.52	0.00	0.00	0.00
21.20	0.83	0.33	2.52	0.00	0.00	0.00
21.25	0.83	0.33	2.52	0.00	0.00	0.00
21.30	0.83	0.33	2.52	0.00	0.00	0.00
21.35	0.83	0.33	2.52	0.00	0.00	0.00
21.40	0.83	0.33	2.52	0.00	0.00	0.00
21.45	0.83	0.33	2.52	0.00	0.00	0.00
21.50	0.83	0.33	2.52	0.00	0.00	0.00
21.55	0.83	0.33	2.52	0.00	0.00	0.00
21.60	0.83	0.33	2.52	0.00	0.00	0.00
21.65	0.83	0.33	2.52	0.00	0.00	0.00
21.70	0.83	0.33	2.52	0.00	0.00	0.00
21.75	0.83	0.33	2.52	0.00	0.00	0.00
21.80	0.83	0.33	2.52	0.00	0.00	0.00
21.85	0.83	0.33	2.52	0.00	0.00	0.00
21.90	0.83	0.33	2.52	0.00	0.00	0.00
21.95	0.83	0.33	2.52	0.00	0.00	0.00
22.00	0.83	0.33	2.52	0.00	0.00	0.00
22.05	0.83	0.33	2.52	0.00	0.00	0.00
22.10	0.83	0.33	2.52	0.00	0.00	0.00
22.15	0.83	0.33	2.52	0.00	0.00	0.00
22.20	0.83	0.33	2.52	0.00	0.00	0.00
22.25	0.83	0.33	2.52	0.00	0.00	0.00
22.30	0.83	0.33	2.52	0.00	0.00	0.00
22.35	0.83	0.33	2.52	0.00	0.00	0.00
22.40	0.83	0.33	2.52	0.00	0.00	0.00
22.45	0.83	0.33	2.52	0.00	0.00	0.00
22.50	0.83	0.33	2.52	0.00	0.00	0.00
22.55	0.83	0.33	2.52	0.00	0.00	0.00
22.60	0.83	0.33	2.52	0.00	0.00	0.00
22.65	0.83	0.33	2.52	0.00	0.00	0.00
22.70	0.83	0.33	2.52	0.00	0.00	0.00
22.75	0.83	0.33	2.52	0.00	0.00	0.00
22.80	0.83	0.33	2.52	0.00	0.00	0.00
22.85	0.83	0.33	2.52	0.00	0.00	0.00
22.90	0.83	0.33	2.52	0.00	0.00	0.00
22.95	0.83	0.33	2.52	0.00	0.00	0.00
23.00	0.83	0.33	2.52	0.00	0.00	0.00
23.05	0.83	0.33	2.52	0.00	0.00	0.00
23.10	0.83	0.33	2.52	0.00	0.00	0.00
23.15	0.83	0.33	2.52	0.00	0.00	0.00
23.20	0.83	0.33	2.52	0.00	0.00	0.00
23.25	0.83	0.33	2.52	0.00	0.00	0.00
23.30	0.83	0.33	2.52	0.00	0.00	0.00
23.35	0.83	0.33	2.52	0.00	0.00	0.00

23.40	0.83	0.33	2.52	0.00	0.00	0.00
23.45	0.83	0.33	2.52	0.00	0.00	0.00
23.50	0.83	0.33	2.52	0.00	0.00	0.00
23.55	0.83	0.33	2.52	0.00	0.00	0.00
23.60	0.83	0.33	2.52	0.00	0.00	0.00
23.65	0.83	0.33	2.52	0.00	0.00	0.00
23.70	0.83	0.33	2.52	0.00	0.00	0.00
23.75	0.83	0.33	2.52	0.00	0.00	0.00
23.80	0.83	0.33	2.52	0.00	0.00	0.00
23.85	0.83	0.33	2.52	0.00	0.00	0.00
23.90	0.83	0.33	2.52	0.00	0.00	0.00
23.95	0.83	0.33	2.52	0.00	0.00	0.00
24.00	0.83	0.33	2.52	0.00	0.00	0.00
24.05	0.83	0.33	2.52	0.00	0.00	0.00
24.10	0.83	0.33	2.52	0.00	0.00	0.00
24.15	0.83	0.33	2.52	0.00	0.00	0.00
24.20	0.83	0.33	2.52	0.00	0.00	0.00
24.25	0.83	0.33	2.52	0.00	0.00	0.00
24.30	0.83	0.33	2.52	0.00	0.00	0.00
24.35	0.83	0.33	2.52	0.00	0.00	0.00
24.40	0.83	0.33	2.52	0.00	0.00	0.00
24.45	0.83	0.33	2.52	0.00	0.00	0.00
24.50	0.83	0.33	2.52	0.00	0.00	0.00
24.55	0.83	0.33	2.52	0.00	0.00	0.00
24.60	0.83	0.33	2.52	0.00	0.00	0.00
24.65	0.83	0.33	2.52	0.00	0.00	0.00
24.70	0.83	0.33	2.52	0.00	0.00	0.00
24.75	0.83	0.33	2.52	0.00	0.00	0.00
24.80	0.83	0.33	2.52	0.00	0.00	0.00
24.85	0.83	0.33	2.52	0.00	0.00	0.00
24.90	0.83	0.33	2.52	0.00	0.00	0.00
24.95	0.83	0.33	2.52	0.00	0.00	0.00
25.00	0.83	0.33	2.52	0.00	0.00	0.00
25.05	0.83	0.33	2.52	0.00	0.00	0.00
25.10	0.83	0.33	2.52	0.00	0.00	0.00
25.15	0.83	0.33	2.52	0.00	0.00	0.00
25.20	0.83	0.33	2.52	0.00	0.00	0.00
25.25	0.83	0.33	2.52	0.00	0.00	0.00
25.30	0.83	0.33	2.52	0.00	0.00	0.00
25.35	0.83	0.33	2.52	0.00	0.00	0.00
25.40	0.83	0.33	2.52	0.00	0.00	0.00
25.45	0.83	0.33	2.52	0.00	0.00	0.00
25.50	0.83	0.33	2.52	0.00	0.00	0.00
25.55	0.83	0.33	2.52	0.00	0.00	0.00
25.60	0.83	0.33	2.52	0.00	0.00	0.00
25.65	0.83	0.33	2.52	0.00	0.00	0.00
25.70	0.83	0.33	2.52	0.00	0.00	0.00
25.75	0.83	0.33	2.52	0.00	0.00	0.00
25.80	0.83	0.33	2.52	0.00	0.00	0.00
25.85	0.83	0.33	2.52	0.00	0.00	0.00
25.90	0.83	0.33	2.52	0.00	0.00	0.00
25.95	0.83	0.33	2.52	0.00	0.00	0.00
26.00	0.83	0.33	2.52	0.00	0.00	0.00
26.05	0.83	0.33	2.52	0.00	0.00	0.00
26.10	0.83	0.33	2.52	0.00	0.00	0.00
26.15	0.83	0.33	2.52	0.00	0.00	0.00
26.20	0.83	0.33	2.52	0.00	0.00	0.00
26.25	0.83	0.33	2.52	0.00	0.00	0.00
26.30	0.83	0.33	2.52	0.00	0.00	0.00
26.35	0.83	0.33	2.52	0.00	0.00	0.00
26.40	0.83	0.33	2.52	0.00	0.00	0.00
26.45	0.83	0.33	2.52	0.00	0.00	0.00
26.50	0.83	0.33	2.52	0.00	0.00	0.00
26.55	0.83	0.33	2.52	0.00	0.00	0.00
26.60	0.83	0.33	2.52	0.00	0.00	0.00
26.65	0.83	0.33	2.52	0.00	0.00	0.00
26.70	0.83	0.33	2.52	0.00	0.00	0.00
26.75	0.83	0.33	2.52	0.00	0.00	0.00
26.80	0.83	0.33	2.52	0.00	0.00	0.00
26.85	0.83	0.33	2.52	0.00	0.00	0.00
26.90	0.83	0.33	2.52	0.00	0.00	0.00

26.95	0.83	0.33	2.52	0.00	0.00	0.00
27.00	0.83	0.33	2.52	0.00	0.00	0.00
27.05	0.83	0.33	2.52	0.00	0.00	0.00
27.10	0.83	0.33	2.52	0.00	0.00	0.00
27.15	0.83	0.33	2.52	0.00	0.00	0.00
27.20	0.83	0.33	2.52	0.00	0.00	0.00
27.25	0.83	0.33	2.52	0.00	0.00	0.00
27.30	0.83	0.33	2.52	0.00	0.00	0.00
27.35	0.83	0.33	2.52	0.00	0.00	0.00
27.40	0.83	0.33	2.52	0.00	0.00	0.00
27.45	0.83	0.33	2.52	0.00	0.00	0.00
27.50	0.83	0.33	2.52	0.00	0.00	0.00
27.55	0.83	0.33	2.52	0.00	0.00	0.00
27.60	0.83	0.33	2.52	0.00	0.00	0.00
27.65	0.83	0.33	2.52	0.00	0.00	0.00
27.70	0.83	0.33	2.52	0.00	0.00	0.00
27.75	0.83	0.33	2.52	0.00	0.00	0.00
27.80	0.83	0.33	2.52	0.00	0.00	0.00
27.85	0.83	0.33	2.52	0.00	0.00	0.00
27.90	0.83	0.33	2.52	0.00	0.00	0.00
27.95	0.83	0.33	2.52	0.00	0.00	0.00
28.00	0.83	0.33	2.52	0.00	0.00	0.00
28.05	0.83	0.33	2.52	0.00	0.00	0.00
28.10	0.83	0.33	2.52	0.00	0.00	0.00
28.15	0.83	0.33	2.52	0.00	0.00	0.00
28.20	0.83	0.33	2.52	0.00	0.00	0.00
28.25	0.83	0.33	2.52	0.00	0.00	0.00
28.30	0.83	0.33	2.52	0.00	0.00	0.00
28.35	0.83	0.33	2.52	0.00	0.00	0.00
28.40	0.83	0.33	2.52	0.00	0.00	0.00
28.45	0.83	0.33	2.52	0.00	0.00	0.00
28.50	0.83	0.33	2.52	0.00	0.00	0.00
28.55	0.83	0.33	2.52	0.00	0.00	0.00
28.60	0.83	0.33	2.52	0.00	0.00	0.00
28.65	0.83	0.33	2.52	0.00	0.00	0.00
28.70	0.83	0.33	2.52	0.00	0.00	0.00
28.75	0.83	0.33	2.52	0.00	0.00	0.00
28.80	0.83	0.33	2.52	0.00	0.00	0.00
28.85	0.83	0.33	2.52	0.00	0.00	0.00
28.90	0.83	0.33	2.52	0.00	0.00	0.00
28.95	0.83	0.33	2.52	0.00	0.00	0.00
29.00	0.83	0.33	2.52	0.00	0.00	0.00
29.05	0.83	0.33	2.52	0.00	0.00	0.00
29.10	0.83	0.33	2.52	0.00	0.00	0.00
29.15	0.83	0.33	2.52	0.00	0.00	0.00
29.20	0.83	0.33	2.52	0.00	0.00	0.00
29.25	0.83	0.33	2.52	0.00	0.00	0.00
29.30	0.83	0.33	2.52	0.00	0.00	0.00
29.35	0.83	0.33	2.52	0.00	0.00	0.00
29.40	0.83	0.33	2.52	0.00	0.00	0.00
29.45	0.83	0.33	2.52	0.00	0.00	0.00
29.50	0.83	0.33	2.52	0.00	0.00	0.00
29.55	0.83	0.33	2.52	0.00	0.00	0.00
29.60	0.83	0.33	2.52	0.00	0.00	0.00
29.65	0.83	0.33	2.52	0.00	0.00	0.00
29.70	0.83	0.33	2.52	0.00	0.00	0.00
29.75	0.83	0.33	2.52	0.00	0.00	0.00
29.80	0.83	0.33	2.52	0.00	0.00	0.00
29.85	0.83	0.33	2.52	0.00	0.00	0.00
29.90	0.83	0.33	2.52	0.00	0.00	0.00
29.95	0.83	0.33	2.52	0.00	0.00	0.00
30.00	0.83	0.33	2.52	0.00	0.00	0.00
30.05	2.00	0.33	5.00	0.00	0.00	0.00
30.10	2.00	0.33	5.00	0.00	0.00	0.00
30.15	2.00	0.33	5.00	0.00	0.00	0.00
30.20	2.00	0.33	5.00	0.00	0.00	0.00
30.25	2.00	0.33	5.00	0.00	0.00	0.00
30.30	2.00	0.33	5.00	0.00	0.00	0.00
30.35	2.00	0.33	5.00	0.00	0.00	0.00
30.40	2.00	0.33	5.00	0.00	0.00	0.00
30.45	2.00	0.33	5.00	0.00	0.00	0.00

30.50	2.00	0.33	5.00	0.00	0.00	0.00
30.55	2.00	0.33	5.00	0.00	0.00	0.00
30.60	2.00	0.33	5.00	0.00	0.00	0.00
30.65	2.00	0.33	5.00	0.00	0.00	0.00
30.70	2.00	0.33	5.00	0.00	0.00	0.00
30.75	2.00	0.33	5.00	0.00	0.00	0.00
30.80	2.00	0.33	5.00	0.00	0.00	0.00
30.85	2.00	0.33	5.00	0.00	0.00	0.00
30.90	2.00	0.33	5.00	0.00	0.00	0.00
30.95	2.00	0.33	5.00	0.00	0.00	0.00
31.00	2.00	0.33	5.00	0.00	0.00	0.00
31.05	2.00	0.33	5.00	0.00	0.00	0.00
31.10	2.00	0.33	5.00	0.00	0.00	0.00
31.15	2.00	0.33	5.00	0.00	0.00	0.00
31.20	2.00	0.33	5.00	0.00	0.00	0.00
31.25	2.00	0.33	5.00	0.00	0.00	0.00
31.30	2.00	0.33	5.00	0.00	0.00	0.00
31.35	2.00	0.33	5.00	0.00	0.00	0.00
31.40	2.00	0.33	5.00	0.00	0.00	0.00
31.45	2.00	0.33	5.00	0.00	0.00	0.00
31.50	2.00	0.33	5.00	0.00	0.00	0.00
31.55	2.00	0.33	5.00	0.00	0.00	0.00
31.60	2.00	0.33	5.00	0.00	0.00	0.00
31.65	2.00	0.33	5.00	0.00	0.00	0.00
31.70	2.00	0.33	5.00	0.00	0.00	0.00
31.75	2.00	0.33	5.00	0.00	0.00	0.00
31.80	2.00	0.33	5.00	0.00	0.00	0.00
31.85	2.00	0.33	5.00	0.00	0.00	0.00
31.90	2.00	0.33	5.00	0.00	0.00	0.00
31.95	2.00	0.32	5.00	0.00	0.00	0.00
32.00	2.00	0.32	5.00	0.00	0.00	0.00
32.05	2.00	0.32	5.00	0.00	0.00	0.00
32.10	2.00	0.32	5.00	0.00	0.00	0.00
32.15	2.00	0.32	5.00	0.00	0.00	0.00
32.20	2.00	0.32	5.00	0.00	0.00	0.00
32.25	2.00	0.32	5.00	0.00	0.00	0.00
32.30	2.00	0.32	5.00	0.00	0.00	0.00
32.35	2.00	0.32	5.00	0.00	0.00	0.00
32.40	2.00	0.32	5.00	0.00	0.00	0.00
32.45	2.00	0.32	5.00	0.00	0.00	0.00
32.50	2.00	0.32	5.00	0.00	0.00	0.00
32.55	2.00	0.32	5.00	0.00	0.00	0.00
32.60	2.00	0.32	5.00	0.00	0.00	0.00
32.65	2.00	0.32	5.00	0.00	0.00	0.00
32.70	2.00	0.32	5.00	0.00	0.00	0.00
32.75	2.00	0.32	5.00	0.00	0.00	0.00
32.80	2.00	0.32	5.00	0.00	0.00	0.00
32.85	2.00	0.32	5.00	0.00	0.00	0.00
32.90	2.00	0.32	5.00	0.00	0.00	0.00
32.95	2.00	0.32	5.00	0.00	0.00	0.00
33.00	2.00	0.32	5.00	0.00	0.00	0.00
33.05	2.00	0.32	5.00	0.00	0.00	0.00
33.10	2.00	0.32	5.00	0.00	0.00	0.00
33.15	2.00	0.32	5.00	0.00	0.00	0.00
33.20	2.00	0.32	5.00	0.00	0.00	0.00
33.25	2.00	0.32	5.00	0.00	0.00	0.00
33.30	2.00	0.32	5.00	0.00	0.00	0.00
33.35	2.00	0.32	5.00	0.00	0.00	0.00
33.40	2.00	0.32	5.00	0.00	0.00	0.00
33.45	2.00	0.32	5.00	0.00	0.00	0.00
33.50	2.00	0.32	5.00	0.00	0.00	0.00
33.55	2.00	0.32	5.00	0.00	0.00	0.00
33.60	2.00	0.32	5.00	0.00	0.00	0.00
33.65	2.00	0.32	5.00	0.00	0.00	0.00
33.70	2.00	0.32	5.00	0.00	0.00	0.00
33.75	2.00	0.32	5.00	0.00	0.00	0.00
33.80	2.00	0.32	5.00	0.00	0.00	0.00
33.85	2.00	0.32	5.00	0.00	0.00	0.00
33.90	2.00	0.32	5.00	0.00	0.00	0.00
33.95	2.00	0.32	5.00	0.00	0.00	0.00
34.00	2.00	0.32	5.00	0.00	0.00	0.00

34.05	2.00	0.32	5.00	0.00	0.00	0.00
34.10	2.00	0.32	5.00	0.00	0.00	0.00
34.15	2.00	0.32	5.00	0.00	0.00	0.00
34.20	2.00	0.32	5.00	0.00	0.00	0.00
34.25	2.00	0.32	5.00	0.00	0.00	0.00
34.30	2.00	0.32	5.00	0.00	0.00	0.00
34.35	2.00	0.32	5.00	0.00	0.00	0.00
34.40	2.00	0.32	5.00	0.00	0.00	0.00
34.45	2.00	0.32	5.00	0.00	0.00	0.00
34.50	2.00	0.32	5.00	0.00	0.00	0.00
34.55	2.00	0.32	5.00	0.00	0.00	0.00
34.60	2.00	0.32	5.00	0.00	0.00	0.00
34.65	2.00	0.32	5.00	0.00	0.00	0.00
34.70	2.00	0.32	5.00	0.00	0.00	0.00
34.75	2.00	0.32	5.00	0.00	0.00	0.00
34.80	2.00	0.32	5.00	0.00	0.00	0.00
34.85	2.00	0.32	5.00	0.00	0.00	0.00
34.90	2.00	0.32	5.00	0.00	0.00	0.00
34.95	2.00	0.32	5.00	0.00	0.00	0.00
35.00	2.00	0.32	5.00	0.00	0.00	0.00
35.05	2.00	0.32	5.00	0.00	0.00	0.00
35.10	2.00	0.32	5.00	0.00	0.00	0.00
35.15	2.00	0.32	5.00	0.00	0.00	0.00
35.20	2.00	0.32	5.00	0.00	0.00	0.00
35.25	2.00	0.32	5.00	0.00	0.00	0.00
35.30	2.00	0.32	5.00	0.00	0.00	0.00
35.35	2.00	0.32	5.00	0.00	0.00	0.00
35.40	2.00	0.32	5.00	0.00	0.00	0.00
35.45	2.00	0.32	5.00	0.00	0.00	0.00
35.50	2.00	0.32	5.00	0.00	0.00	0.00
35.55	2.00	0.32	5.00	0.00	0.00	0.00
35.60	2.00	0.32	5.00	0.00	0.00	0.00
35.65	2.00	0.32	5.00	0.00	0.00	0.00
35.70	2.00	0.32	5.00	0.00	0.00	0.00
35.75	2.00	0.32	5.00	0.00	0.00	0.00
35.80	2.00	0.32	5.00	0.00	0.00	0.00
35.85	2.00	0.32	5.00	0.00	0.00	0.00
35.90	2.00	0.32	5.00	0.00	0.00	0.00
35.95	2.00	0.32	5.00	0.00	0.00	0.00
36.00	2.00	0.32	5.00	0.00	0.00	0.00
36.05	2.00	0.32	5.00	0.00	0.00	0.00
36.10	2.00	0.32	5.00	0.00	0.00	0.00
36.15	2.00	0.32	5.00	0.00	0.00	0.00
36.20	2.00	0.32	5.00	0.00	0.00	0.00
36.25	2.00	0.32	5.00	0.00	0.00	0.00
36.30	2.00	0.31	5.00	0.00	0.00	0.00
36.35	2.00	0.31	5.00	0.00	0.00	0.00
36.40	2.00	0.31	5.00	0.00	0.00	0.00
36.45	2.00	0.31	5.00	0.00	0.00	0.00
36.50	2.00	0.31	5.00	0.00	0.00	0.00

---

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

---

1 atm (atmosphere) = 1 tsf (ton/ft2)

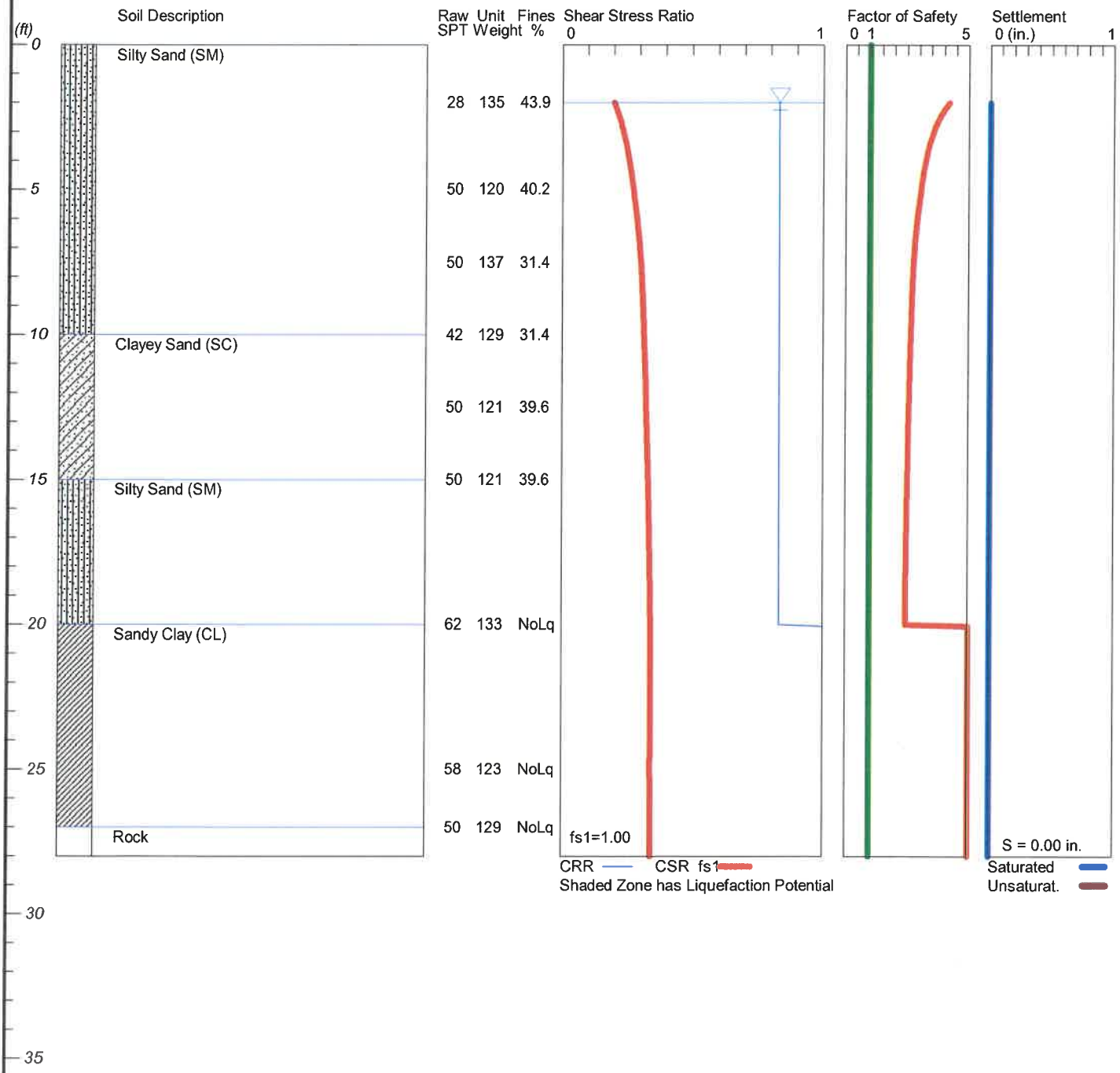
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Triangle Development

Hole No.=B22 Water Depth=2 ft

Magnitude=6.15
Acceleration=0.307g



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                                    LIQUEFACTION ANALYSIS SUMMARY
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      Font: Courier New, Regular, Size 8 is recommended for this report.
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      Input File Name: C:\Users\mweber\Documents\Krazan\Projects\012\22\165 Triangle Development\B22\B22
Liquefaction.liq
      Title:  Triangle Development
      Subtitle:  012-22165

      Surface Elev.=
      Hole No.=B22
      Depth of Hole= 28.00 ft
      Water Table during Earthquake= 2.00 ft
      Water Table during In-Situ Testing= 4.00 ft
      Max. Acceleration= 0.31 g
      Earthquake Magnitude= 6.15

 Input Data:
      Surface Elev.=
      Hole No.=B22
      Depth of Hole=28.00 ft
      Water Table during Earthquake= 2.00 ft
      Water Table during In-Situ Testing= 4.00 ft
      Max. Acceleration=0.31 g
      Earthquake Magnitude=6.15
      No-Liquefiable Soils:   CL, OL are Non-Liq. Soil

      1. SPT or BPT Calculation.
      2. Settlement Analysis Method: Ishihara / Yoshimine
      3. Fines Correction for Liquefaction: Stark/Olson et al.*
      4. Fine Correction for Settlement: During Liquefaction*
      5. Settlement Calculation in: All zones*
      6. Hammer Energy Ratio,                                    Ce = 1.4
      7. Borehole Diameter,                                          Cb= 1.05
      8. Sampling Method,                                           Cs= 1
      9. User request factor of safety (apply to CSR) ,   User= 1
         Plot one CSR curve (fs1=User)
      10. Use Curve Smoothing: No
      * Recommended Options

      In-Situ Test Data:
      Depth   SPT     gamma   Fines
      ft              pcf     %
      ____________________________________
      2.00    28.00   135.00  43.90
      5.00    50.00   120.00  40.20
      7.50    50.00   137.00  31.40
      10.00   42.00   129.00  31.40
      12.50   50.00   121.00  39.60
      15.00   50.00   121.00  39.60
      20.00   62.00   133.00  NoLiq
      25.00   58.00   123.00  NoLiq
      27.00   50.00   129.00  NoLiq
      ____________________________________

Output Results:
      Settlement of Saturated Sands=0.00 in.
      Settlement of Unsaturated Sands=0.00 in.
      Total Settlement of Saturated and Unsaturated Sands=0.00 in.
      Differential Settlement=0.000 to 0.000 in.

      Depth   CRRm    CSRfs   F.S.    S_sat.  S_dry   S_all
      ft                              in.     in.     in.
      ____________________________________________________
      2.00    0.83    0.20    4.18    0.00    0.00    0.00
      2.05    0.83    0.20    4.14    0.00    0.00    0.00
      2.10    0.83    0.20    4.09    0.00    0.00    0.00
```

2.15	0.83	0.21	4.05	0.00	0.00	0.00
2.20	0.83	0.21	4.01	0.00	0.00	0.00
2.25	0.83	0.21	3.97	0.00	0.00	0.00
2.30	0.83	0.21	3.93	0.00	0.00	0.00
2.35	0.83	0.21	3.90	0.00	0.00	0.00
2.40	0.83	0.21	3.86	0.00	0.00	0.00
2.45	0.83	0.22	3.83	0.00	0.00	0.00
2.50	0.83	0.22	3.80	0.00	0.00	0.00
2.55	0.83	0.22	3.77	0.00	0.00	0.00
2.60	0.83	0.22	3.74	0.00	0.00	0.00
2.65	0.83	0.22	3.71	0.00	0.00	0.00
2.70	0.83	0.23	3.69	0.00	0.00	0.00
2.75	0.83	0.23	3.66	0.00	0.00	0.00
2.80	0.83	0.23	3.64	0.00	0.00	0.00
2.85	0.83	0.23	3.61	0.00	0.00	0.00
2.90	0.83	0.23	3.59	0.00	0.00	0.00
2.95	0.83	0.23	3.57	0.00	0.00	0.00
3.00	0.83	0.23	3.55	0.00	0.00	0.00
3.05	0.83	0.24	3.53	0.00	0.00	0.00
3.10	0.83	0.24	3.51	0.00	0.00	0.00
3.15	0.83	0.24	3.49	0.00	0.00	0.00
3.20	0.83	0.24	3.47	0.00	0.00	0.00
3.25	0.83	0.24	3.45	0.00	0.00	0.00
3.30	0.83	0.24	3.43	0.00	0.00	0.00
3.35	0.83	0.24	3.41	0.00	0.00	0.00
3.40	0.83	0.24	3.40	0.00	0.00	0.00
3.45	0.83	0.25	3.38	0.00	0.00	0.00
3.50	0.83	0.25	3.37	0.00	0.00	0.00
3.55	0.83	0.25	3.35	0.00	0.00	0.00
3.60	0.83	0.25	3.34	0.00	0.00	0.00
3.65	0.83	0.25	3.32	0.00	0.00	0.00
3.70	0.83	0.25	3.31	0.00	0.00	0.00
3.75	0.83	0.25	3.29	0.00	0.00	0.00
3.80	0.83	0.25	3.28	0.00	0.00	0.00
3.85	0.83	0.25	3.27	0.00	0.00	0.00
3.90	0.83	0.26	3.26	0.00	0.00	0.00
3.95	0.83	0.26	3.24	0.00	0.00	0.00
4.00	0.83	0.26	3.23	0.00	0.00	0.00
4.05	0.83	0.26	3.22	0.00	0.00	0.00
4.10	0.83	0.26	3.21	0.00	0.00	0.00
4.15	0.83	0.26	3.20	0.00	0.00	0.00
4.20	0.83	0.26	3.19	0.00	0.00	0.00
4.25	0.83	0.26	3.18	0.00	0.00	0.00
4.30	0.83	0.26	3.17	0.00	0.00	0.00
4.35	0.83	0.26	3.16	0.00	0.00	0.00
4.40	0.83	0.26	3.15	0.00	0.00	0.00
4.45	0.83	0.26	3.14	0.00	0.00	0.00
4.50	0.83	0.27	3.13	0.00	0.00	0.00
4.55	0.83	0.27	3.12	0.00	0.00	0.00
4.60	0.83	0.27	3.11	0.00	0.00	0.00
4.65	0.83	0.27	3.10	0.00	0.00	0.00
4.70	0.83	0.27	3.09	0.00	0.00	0.00
4.75	0.83	0.27	3.08	0.00	0.00	0.00
4.80	0.83	0.27	3.07	0.00	0.00	0.00
4.85	0.83	0.27	3.07	0.00	0.00	0.00
4.90	0.83	0.27	3.06	0.00	0.00	0.00
4.95	0.83	0.27	3.05	0.00	0.00	0.00
5.00	0.83	0.27	3.04	0.00	0.00	0.00
5.05	0.83	0.27	3.04	0.00	0.00	0.00
5.10	0.83	0.27	3.03	0.00	0.00	0.00
5.15	0.83	0.28	3.02	0.00	0.00	0.00
5.20	0.83	0.28	3.01	0.00	0.00	0.00
5.25	0.83	0.28	3.00	0.00	0.00	0.00
5.30	0.83	0.28	2.99	0.00	0.00	0.00
5.35	0.83	0.28	2.99	0.00	0.00	0.00
5.40	0.83	0.28	2.98	0.00	0.00	0.00
5.45	0.83	0.28	2.97	0.00	0.00	0.00
5.50	0.83	0.28	2.96	0.00	0.00	0.00
5.55	0.83	0.28	2.96	0.00	0.00	0.00
5.60	0.83	0.28	2.95	0.00	0.00	0.00
5.65	0.83	0.28	2.94	0.00	0.00	0.00

5.70	0.83	0.28	2.94	0.00	0.00	0.00
5.75	0.83	0.28	2.93	0.00	0.00	0.00
5.80	0.83	0.28	2.92	0.00	0.00	0.00
5.85	0.83	0.28	2.92	0.00	0.00	0.00
5.90	0.83	0.29	2.91	0.00	0.00	0.00
5.95	0.83	0.29	2.90	0.00	0.00	0.00
6.00	0.83	0.29	2.90	0.00	0.00	0.00
6.05	0.83	0.29	2.89	0.00	0.00	0.00
6.10	0.83	0.29	2.88	0.00	0.00	0.00
6.15	0.83	0.29	2.88	0.00	0.00	0.00
6.20	0.83	0.29	2.87	0.00	0.00	0.00
6.25	0.83	0.29	2.87	0.00	0.00	0.00
6.30	0.83	0.29	2.86	0.00	0.00	0.00
6.35	0.83	0.29	2.86	0.00	0.00	0.00
6.40	0.83	0.29	2.85	0.00	0.00	0.00
6.45	0.83	0.29	2.84	0.00	0.00	0.00
6.50	0.83	0.29	2.84	0.00	0.00	0.00
6.55	0.83	0.29	2.83	0.00	0.00	0.00
6.60	0.83	0.29	2.83	0.00	0.00	0.00
6.65	0.83	0.29	2.82	0.00	0.00	0.00
6.70	0.83	0.29	2.82	0.00	0.00	0.00
6.75	0.83	0.30	2.81	0.00	0.00	0.00
6.80	0.83	0.30	2.81	0.00	0.00	0.00
6.85	0.83	0.30	2.80	0.00	0.00	0.00
6.90	0.83	0.30	2.80	0.00	0.00	0.00
6.95	0.83	0.30	2.79	0.00	0.00	0.00
7.00	0.83	0.30	2.79	0.00	0.00	0.00
7.05	0.83	0.30	2.78	0.00	0.00	0.00
7.10	0.83	0.30	2.78	0.00	0.00	0.00
7.15	0.83	0.30	2.78	0.00	0.00	0.00
7.20	0.83	0.30	2.77	0.00	0.00	0.00
7.25	0.83	0.30	2.77	0.00	0.00	0.00
7.30	0.83	0.30	2.76	0.00	0.00	0.00
7.35	0.83	0.30	2.76	0.00	0.00	0.00
7.40	0.83	0.30	2.75	0.00	0.00	0.00
7.45	0.83	0.30	2.75	0.00	0.00	0.00
7.50	0.83	0.30	2.75	0.00	0.00	0.00
7.55	0.83	0.30	2.74	0.00	0.00	0.00
7.60	0.83	0.30	2.74	0.00	0.00	0.00
7.65	0.83	0.30	2.74	0.00	0.00	0.00
7.70	0.83	0.30	2.73	0.00	0.00	0.00
7.75	0.83	0.30	2.73	0.00	0.00	0.00
7.80	0.83	0.30	2.73	0.00	0.00	0.00
7.85	0.83	0.30	2.73	0.00	0.00	0.00
7.90	0.83	0.30	2.72	0.00	0.00	0.00
7.95	0.83	0.31	2.72	0.00	0.00	0.00
8.00	0.83	0.31	2.72	0.00	0.00	0.00
8.05	0.83	0.31	2.72	0.00	0.00	0.00
8.10	0.83	0.31	2.72	0.00	0.00	0.00
8.15	0.83	0.31	2.71	0.00	0.00	0.00
8.20	0.83	0.31	2.71	0.00	0.00	0.00
8.25	0.83	0.31	2.71	0.00	0.00	0.00
8.30	0.83	0.31	2.71	0.00	0.00	0.00
8.35	0.83	0.31	2.70	0.00	0.00	0.00
8.40	0.83	0.31	2.70	0.00	0.00	0.00
8.45	0.83	0.31	2.70	0.00	0.00	0.00
8.50	0.83	0.31	2.70	0.00	0.00	0.00
8.55	0.83	0.31	2.70	0.00	0.00	0.00
8.60	0.83	0.31	2.69	0.00	0.00	0.00
8.65	0.83	0.31	2.69	0.00	0.00	0.00
8.70	0.83	0.31	2.69	0.00	0.00	0.00
8.75	0.83	0.31	2.69	0.00	0.00	0.00
8.80	0.83	0.31	2.69	0.00	0.00	0.00
8.85	0.83	0.31	2.68	0.00	0.00	0.00
8.90	0.83	0.31	2.68	0.00	0.00	0.00
8.95	0.83	0.31	2.68	0.00	0.00	0.00
9.00	0.83	0.31	2.68	0.00	0.00	0.00
9.05	0.83	0.31	2.68	0.00	0.00	0.00
9.10	0.83	0.31	2.68	0.00	0.00	0.00
9.15	0.83	0.31	2.67	0.00	0.00	0.00
9.20	0.83	0.31	2.67	0.00	0.00	0.00

9.25	0.83	0.31	2.67	0.00	0.00	0.00
9.30	0.83	0.31	2.67	0.00	0.00	0.00
9.35	0.83	0.31	2.67	0.00	0.00	0.00
9.40	0.83	0.31	2.67	0.00	0.00	0.00
9.45	0.83	0.31	2.66	0.00	0.00	0.00
9.50	0.83	0.31	2.66	0.00	0.00	0.00
9.55	0.83	0.31	2.66	0.00	0.00	0.00
9.60	0.83	0.31	2.66	0.00	0.00	0.00
9.65	0.83	0.31	2.66	0.00	0.00	0.00
9.70	0.83	0.31	2.66	0.00	0.00	0.00
9.75	0.83	0.31	2.65	0.00	0.00	0.00
9.80	0.83	0.31	2.65	0.00	0.00	0.00
9.85	0.83	0.31	2.65	0.00	0.00	0.00
9.90	0.83	0.31	2.65	0.00	0.00	0.00
9.95	0.83	0.31	2.65	0.00	0.00	0.00
10.00	0.83	0.31	2.65	0.00	0.00	0.00
10.05	0.83	0.31	2.65	0.00	0.00	0.00
10.10	0.83	0.31	2.64	0.00	0.00	0.00
10.15	0.83	0.31	2.64	0.00	0.00	0.00
10.20	0.83	0.31	2.64	0.00	0.00	0.00
10.25	0.83	0.31	2.64	0.00	0.00	0.00
10.30	0.83	0.32	2.64	0.00	0.00	0.00
10.35	0.83	0.32	2.63	0.00	0.00	0.00
10.40	0.83	0.32	2.63	0.00	0.00	0.00
10.45	0.83	0.32	2.63	0.00	0.00	0.00
10.50	0.83	0.32	2.63	0.00	0.00	0.00
10.55	0.83	0.32	2.63	0.00	0.00	0.00
10.60	0.83	0.32	2.63	0.00	0.00	0.00
10.65	0.83	0.32	2.62	0.00	0.00	0.00
10.70	0.83	0.32	2.62	0.00	0.00	0.00
10.75	0.83	0.32	2.62	0.00	0.00	0.00
10.80	0.83	0.32	2.62	0.00	0.00	0.00
10.85	0.83	0.32	2.62	0.00	0.00	0.00
10.90	0.83	0.32	2.62	0.00	0.00	0.00
10.95	0.83	0.32	2.62	0.00	0.00	0.00
11.00	0.83	0.32	2.61	0.00	0.00	0.00
11.05	0.83	0.32	2.61	0.00	0.00	0.00
11.10	0.83	0.32	2.61	0.00	0.00	0.00
11.15	0.83	0.32	2.61	0.00	0.00	0.00
11.20	0.83	0.32	2.61	0.00	0.00	0.00
11.25	0.83	0.32	2.61	0.00	0.00	0.00
11.30	0.83	0.32	2.60	0.00	0.00	0.00
11.35	0.83	0.32	2.60	0.00	0.00	0.00
11.40	0.83	0.32	2.60	0.00	0.00	0.00
11.45	0.83	0.32	2.60	0.00	0.00	0.00
11.50	0.83	0.32	2.60	0.00	0.00	0.00
11.55	0.83	0.32	2.60	0.00	0.00	0.00
11.60	0.83	0.32	2.60	0.00	0.00	0.00
11.65	0.83	0.32	2.60	0.00	0.00	0.00
11.70	0.83	0.32	2.59	0.00	0.00	0.00
11.75	0.83	0.32	2.59	0.00	0.00	0.00
11.80	0.83	0.32	2.59	0.00	0.00	0.00
11.85	0.83	0.32	2.59	0.00	0.00	0.00
11.90	0.83	0.32	2.59	0.00	0.00	0.00
11.95	0.83	0.32	2.59	0.00	0.00	0.00
12.00	0.83	0.32	2.59	0.00	0.00	0.00
12.05	0.83	0.32	2.59	0.00	0.00	0.00
12.10	0.83	0.32	2.58	0.00	0.00	0.00
12.15	0.83	0.32	2.58	0.00	0.00	0.00
12.20	0.83	0.32	2.58	0.00	0.00	0.00
12.25	0.83	0.32	2.58	0.00	0.00	0.00
12.30	0.83	0.32	2.58	0.00	0.00	0.00
12.35	0.83	0.32	2.58	0.00	0.00	0.00
12.40	0.83	0.32	2.58	0.00	0.00	0.00
12.45	0.83	0.32	2.58	0.00	0.00	0.00
12.50	0.83	0.32	2.57	0.00	0.00	0.00
12.55	0.83	0.32	2.57	0.00	0.00	0.00
12.60	0.83	0.32	2.57	0.00	0.00	0.00
12.65	0.83	0.32	2.57	0.00	0.00	0.00
12.70	0.83	0.32	2.57	0.00	0.00	0.00
12.75	0.83	0.32	2.57	0.00	0.00	0.00

12.80	0.83	0.32	2.57	0.00	0.00	0.00
12.85	0.83	0.32	2.56	0.00	0.00	0.00
12.90	0.83	0.32	2.56	0.00	0.00	0.00
12.95	0.83	0.32	2.56	0.00	0.00	0.00
13.00	0.83	0.32	2.56	0.00	0.00	0.00
13.05	0.83	0.32	2.56	0.00	0.00	0.00
13.10	0.83	0.32	2.56	0.00	0.00	0.00
13.15	0.83	0.33	2.56	0.00	0.00	0.00
13.20	0.83	0.33	2.55	0.00	0.00	0.00
13.25	0.83	0.33	2.55	0.00	0.00	0.00
13.30	0.83	0.33	2.55	0.00	0.00	0.00
13.35	0.83	0.33	2.55	0.00	0.00	0.00
13.40	0.83	0.33	2.55	0.00	0.00	0.00
13.45	0.83	0.33	2.55	0.00	0.00	0.00
13.50	0.83	0.33	2.55	0.00	0.00	0.00
13.55	0.83	0.33	2.55	0.00	0.00	0.00
13.60	0.83	0.33	2.54	0.00	0.00	0.00
13.65	0.83	0.33	2.54	0.00	0.00	0.00
13.70	0.83	0.33	2.54	0.00	0.00	0.00
13.75	0.83	0.33	2.54	0.00	0.00	0.00
13.80	0.83	0.33	2.54	0.00	0.00	0.00
13.85	0.83	0.33	2.54	0.00	0.00	0.00
13.90	0.83	0.33	2.54	0.00	0.00	0.00
13.95	0.83	0.33	2.54	0.00	0.00	0.00
14.00	0.83	0.33	2.53	0.00	0.00	0.00
14.05	0.83	0.33	2.53	0.00	0.00	0.00
14.10	0.83	0.33	2.53	0.00	0.00	0.00
14.15	0.83	0.33	2.53	0.00	0.00	0.00
14.20	0.83	0.33	2.53	0.00	0.00	0.00
14.25	0.83	0.33	2.53	0.00	0.00	0.00
14.30	0.83	0.33	2.53	0.00	0.00	0.00
14.35	0.83	0.33	2.53	0.00	0.00	0.00
14.40	0.83	0.33	2.53	0.00	0.00	0.00
14.45	0.83	0.33	2.52	0.00	0.00	0.00
14.50	0.83	0.33	2.52	0.00	0.00	0.00
14.55	0.83	0.33	2.52	0.00	0.00	0.00
14.60	0.83	0.33	2.52	0.00	0.00	0.00
14.65	0.83	0.33	2.52	0.00	0.00	0.00
14.70	0.83	0.33	2.52	0.00	0.00	0.00
14.75	0.83	0.33	2.52	0.00	0.00	0.00
14.80	0.83	0.33	2.52	0.00	0.00	0.00
14.85	0.83	0.33	2.52	0.00	0.00	0.00
14.90	0.83	0.33	2.51	0.00	0.00	0.00
14.95	0.83	0.33	2.51	0.00	0.00	0.00
15.00	0.83	0.33	2.51	0.00	0.00	0.00
15.05	0.83	0.33	2.51	0.00	0.00	0.00
15.10	0.83	0.33	2.51	0.00	0.00	0.00
15.15	0.83	0.33	2.51	0.00	0.00	0.00
15.20	0.83	0.33	2.51	0.00	0.00	0.00
15.25	0.83	0.33	2.51	0.00	0.00	0.00
15.30	0.83	0.33	2.51	0.00	0.00	0.00
15.35	0.83	0.33	2.51	0.00	0.00	0.00
15.40	0.83	0.33	2.50	0.00	0.00	0.00
15.45	0.83	0.33	2.50	0.00	0.00	0.00
15.50	0.83	0.33	2.50	0.00	0.00	0.00
15.55	0.83	0.33	2.50	0.00	0.00	0.00
15.60	0.83	0.33	2.50	0.00	0.00	0.00
15.65	0.83	0.33	2.50	0.00	0.00	0.00
15.70	0.83	0.33	2.50	0.00	0.00	0.00
15.75	0.83	0.33	2.50	0.00	0.00	0.00
15.80	0.83	0.33	2.50	0.00	0.00	0.00
15.85	0.83	0.33	2.50	0.00	0.00	0.00
15.90	0.83	0.33	2.50	0.00	0.00	0.00
15.95	0.83	0.33	2.49	0.00	0.00	0.00
16.00	0.83	0.33	2.49	0.00	0.00	0.00
16.05	0.83	0.33	2.49	0.00	0.00	0.00
16.10	0.83	0.33	2.49	0.00	0.00	0.00
16.15	0.83	0.33	2.49	0.00	0.00	0.00
16.20	0.83	0.33	2.49	0.00	0.00	0.00
16.25	0.83	0.33	2.49	0.00	0.00	0.00
16.30	0.83	0.33	2.49	0.00	0.00	0.00

16.35	0.83	0.33	2.49	0.00	0.00	0.00
16.40	0.83	0.33	2.49	0.00	0.00	0.00
16.45	0.83	0.33	2.49	0.00	0.00	0.00
16.50	0.83	0.33	2.49	0.00	0.00	0.00
16.55	0.83	0.33	2.48	0.00	0.00	0.00
16.60	0.83	0.33	2.48	0.00	0.00	0.00
16.65	0.83	0.33	2.48	0.00	0.00	0.00
16.70	0.83	0.33	2.48	0.00	0.00	0.00
16.75	0.83	0.33	2.48	0.00	0.00	0.00
16.80	0.83	0.33	2.48	0.00	0.00	0.00
16.85	0.83	0.34	2.48	0.00	0.00	0.00
16.90	0.83	0.34	2.48	0.00	0.00	0.00
16.95	0.83	0.34	2.48	0.00	0.00	0.00
17.00	0.83	0.34	2.48	0.00	0.00	0.00
17.05	0.83	0.34	2.48	0.00	0.00	0.00
17.10	0.83	0.34	2.48	0.00	0.00	0.00
17.15	0.83	0.34	2.48	0.00	0.00	0.00
17.20	0.83	0.34	2.47	0.00	0.00	0.00
17.25	0.83	0.34	2.47	0.00	0.00	0.00
17.30	0.83	0.34	2.47	0.00	0.00	0.00
17.35	0.83	0.34	2.47	0.00	0.00	0.00
17.40	0.83	0.34	2.47	0.00	0.00	0.00
17.45	0.83	0.34	2.47	0.00	0.00	0.00
17.50	0.83	0.34	2.47	0.00	0.00	0.00
17.55	0.83	0.34	2.47	0.00	0.00	0.00
17.60	0.83	0.34	2.47	0.00	0.00	0.00
17.65	0.83	0.34	2.47	0.00	0.00	0.00
17.70	0.83	0.34	2.47	0.00	0.00	0.00
17.75	0.83	0.34	2.47	0.00	0.00	0.00
17.80	0.83	0.34	2.47	0.00	0.00	0.00
17.85	0.83	0.34	2.47	0.00	0.00	0.00
17.90	0.83	0.34	2.46	0.00	0.00	0.00
17.95	0.83	0.34	2.46	0.00	0.00	0.00
18.00	0.83	0.34	2.46	0.00	0.00	0.00
18.05	0.83	0.34	2.46	0.00	0.00	0.00
18.10	0.83	0.34	2.46	0.00	0.00	0.00
18.15	0.83	0.34	2.46	0.00	0.00	0.00
18.20	0.83	0.34	2.46	0.00	0.00	0.00
18.25	0.83	0.34	2.46	0.00	0.00	0.00
18.30	0.83	0.34	2.46	0.00	0.00	0.00
18.35	0.83	0.34	2.46	0.00	0.00	0.00
18.40	0.83	0.34	2.46	0.00	0.00	0.00
18.45	0.83	0.34	2.46	0.00	0.00	0.00
18.50	0.83	0.34	2.46	0.00	0.00	0.00
18.55	0.83	0.34	2.46	0.00	0.00	0.00
18.60	0.83	0.34	2.46	0.00	0.00	0.00
18.65	0.83	0.34	2.46	0.00	0.00	0.00
18.70	0.83	0.34	2.46	0.00	0.00	0.00
18.75	0.83	0.34	2.45	0.00	0.00	0.00
18.80	0.83	0.34	2.45	0.00	0.00	0.00
18.85	0.83	0.34	2.45	0.00	0.00	0.00
18.90	0.83	0.34	2.45	0.00	0.00	0.00
18.95	0.83	0.34	2.45	0.00	0.00	0.00
19.00	0.83	0.34	2.45	0.00	0.00	0.00
19.05	0.83	0.34	2.45	0.00	0.00	0.00
19.10	0.83	0.34	2.45	0.00	0.00	0.00
19.15	0.83	0.34	2.45	0.00	0.00	0.00
19.20	0.83	0.34	2.45	0.00	0.00	0.00
19.25	0.83	0.34	2.45	0.00	0.00	0.00
19.30	0.83	0.34	2.45	0.00	0.00	0.00
19.35	0.83	0.34	2.45	0.00	0.00	0.00
19.40	0.83	0.34	2.45	0.00	0.00	0.00
19.45	0.83	0.34	2.45	0.00	0.00	0.00
19.50	0.83	0.34	2.45	0.00	0.00	0.00
19.55	0.83	0.34	2.45	0.00	0.00	0.00
19.60	0.83	0.34	2.45	0.00	0.00	0.00
19.65	0.83	0.34	2.44	0.00	0.00	0.00
19.70	0.83	0.34	2.44	0.00	0.00	0.00
19.75	0.83	0.34	2.44	0.00	0.00	0.00
19.80	0.83	0.34	2.44	0.00	0.00	0.00
19.85	0.83	0.34	2.44	0.00	0.00	0.00

19.90	0.83	0.34	2.44	0.00	0.00	0.00
19.95	0.83	0.34	2.44	0.00	0.00	0.00
20.00	0.83	0.34	2.44	0.00	0.00	0.00
20.05	2.00	0.34	5.00	0.00	0.00	0.00
20.10	2.00	0.34	5.00	0.00	0.00	0.00
20.15	2.00	0.34	5.00	0.00	0.00	0.00
20.20	2.00	0.34	5.00	0.00	0.00	0.00
20.25	2.00	0.34	5.00	0.00	0.00	0.00
20.30	2.00	0.34	5.00	0.00	0.00	0.00
20.35	2.00	0.34	5.00	0.00	0.00	0.00
20.40	2.00	0.34	5.00	0.00	0.00	0.00
20.45	2.00	0.34	5.00	0.00	0.00	0.00
20.50	2.00	0.34	5.00	0.00	0.00	0.00
20.55	2.00	0.34	5.00	0.00	0.00	0.00
20.60	2.00	0.34	5.00	0.00	0.00	0.00
20.65	2.00	0.34	5.00	0.00	0.00	0.00
20.70	2.00	0.34	5.00	0.00	0.00	0.00
20.75	2.00	0.34	5.00	0.00	0.00	0.00
20.80	2.00	0.34	5.00	0.00	0.00	0.00
20.85	2.00	0.34	5.00	0.00	0.00	0.00
20.90	2.00	0.34	5.00	0.00	0.00	0.00
20.95	2.00	0.34	5.00	0.00	0.00	0.00
21.00	2.00	0.34	5.00	0.00	0.00	0.00
21.05	2.00	0.34	5.00	0.00	0.00	0.00
21.10	2.00	0.34	5.00	0.00	0.00	0.00
21.15	2.00	0.34	5.00	0.00	0.00	0.00
21.20	2.00	0.34	5.00	0.00	0.00	0.00
21.25	2.00	0.34	5.00	0.00	0.00	0.00
21.30	2.00	0.34	5.00	0.00	0.00	0.00
21.35	2.00	0.34	5.00	0.00	0.00	0.00
21.40	2.00	0.34	5.00	0.00	0.00	0.00
21.45	2.00	0.34	5.00	0.00	0.00	0.00
21.50	2.00	0.34	5.00	0.00	0.00	0.00
21.55	2.00	0.34	5.00	0.00	0.00	0.00
21.60	2.00	0.34	5.00	0.00	0.00	0.00
21.65	2.00	0.34	5.00	0.00	0.00	0.00
21.70	2.00	0.34	5.00	0.00	0.00	0.00
21.75	2.00	0.34	5.00	0.00	0.00	0.00
21.80	2.00	0.34	5.00	0.00	0.00	0.00
21.85	2.00	0.34	5.00	0.00	0.00	0.00
21.90	2.00	0.34	5.00	0.00	0.00	0.00
21.95	2.00	0.34	5.00	0.00	0.00	0.00
22.00	2.00	0.34	5.00	0.00	0.00	0.00
22.05	2.00	0.34	5.00	0.00	0.00	0.00
22.10	2.00	0.34	5.00	0.00	0.00	0.00
22.15	2.00	0.34	5.00	0.00	0.00	0.00
22.20	2.00	0.34	5.00	0.00	0.00	0.00
22.25	2.00	0.34	5.00	0.00	0.00	0.00
22.30	2.00	0.34	5.00	0.00	0.00	0.00
22.35	2.00	0.34	5.00	0.00	0.00	0.00
22.40	2.00	0.34	5.00	0.00	0.00	0.00
22.45	2.00	0.34	5.00	0.00	0.00	0.00
22.50	2.00	0.34	5.00	0.00	0.00	0.00
22.55	2.00	0.34	5.00	0.00	0.00	0.00
22.60	2.00	0.34	5.00	0.00	0.00	0.00
22.65	2.00	0.34	5.00	0.00	0.00	0.00
22.70	2.00	0.34	5.00	0.00	0.00	0.00
22.75	2.00	0.34	5.00	0.00	0.00	0.00
22.80	2.00	0.34	5.00	0.00	0.00	0.00
22.85	2.00	0.34	5.00	0.00	0.00	0.00
22.90	2.00	0.34	5.00	0.00	0.00	0.00
22.95	2.00	0.34	5.00	0.00	0.00	0.00
23.00	2.00	0.34	5.00	0.00	0.00	0.00
23.05	2.00	0.34	5.00	0.00	0.00	0.00
23.10	2.00	0.34	5.00	0.00	0.00	0.00
23.15	2.00	0.34	5.00	0.00	0.00	0.00
23.20	2.00	0.34	5.00	0.00	0.00	0.00
23.25	2.00	0.34	5.00	0.00	0.00	0.00
23.30	2.00	0.34	5.00	0.00	0.00	0.00
23.35	2.00	0.34	5.00	0.00	0.00	0.00
23.40	2.00	0.34	5.00	0.00	0.00	0.00

23.45	2.00	0.34	5.00	0.00	0.00	0.00
23.50	2.00	0.34	5.00	0.00	0.00	0.00
23.55	2.00	0.34	5.00	0.00	0.00	0.00
23.60	2.00	0.34	5.00	0.00	0.00	0.00
23.65	2.00	0.34	5.00	0.00	0.00	0.00
23.70	2.00	0.34	5.00	0.00	0.00	0.00
23.75	2.00	0.34	5.00	0.00	0.00	0.00
23.80	2.00	0.34	5.00	0.00	0.00	0.00
23.85	2.00	0.34	5.00	0.00	0.00	0.00
23.90	2.00	0.34	5.00	0.00	0.00	0.00
23.95	2.00	0.34	5.00	0.00	0.00	0.00
24.00	2.00	0.34	5.00	0.00	0.00	0.00
24.05	2.00	0.34	5.00	0.00	0.00	0.00
24.10	2.00	0.34	5.00	0.00	0.00	0.00
24.15	2.00	0.34	5.00	0.00	0.00	0.00
24.20	2.00	0.34	5.00	0.00	0.00	0.00
24.25	2.00	0.34	5.00	0.00	0.00	0.00
24.30	2.00	0.34	5.00	0.00	0.00	0.00
24.35	2.00	0.34	5.00	0.00	0.00	0.00
24.40	2.00	0.34	5.00	0.00	0.00	0.00
24.45	2.00	0.34	5.00	0.00	0.00	0.00
24.50	2.00	0.34	5.00	0.00	0.00	0.00
24.55	2.00	0.34	5.00	0.00	0.00	0.00
24.60	2.00	0.34	5.00	0.00	0.00	0.00
24.65	2.00	0.34	5.00	0.00	0.00	0.00
24.70	2.00	0.34	5.00	0.00	0.00	0.00
24.75	2.00	0.34	5.00	0.00	0.00	0.00
24.80	2.00	0.34	5.00	0.00	0.00	0.00
24.85	2.00	0.34	5.00	0.00	0.00	0.00
24.90	2.00	0.34	5.00	0.00	0.00	0.00
24.95	2.00	0.34	5.00	0.00	0.00	0.00
25.00	2.00	0.34	5.00	0.00	0.00	0.00
25.05	2.00	0.34	5.00	0.00	0.00	0.00
25.10	2.00	0.34	5.00	0.00	0.00	0.00
25.15	2.00	0.34	5.00	0.00	0.00	0.00
25.20	2.00	0.34	5.00	0.00	0.00	0.00
25.25	2.00	0.34	5.00	0.00	0.00	0.00
25.30	2.00	0.34	5.00	0.00	0.00	0.00
25.35	2.00	0.34	5.00	0.00	0.00	0.00
25.40	2.00	0.34	5.00	0.00	0.00	0.00
25.45	2.00	0.34	5.00	0.00	0.00	0.00
25.50	2.00	0.34	5.00	0.00	0.00	0.00
25.55	2.00	0.34	5.00	0.00	0.00	0.00
25.60	2.00	0.34	5.00	0.00	0.00	0.00
25.65	2.00	0.34	5.00	0.00	0.00	0.00
25.70	2.00	0.34	5.00	0.00	0.00	0.00
25.75	2.00	0.34	5.00	0.00	0.00	0.00
25.80	2.00	0.34	5.00	0.00	0.00	0.00
25.85	2.00	0.34	5.00	0.00	0.00	0.00
25.90	2.00	0.34	5.00	0.00	0.00	0.00
25.95	2.00	0.34	5.00	0.00	0.00	0.00
26.00	2.00	0.34	5.00	0.00	0.00	0.00
26.05	2.00	0.34	5.00	0.00	0.00	0.00
26.10	2.00	0.34	5.00	0.00	0.00	0.00
26.15	2.00	0.34	5.00	0.00	0.00	0.00
26.20	2.00	0.34	5.00	0.00	0.00	0.00
26.25	2.00	0.34	5.00	0.00	0.00	0.00
26.30	2.00	0.34	5.00	0.00	0.00	0.00
26.35	2.00	0.34	5.00	0.00	0.00	0.00
26.40	2.00	0.34	5.00	0.00	0.00	0.00
26.45	2.00	0.34	5.00	0.00	0.00	0.00
26.50	2.00	0.34	5.00	0.00	0.00	0.00
26.55	2.00	0.34	5.00	0.00	0.00	0.00
26.60	2.00	0.34	5.00	0.00	0.00	0.00
26.65	2.00	0.34	5.00	0.00	0.00	0.00
26.70	2.00	0.34	5.00	0.00	0.00	0.00
26.75	2.00	0.34	5.00	0.00	0.00	0.00
26.80	2.00	0.34	5.00	0.00	0.00	0.00
26.85	2.00	0.34	5.00	0.00	0.00	0.00
26.90	2.00	0.34	5.00	0.00	0.00	0.00
26.95	2.00	0.34	5.00	0.00	0.00	0.00

27.00	2.00	0.34	5.00	0.00	0.00	0.00
27.05	2.00	0.34	5.00	0.00	0.00	0.00
27.10	2.00	0.34	5.00	0.00	0.00	0.00
27.15	2.00	0.34	5.00	0.00	0.00	0.00
27.20	2.00	0.34	5.00	0.00	0.00	0.00
27.25	2.00	0.34	5.00	0.00	0.00	0.00
27.30	2.00	0.34	5.00	0.00	0.00	0.00
27.35	2.00	0.34	5.00	0.00	0.00	0.00
27.40	2.00	0.34	5.00	0.00	0.00	0.00
27.45	2.00	0.34	5.00	0.00	0.00	0.00
27.50	2.00	0.34	5.00	0.00	0.00	0.00
27.55	2.00	0.34	5.00	0.00	0.00	0.00
27.60	2.00	0.34	5.00	0.00	0.00	0.00
27.65	2.00	0.34	5.00	0.00	0.00	0.00
27.70	2.00	0.34	5.00	0.00	0.00	0.00
27.75	2.00	0.34	5.00	0.00	0.00	0.00
27.80	2.00	0.34	5.00	0.00	0.00	0.00
27.85	2.00	0.34	5.00	0.00	0.00	0.00
27.90	2.00	0.34	5.00	0.00	0.00	0.00
27.95	2.00	0.34	5.00	0.00	0.00	0.00
28.00	2.00	0.34	5.00	0.00	0.00	0.00

---

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

---

1 atm (atmosphere) = 1 tsf (ton/ft2)

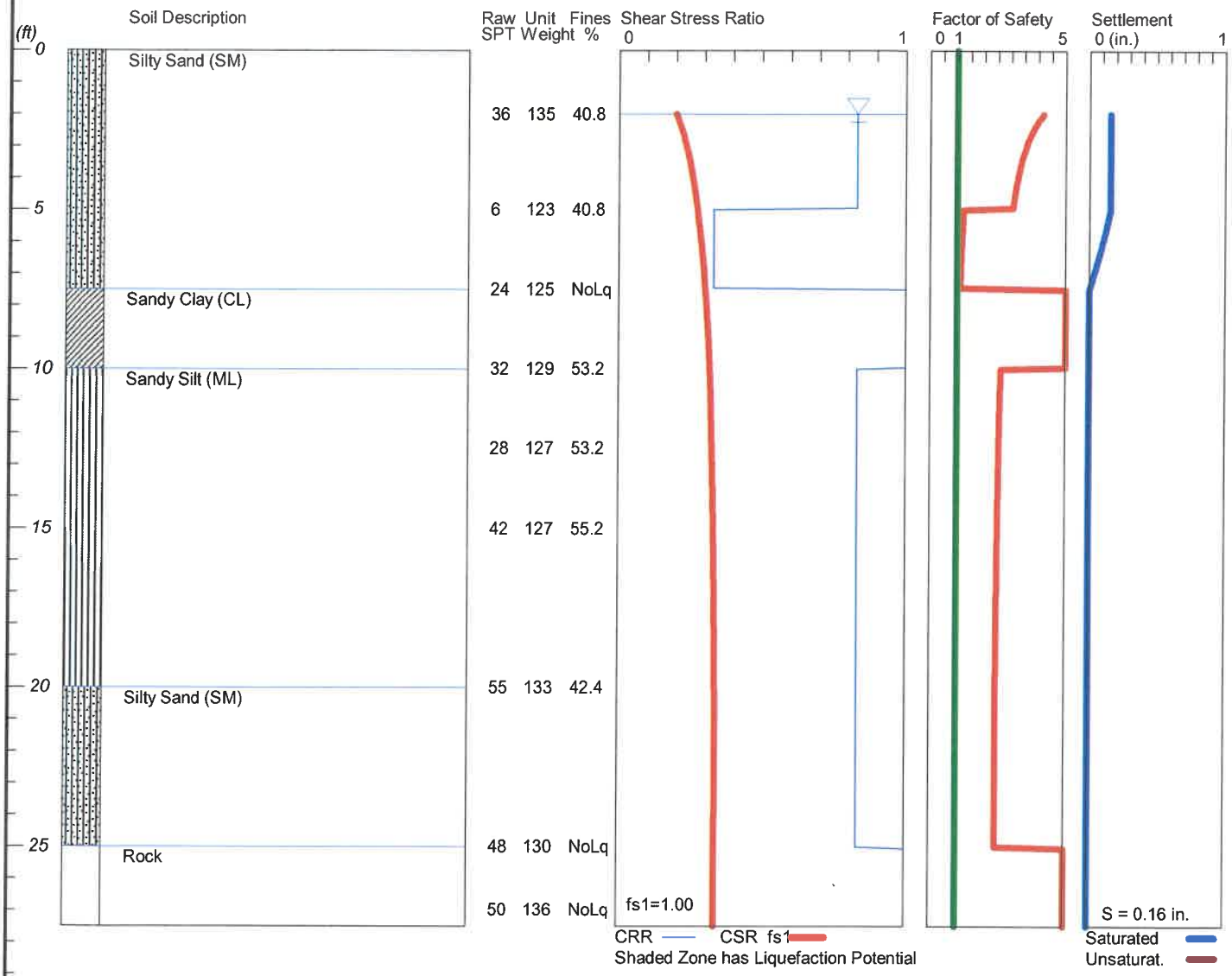
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Triangle Development

Hole No.=B23 Water Depth=2 ft

Magnitude=6.15
Acceleration=0.307g



LiquefyPro CivilTech Software USA www.civiltech.com

Krazan

012-22165

Plate A-1

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*****************************************************************************************************
                                    LIQUEFACTION ANALYSIS SUMMARY
                                  Copyright by CivilTech Software
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      Font: Courier New, Regular, Size 8 is recommended for this report.
      Licensed to ,   8/9/2023        5:10:05 PM

      Input File Name: C:\Users\mweber\Documents\Krazan\Projects\012\22\165 Triangle Development\B23\B23
Liquefaction.liq
      Title:  Triangle Development
      Subtitle:  012-22165

      Surface Elev.=
      Hole No.=B23
      Depth of Hole= 27.50 ft
      Water Table during Earthquake= 2.00 ft
      Water Table during In-Situ Testing= 3.00 ft
      Max. Acceleration= 0.31 g
      Earthquake Magnitude= 6.15

 Input Data:
      Surface Elev.=
      Hole No.=B23
      Depth of Hole=27.50 ft
      Water Table during Earthquake= 2.00 ft
      Water Table during In-Situ Testing= 3.00 ft
      Max. Acceleration=0.31 g
      Earthquake Magnitude=6.15
      No-Liquefiable Soils:   CL, OL are Non-Liq. Soil

      1. SPT or BPT Calculation.
      2. Settlement Analysis Method: Ishihara / Yoshimine
      3. Fines Correction for Liquefaction: Stark/Olson et al.*
      4. Fine Correction for Settlement: During Liquefaction*
      5. Settlement Calculation in: All zones*
      6. Hammer Energy Ratio,                                  Ce = 1.4
      7. Borehole Diameter,                                        Cb= 1.05
      8. Sampling Method,                                         Cs= 1
      9. User request factor of safety (apply to CSR) ,   User= 1
         Plot one CSR curve (fs1=User)
      10. Use Curve Smoothing: No
      * Recommended Options

      In-Situ Test Data:
      Depth   SPT     gamma   Fines
      ft              pcf     %
      ____________________________________
      2.00    36.00   135.00  40.80
      5.00    6.00    123.00  40.80
      7.50    24.00   125.00  NoLiq
      10.00   32.00   129.00  53.20
      12.50   28.00   127.00  53.20
      15.00   42.00   127.00  55.20
      20.00   55.00   133.00  42.40
      25.00   48.00   130.00  NoLiq
      27.00   50.00   136.00  NoLiq
      ____________________________________

Output Results:
      Settlement of Saturated Sands=0.16 in.
      Settlement of Unsaturated Sands=0.00 in.
      Total Settlement of Saturated and Unsaturated Sands=0.16 in.
      Differential Settlement=0.079 to 0.104 in.

      Depth   CRRm    CSRfs   F.S.    S_sat.  S_dry   S_all
      ft                              in.     in.     in.
      ____________________________________________________
      2.00    0.83    0.20    4.18    0.16    0.00    0.16
      2.05    0.83    0.20    4.14    0.16    0.00    0.16
      2.10    0.83    0.20    4.09    0.16    0.00    0.16
```

2.15	0.83	0.21	4.05	0.16	0.00	0.16
2.20	0.83	0.21	4.01	0.16	0.00	0.16
2.25	0.83	0.21	3.97	0.16	0.00	0.16
2.30	0.83	0.21	3.93	0.16	0.00	0.16
2.35	0.83	0.21	3.90	0.16	0.00	0.16
2.40	0.83	0.21	3.86	0.16	0.00	0.16
2.45	0.83	0.22	3.83	0.16	0.00	0.16
2.50	0.83	0.22	3.80	0.16	0.00	0.16
2.55	0.83	0.22	3.77	0.16	0.00	0.16
2.60	0.83	0.22	3.74	0.16	0.00	0.16
2.65	0.83	0.22	3.71	0.16	0.00	0.16
2.70	0.83	0.23	3.69	0.16	0.00	0.16
2.75	0.83	0.23	3.66	0.16	0.00	0.16
2.80	0.83	0.23	3.64	0.16	0.00	0.16
2.85	0.83	0.23	3.61	0.16	0.00	0.16
2.90	0.83	0.23	3.59	0.16	0.00	0.16
2.95	0.83	0.23	3.57	0.16	0.00	0.16
3.00	0.83	0.23	3.55	0.16	0.00	0.16
3.05	0.83	0.24	3.53	0.16	0.00	0.16
3.10	0.83	0.24	3.51	0.16	0.00	0.16
3.15	0.83	0.24	3.49	0.16	0.00	0.16
3.20	0.83	0.24	3.47	0.16	0.00	0.16
3.25	0.83	0.24	3.45	0.16	0.00	0.16
3.30	0.83	0.24	3.43	0.16	0.00	0.16
3.35	0.83	0.24	3.41	0.16	0.00	0.16
3.40	0.83	0.24	3.40	0.16	0.00	0.16
3.45	0.83	0.25	3.38	0.16	0.00	0.16
3.50	0.83	0.25	3.37	0.16	0.00	0.16
3.55	0.83	0.25	3.35	0.16	0.00	0.16
3.60	0.83	0.25	3.34	0.16	0.00	0.16
3.65	0.83	0.25	3.32	0.16	0.00	0.16
3.70	0.83	0.25	3.31	0.16	0.00	0.16
3.75	0.83	0.25	3.29	0.16	0.00	0.16
3.80	0.83	0.25	3.28	0.16	0.00	0.16
3.85	0.83	0.25	3.27	0.16	0.00	0.16
3.90	0.83	0.26	3.26	0.16	0.00	0.16
3.95	0.83	0.26	3.24	0.16	0.00	0.16
4.00	0.83	0.26	3.23	0.16	0.00	0.16
4.05	0.83	0.26	3.22	0.16	0.00	0.16
4.10	0.83	0.26	3.21	0.16	0.00	0.16
4.15	0.83	0.26	3.20	0.16	0.00	0.16
4.20	0.83	0.26	3.19	0.16	0.00	0.16
4.25	0.83	0.26	3.18	0.16	0.00	0.16
4.30	0.83	0.26	3.17	0.16	0.00	0.16
4.35	0.83	0.26	3.16	0.16	0.00	0.16
4.40	0.83	0.26	3.15	0.16	0.00	0.16
4.45	0.83	0.26	3.14	0.16	0.00	0.16
4.50	0.83	0.27	3.13	0.16	0.00	0.16
4.55	0.83	0.27	3.12	0.16	0.00	0.16
4.60	0.83	0.27	3.11	0.16	0.00	0.16
4.65	0.83	0.27	3.10	0.16	0.00	0.16
4.70	0.83	0.27	3.09	0.16	0.00	0.16
4.75	0.83	0.27	3.08	0.16	0.00	0.16
4.80	0.83	0.27	3.07	0.16	0.00	0.16
4.85	0.83	0.27	3.07	0.16	0.00	0.16
4.90	0.83	0.27	3.06	0.16	0.00	0.16
4.95	0.83	0.27	3.05	0.16	0.00	0.16
5.00	0.33	0.27	1.21	0.16	0.00	0.16
5.05	0.33	0.27	1.21	0.16	0.00	0.16
5.10	0.33	0.27	1.20	0.15	0.00	0.15
5.15	0.33	0.28	1.20	0.15	0.00	0.15
5.20	0.33	0.28	1.20	0.15	0.00	0.15
5.25	0.33	0.28	1.20	0.15	0.00	0.15
5.30	0.33	0.28	1.19	0.14	0.00	0.14
5.35	0.33	0.28	1.19	0.14	0.00	0.14
5.40	0.33	0.28	1.19	0.14	0.00	0.14
5.45	0.33	0.28	1.18	0.13	0.00	0.13
5.50	0.33	0.28	1.18	0.13	0.00	0.13
5.55	0.33	0.28	1.18	0.13	0.00	0.13
5.60	0.33	0.28	1.18	0.13	0.00	0.13
5.65	0.33	0.28	1.17	0.12	0.00	0.12

5.70	0.33	0.28	1.17	0.12	0.00	0.12
5.75	0.33	0.28	1.17	0.12	0.00	0.12
5.80	0.33	0.28	1.16	0.11	0.00	0.11
5.85	0.33	0.28	1.16	0.11	0.00	0.11
5.90	0.33	0.29	1.16	0.11	0.00	0.11
5.95	0.33	0.29	1.16	0.10	0.00	0.10
6.00	0.33	0.29	1.15	0.10	0.00	0.10
6.05	0.33	0.29	1.15	0.10	0.00	0.10
6.10	0.33	0.29	1.15	0.10	0.00	0.10
6.15	0.33	0.29	1.15	0.09	0.00	0.09
6.20	0.33	0.29	1.15	0.09	0.00	0.09
6.25	0.33	0.29	1.14	0.09	0.00	0.09
6.30	0.33	0.29	1.14	0.08	0.00	0.08
6.35	0.33	0.29	1.14	0.08	0.00	0.08
6.40	0.33	0.29	1.14	0.08	0.00	0.08
6.45	0.33	0.29	1.13	0.07	0.00	0.07
6.50	0.33	0.29	1.13	0.07	0.00	0.07
6.55	0.33	0.29	1.13	0.07	0.00	0.07
6.60	0.33	0.29	1.13	0.06	0.00	0.06
6.65	0.33	0.29	1.13	0.06	0.00	0.06
6.70	0.33	0.29	1.12	0.06	0.00	0.06
6.75	0.33	0.29	1.12	0.05	0.00	0.05
6.80	0.33	0.29	1.12	0.05	0.00	0.05
6.85	0.33	0.30	1.12	0.05	0.00	0.05
6.90	0.33	0.30	1.12	0.04	0.00	0.04
6.95	0.33	0.30	1.12	0.04	0.00	0.04
7.00	0.33	0.30	1.11	0.04	0.00	0.04
7.05	0.33	0.30	1.11	0.03	0.00	0.03
7.10	0.33	0.30	1.11	0.03	0.00	0.03
7.15	0.33	0.30	1.11	0.03	0.00	0.03
7.20	0.33	0.30	1.11	0.02	0.00	0.02
7.25	0.33	0.30	1.11	0.02	0.00	0.02
7.30	0.33	0.30	1.10	0.01	0.00	0.01
7.35	0.33	0.30	1.10	0.01	0.00	0.01
7.40	0.33	0.30	1.10	0.01	0.00	0.01
7.45	0.33	0.30	1.10	0.00	0.00	0.00
7.50	2.00	0.30	5.00	0.00	0.00	0.00
7.55	2.00	0.30	5.00	0.00	0.00	0.00
7.60	2.00	0.30	5.00	0.00	0.00	0.00
7.65	2.00	0.30	5.00	0.00	0.00	0.00
7.70	2.00	0.30	5.00	0.00	0.00	0.00
7.75	2.00	0.30	5.00	0.00	0.00	0.00
7.80	2.00	0.30	5.00	0.00	0.00	0.00
7.85	2.00	0.30	5.00	0.00	0.00	0.00
7.90	2.00	0.30	5.00	0.00	0.00	0.00
7.95	2.00	0.30	5.00	0.00	0.00	0.00
8.00	2.00	0.31	5.00	0.00	0.00	0.00
8.05	2.00	0.31	5.00	0.00	0.00	0.00
8.10	2.00	0.31	5.00	0.00	0.00	0.00
8.15	2.00	0.31	5.00	0.00	0.00	0.00
8.20	2.00	0.31	5.00	0.00	0.00	0.00
8.25	2.00	0.31	5.00	0.00	0.00	0.00
8.30	2.00	0.31	5.00	0.00	0.00	0.00
8.35	2.00	0.31	5.00	0.00	0.00	0.00
8.40	2.00	0.31	5.00	0.00	0.00	0.00
8.45	2.00	0.31	5.00	0.00	0.00	0.00
8.50	2.00	0.31	5.00	0.00	0.00	0.00
8.55	2.00	0.31	5.00	0.00	0.00	0.00
8.60	2.00	0.31	5.00	0.00	0.00	0.00
8.65	2.00	0.31	5.00	0.00	0.00	0.00
8.70	2.00	0.31	5.00	0.00	0.00	0.00
8.75	2.00	0.31	5.00	0.00	0.00	0.00
8.80	2.00	0.31	5.00	0.00	0.00	0.00
8.85	2.00	0.31	5.00	0.00	0.00	0.00
8.90	2.00	0.31	5.00	0.00	0.00	0.00
8.95	2.00	0.31	5.00	0.00	0.00	0.00
9.00	2.00	0.31	5.00	0.00	0.00	0.00
9.05	2.00	0.31	5.00	0.00	0.00	0.00
9.10	2.00	0.31	5.00	0.00	0.00	0.00
9.15	2.00	0.31	5.00	0.00	0.00	0.00
9.20	2.00	0.31	5.00	0.00	0.00	0.00

9.25	2.00	0.31	5.00	0.00	0.00	0.00
9.30	2.00	0.31	5.00	0.00	0.00	0.00
9.35	2.00	0.31	5.00	0.00	0.00	0.00
9.40	2.00	0.31	5.00	0.00	0.00	0.00
9.45	2.00	0.31	5.00	0.00	0.00	0.00
9.50	2.00	0.31	5.00	0.00	0.00	0.00
9.55	2.00	0.31	5.00	0.00	0.00	0.00
9.60	2.00	0.32	5.00	0.00	0.00	0.00
9.65	2.00	0.32	5.00	0.00	0.00	0.00
9.70	2.00	0.32	5.00	0.00	0.00	0.00
9.75	2.00	0.32	5.00	0.00	0.00	0.00
9.80	2.00	0.32	5.00	0.00	0.00	0.00
9.85	2.00	0.32	5.00	0.00	0.00	0.00
9.90	2.00	0.32	5.00	0.00	0.00	0.00
9.95	2.00	0.32	5.00	0.00	0.00	0.00
10.00	0.83	0.32	2.62	0.00	0.00	0.00
10.05	0.83	0.32	2.62	0.00	0.00	0.00
10.10	0.83	0.32	2.62	0.00	0.00	0.00
10.15	0.83	0.32	2.61	0.00	0.00	0.00
10.20	0.83	0.32	2.61	0.00	0.00	0.00
10.25	0.83	0.32	2.61	0.00	0.00	0.00
10.30	0.83	0.32	2.61	0.00	0.00	0.00
10.35	0.83	0.32	2.61	0.00	0.00	0.00
10.40	0.83	0.32	2.61	0.00	0.00	0.00
10.45	0.83	0.32	2.60	0.00	0.00	0.00
10.50	0.83	0.32	2.60	0.00	0.00	0.00
10.55	0.83	0.32	2.60	0.00	0.00	0.00
10.60	0.83	0.32	2.60	0.00	0.00	0.00
10.65	0.83	0.32	2.60	0.00	0.00	0.00
10.70	0.83	0.32	2.60	0.00	0.00	0.00
10.75	0.83	0.32	2.59	0.00	0.00	0.00
10.80	0.83	0.32	2.59	0.00	0.00	0.00
10.85	0.83	0.32	2.59	0.00	0.00	0.00
10.90	0.83	0.32	2.59	0.00	0.00	0.00
10.95	0.83	0.32	2.59	0.00	0.00	0.00
11.00	0.83	0.32	2.59	0.00	0.00	0.00
11.05	0.83	0.32	2.59	0.00	0.00	0.00
11.10	0.83	0.32	2.58	0.00	0.00	0.00
11.15	0.83	0.32	2.58	0.00	0.00	0.00
11.20	0.83	0.32	2.58	0.00	0.00	0.00
11.25	0.83	0.32	2.58	0.00	0.00	0.00
11.30	0.83	0.32	2.58	0.00	0.00	0.00
11.35	0.83	0.32	2.58	0.00	0.00	0.00
11.40	0.83	0.32	2.58	0.00	0.00	0.00
11.45	0.83	0.32	2.58	0.00	0.00	0.00
11.50	0.83	0.32	2.57	0.00	0.00	0.00
11.55	0.83	0.32	2.57	0.00	0.00	0.00
11.60	0.83	0.32	2.57	0.00	0.00	0.00
11.65	0.83	0.32	2.57	0.00	0.00	0.00
11.70	0.83	0.32	2.57	0.00	0.00	0.00
11.75	0.83	0.32	2.57	0.00	0.00	0.00
11.80	0.83	0.32	2.57	0.00	0.00	0.00
11.85	0.83	0.32	2.57	0.00	0.00	0.00
11.90	0.83	0.32	2.56	0.00	0.00	0.00
11.95	0.83	0.32	2.56	0.00	0.00	0.00
12.00	0.83	0.32	2.56	0.00	0.00	0.00
12.05	0.83	0.32	2.56	0.00	0.00	0.00
12.10	0.83	0.32	2.56	0.00	0.00	0.00
12.15	0.83	0.32	2.56	0.00	0.00	0.00
12.20	0.83	0.32	2.56	0.00	0.00	0.00
12.25	0.83	0.32	2.56	0.00	0.00	0.00
12.30	0.83	0.33	2.56	0.00	0.00	0.00
12.35	0.83	0.33	2.55	0.00	0.00	0.00
12.40	0.83	0.33	2.55	0.00	0.00	0.00
12.45	0.83	0.33	2.55	0.00	0.00	0.00
12.50	0.83	0.33	2.55	0.00	0.00	0.00
12.55	0.83	0.33	2.55	0.00	0.00	0.00
12.60	0.83	0.33	2.55	0.00	0.00	0.00
12.65	0.83	0.33	2.55	0.00	0.00	0.00
12.70	0.83	0.33	2.55	0.00	0.00	0.00
12.75	0.83	0.33	2.55	0.00	0.00	0.00

12.80	0.83	0.33	2.54	0.00	0.00	0.00
12.85	0.83	0.33	2.54	0.00	0.00	0.00
12.90	0.83	0.33	2.54	0.00	0.00	0.00
12.95	0.83	0.33	2.54	0.00	0.00	0.00
13.00	0.83	0.33	2.54	0.00	0.00	0.00
13.05	0.83	0.33	2.54	0.00	0.00	0.00
13.10	0.83	0.33	2.54	0.00	0.00	0.00
13.15	0.83	0.33	2.54	0.00	0.00	0.00
13.20	0.83	0.33	2.54	0.00	0.00	0.00
13.25	0.83	0.33	2.53	0.00	0.00	0.00
13.30	0.83	0.33	2.53	0.00	0.00	0.00
13.35	0.83	0.33	2.53	0.00	0.00	0.00
13.40	0.83	0.33	2.53	0.00	0.00	0.00
13.45	0.83	0.33	2.53	0.00	0.00	0.00
13.50	0.83	0.33	2.53	0.00	0.00	0.00
13.55	0.83	0.33	2.53	0.00	0.00	0.00
13.60	0.83	0.33	2.53	0.00	0.00	0.00
13.65	0.83	0.33	2.53	0.00	0.00	0.00
13.70	0.83	0.33	2.53	0.00	0.00	0.00
13.75	0.83	0.33	2.53	0.00	0.00	0.00
13.80	0.83	0.33	2.52	0.00	0.00	0.00
13.85	0.83	0.33	2.52	0.00	0.00	0.00
13.90	0.83	0.33	2.52	0.00	0.00	0.00
13.95	0.83	0.33	2.52	0.00	0.00	0.00
14.00	0.83	0.33	2.52	0.00	0.00	0.00
14.05	0.83	0.33	2.52	0.00	0.00	0.00
14.10	0.83	0.33	2.52	0.00	0.00	0.00
14.15	0.83	0.33	2.52	0.00	0.00	0.00
14.20	0.83	0.33	2.52	0.00	0.00	0.00
14.25	0.83	0.33	2.52	0.00	0.00	0.00
14.30	0.83	0.33	2.52	0.00	0.00	0.00
14.35	0.83	0.33	2.52	0.00	0.00	0.00
14.40	0.83	0.33	2.51	0.00	0.00	0.00
14.45	0.83	0.33	2.51	0.00	0.00	0.00
14.50	0.83	0.33	2.51	0.00	0.00	0.00
14.55	0.83	0.33	2.51	0.00	0.00	0.00
14.60	0.83	0.33	2.51	0.00	0.00	0.00
14.65	0.83	0.33	2.51	0.00	0.00	0.00
14.70	0.83	0.33	2.51	0.00	0.00	0.00
14.75	0.83	0.33	2.51	0.00	0.00	0.00
14.80	0.83	0.33	2.51	0.00	0.00	0.00
14.85	0.83	0.33	2.51	0.00	0.00	0.00
14.90	0.83	0.33	2.51	0.00	0.00	0.00
14.95	0.83	0.33	2.51	0.00	0.00	0.00
15.00	0.83	0.33	2.51	0.00	0.00	0.00
15.05	0.83	0.33	2.50	0.00	0.00	0.00
15.10	0.83	0.33	2.50	0.00	0.00	0.00
15.15	0.83	0.33	2.50	0.00	0.00	0.00
15.20	0.83	0.33	2.50	0.00	0.00	0.00
15.25	0.83	0.33	2.50	0.00	0.00	0.00
15.30	0.83	0.33	2.50	0.00	0.00	0.00
15.35	0.83	0.33	2.50	0.00	0.00	0.00
15.40	0.83	0.33	2.50	0.00	0.00	0.00
15.45	0.83	0.33	2.50	0.00	0.00	0.00
15.50	0.83	0.33	2.50	0.00	0.00	0.00
15.55	0.83	0.33	2.50	0.00	0.00	0.00
15.60	0.83	0.33	2.50	0.00	0.00	0.00
15.65	0.83	0.33	2.50	0.00	0.00	0.00
15.70	0.83	0.33	2.50	0.00	0.00	0.00
15.75	0.83	0.33	2.50	0.00	0.00	0.00
15.80	0.83	0.33	2.49	0.00	0.00	0.00
15.85	0.83	0.33	2.49	0.00	0.00	0.00
15.90	0.83	0.33	2.49	0.00	0.00	0.00
15.95	0.83	0.33	2.49	0.00	0.00	0.00
16.00	0.83	0.33	2.49	0.00	0.00	0.00
16.05	0.83	0.33	2.49	0.00	0.00	0.00
16.10	0.83	0.33	2.49	0.00	0.00	0.00
16.15	0.83	0.33	2.49	0.00	0.00	0.00
16.20	0.83	0.33	2.49	0.00	0.00	0.00
16.25	0.83	0.33	2.49	0.00	0.00	0.00
16.30	0.83	0.33	2.49	0.00	0.00	0.00

16.35	0.83	0.33	2.49	0.00	0.00	0.00
16.40	0.83	0.33	2.49	0.00	0.00	0.00
16.45	0.83	0.33	2.49	0.00	0.00	0.00
16.50	0.83	0.33	2.49	0.00	0.00	0.00
16.55	0.83	0.33	2.49	0.00	0.00	0.00
16.60	0.83	0.33	2.49	0.00	0.00	0.00
16.65	0.83	0.33	2.48	0.00	0.00	0.00
16.70	0.83	0.33	2.48	0.00	0.00	0.00
16.75	0.83	0.33	2.48	0.00	0.00	0.00
16.80	0.83	0.33	2.48	0.00	0.00	0.00
16.85	0.83	0.33	2.48	0.00	0.00	0.00
16.90	0.83	0.33	2.48	0.00	0.00	0.00
16.95	0.83	0.33	2.48	0.00	0.00	0.00
17.00	0.83	0.33	2.48	0.00	0.00	0.00
17.05	0.83	0.33	2.48	0.00	0.00	0.00
17.10	0.83	0.33	2.48	0.00	0.00	0.00
17.15	0.83	0.33	2.48	0.00	0.00	0.00
17.20	0.83	0.34	2.48	0.00	0.00	0.00
17.25	0.83	0.34	2.48	0.00	0.00	0.00
17.30	0.83	0.34	2.48	0.00	0.00	0.00
17.35	0.83	0.34	2.48	0.00	0.00	0.00
17.40	0.83	0.34	2.48	0.00	0.00	0.00
17.45	0.83	0.34	2.48	0.00	0.00	0.00
17.50	0.83	0.34	2.48	0.00	0.00	0.00
17.55	0.83	0.34	2.48	0.00	0.00	0.00
17.60	0.83	0.34	2.48	0.00	0.00	0.00
17.65	0.83	0.34	2.48	0.00	0.00	0.00
17.70	0.83	0.34	2.47	0.00	0.00	0.00
17.75	0.83	0.34	2.47	0.00	0.00	0.00
17.80	0.83	0.34	2.47	0.00	0.00	0.00
17.85	0.83	0.34	2.47	0.00	0.00	0.00
17.90	0.83	0.34	2.47	0.00	0.00	0.00
17.95	0.83	0.34	2.47	0.00	0.00	0.00
18.00	0.83	0.34	2.47	0.00	0.00	0.00
18.05	0.83	0.34	2.47	0.00	0.00	0.00
18.10	0.83	0.34	2.47	0.00	0.00	0.00
18.15	0.83	0.34	2.47	0.00	0.00	0.00
18.20	0.83	0.34	2.47	0.00	0.00	0.00
18.25	0.83	0.34	2.47	0.00	0.00	0.00
18.30	0.83	0.34	2.47	0.00	0.00	0.00
18.35	0.83	0.34	2.47	0.00	0.00	0.00
18.40	0.83	0.34	2.47	0.00	0.00	0.00
18.45	0.83	0.34	2.47	0.00	0.00	0.00
18.50	0.83	0.34	2.47	0.00	0.00	0.00
18.55	0.83	0.34	2.47	0.00	0.00	0.00
18.60	0.83	0.34	2.47	0.00	0.00	0.00
18.65	0.83	0.34	2.47	0.00	0.00	0.00
18.70	0.83	0.34	2.47	0.00	0.00	0.00
18.75	0.83	0.34	2.47	0.00	0.00	0.00
18.80	0.83	0.34	2.47	0.00	0.00	0.00
18.85	0.83	0.34	2.47	0.00	0.00	0.00
18.90	0.83	0.34	2.47	0.00	0.00	0.00
18.95	0.83	0.34	2.46	0.00	0.00	0.00
19.00	0.83	0.34	2.46	0.00	0.00	0.00
19.05	0.83	0.34	2.46	0.00	0.00	0.00
19.10	0.83	0.34	2.46	0.00	0.00	0.00
19.15	0.83	0.34	2.46	0.00	0.00	0.00
19.20	0.83	0.34	2.46	0.00	0.00	0.00
19.25	0.83	0.34	2.46	0.00	0.00	0.00
19.30	0.83	0.34	2.46	0.00	0.00	0.00
19.35	0.83	0.34	2.46	0.00	0.00	0.00
19.40	0.83	0.34	2.46	0.00	0.00	0.00
19.45	0.83	0.34	2.46	0.00	0.00	0.00
19.50	0.83	0.34	2.46	0.00	0.00	0.00
19.55	0.83	0.34	2.46	0.00	0.00	0.00
19.60	0.83	0.34	2.46	0.00	0.00	0.00
19.65	0.83	0.34	2.46	0.00	0.00	0.00
19.70	0.83	0.34	2.46	0.00	0.00	0.00
19.75	0.83	0.34	2.46	0.00	0.00	0.00
19.80	0.83	0.34	2.46	0.00	0.00	0.00
19.85	0.83	0.34	2.46	0.00	0.00	0.00

19.90	0.83	0.34	2.46	0.00	0.00	0.00
19.95	0.83	0.34	2.46	0.00	0.00	0.00
20.00	0.83	0.34	2.46	0.00	0.00	0.00
20.05	0.83	0.34	2.46	0.00	0.00	0.00
20.10	0.83	0.34	2.46	0.00	0.00	0.00
20.15	0.83	0.34	2.46	0.00	0.00	0.00
20.20	0.83	0.34	2.46	0.00	0.00	0.00
20.25	0.83	0.34	2.46	0.00	0.00	0.00
20.30	0.83	0.34	2.46	0.00	0.00	0.00
20.35	0.83	0.34	2.46	0.00	0.00	0.00
20.40	0.83	0.34	2.46	0.00	0.00	0.00
20.45	0.83	0.34	2.46	0.00	0.00	0.00
20.50	0.83	0.34	2.46	0.00	0.00	0.00
20.55	0.83	0.34	2.46	0.00	0.00	0.00
20.60	0.83	0.34	2.46	0.00	0.00	0.00
20.65	0.83	0.34	2.46	0.00	0.00	0.00
20.70	0.83	0.34	2.46	0.00	0.00	0.00
20.75	0.83	0.34	2.46	0.00	0.00	0.00
20.80	0.83	0.34	2.46	0.00	0.00	0.00
20.85	0.83	0.34	2.46	0.00	0.00	0.00
20.90	0.83	0.34	2.46	0.00	0.00	0.00
20.95	0.83	0.34	2.46	0.00	0.00	0.00
21.00	0.83	0.34	2.46	0.00	0.00	0.00
21.05	0.83	0.34	2.46	0.00	0.00	0.00
21.10	0.83	0.34	2.46	0.00	0.00	0.00
21.15	0.83	0.34	2.46	0.00	0.00	0.00
21.20	0.83	0.34	2.46	0.00	0.00	0.00
21.25	0.83	0.34	2.46	0.00	0.00	0.00
21.30	0.83	0.34	2.46	0.00	0.00	0.00
21.35	0.83	0.34	2.46	0.00	0.00	0.00
21.40	0.83	0.34	2.46	0.00	0.00	0.00
21.45	0.83	0.34	2.46	0.00	0.00	0.00
21.50	0.83	0.34	2.46	0.00	0.00	0.00
21.55	0.83	0.34	2.46	0.00	0.00	0.00
21.60	0.83	0.34	2.46	0.00	0.00	0.00
21.65	0.83	0.34	2.46	0.00	0.00	0.00
21.70	0.83	0.34	2.46	0.00	0.00	0.00
21.75	0.83	0.34	2.46	0.00	0.00	0.00
21.80	0.83	0.34	2.46	0.00	0.00	0.00
21.85	0.83	0.34	2.46	0.00	0.00	0.00
21.90	0.83	0.34	2.46	0.00	0.00	0.00
21.95	0.83	0.34	2.46	0.00	0.00	0.00
22.00	0.83	0.34	2.46	0.00	0.00	0.00
22.05	0.83	0.34	2.46	0.00	0.00	0.00
22.10	0.83	0.34	2.46	0.00	0.00	0.00
22.15	0.83	0.34	2.46	0.00	0.00	0.00
22.20	0.83	0.34	2.46	0.00	0.00	0.00
22.25	0.83	0.34	2.46	0.00	0.00	0.00
22.30	0.83	0.34	2.46	0.00	0.00	0.00
22.35	0.83	0.34	2.46	0.00	0.00	0.00
22.40	0.83	0.34	2.46	0.00	0.00	0.00
22.45	0.83	0.34	2.46	0.00	0.00	0.00
22.50	0.83	0.34	2.46	0.00	0.00	0.00
22.55	0.83	0.34	2.46	0.00	0.00	0.00
22.60	0.83	0.34	2.46	0.00	0.00	0.00
22.65	0.83	0.34	2.46	0.00	0.00	0.00
22.70	0.83	0.34	2.46	0.00	0.00	0.00
22.75	0.83	0.34	2.46	0.00	0.00	0.00
22.80	0.83	0.34	2.46	0.00	0.00	0.00
22.85	0.83	0.34	2.46	0.00	0.00	0.00
22.90	0.83	0.34	2.46	0.00	0.00	0.00
22.95	0.83	0.34	2.46	0.00	0.00	0.00
23.00	0.83	0.34	2.46	0.00	0.00	0.00
23.05	0.83	0.34	2.46	0.00	0.00	0.00
23.10	0.83	0.34	2.46	0.00	0.00	0.00
23.15	0.83	0.34	2.46	0.00	0.00	0.00
23.20	0.83	0.34	2.46	0.00	0.00	0.00
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23.35	0.83	0.34	2.46	0.00	0.00	0.00
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23.45	0.83	0.34	2.46	0.00	0.00	0.00
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23.55	0.83	0.34	2.46	0.00	0.00	0.00
23.60	0.83	0.34	2.46	0.00	0.00	0.00
23.65	0.83	0.34	2.46	0.00	0.00	0.00
23.70	0.83	0.34	2.46	0.00	0.00	0.00
23.75	0.83	0.34	2.46	0.00	0.00	0.00
23.80	0.83	0.34	2.46	0.00	0.00	0.00
23.85	0.83	0.34	2.46	0.00	0.00	0.00
23.90	0.83	0.34	2.46	0.00	0.00	0.00
23.95	0.83	0.34	2.46	0.00	0.00	0.00
24.00	0.83	0.34	2.46	0.00	0.00	0.00
24.05	0.83	0.34	2.46	0.00	0.00	0.00
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24.15	0.83	0.34	2.46	0.00	0.00	0.00
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24.30	0.83	0.34	2.46	0.00	0.00	0.00
24.35	0.83	0.34	2.46	0.00	0.00	0.00
24.40	0.83	0.34	2.46	0.00	0.00	0.00
24.45	0.83	0.34	2.46	0.00	0.00	0.00
24.50	0.83	0.34	2.46	0.00	0.00	0.00
24.55	0.83	0.34	2.46	0.00	0.00	0.00
24.60	0.83	0.34	2.46	0.00	0.00	0.00
24.65	0.83	0.34	2.46	0.00	0.00	0.00
24.70	0.83	0.34	2.46	0.00	0.00	0.00
24.75	0.83	0.34	2.46	0.00	0.00	0.00
24.80	0.83	0.34	2.46	0.00	0.00	0.00
24.85	0.83	0.34	2.46	0.00	0.00	0.00
24.90	0.83	0.34	2.46	0.00	0.00	0.00
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25.30	2.00	0.34	5.00	0.00	0.00	0.00
25.35	2.00	0.34	5.00	0.00	0.00	0.00
25.40	2.00	0.34	5.00	0.00	0.00	0.00
25.45	2.00	0.34	5.00	0.00	0.00	0.00
25.50	2.00	0.34	5.00	0.00	0.00	0.00
25.55	2.00	0.34	5.00	0.00	0.00	0.00
25.60	2.00	0.34	5.00	0.00	0.00	0.00
25.65	2.00	0.34	5.00	0.00	0.00	0.00
25.70	2.00	0.34	5.00	0.00	0.00	0.00
25.75	2.00	0.34	5.00	0.00	0.00	0.00
25.80	2.00	0.34	5.00	0.00	0.00	0.00
25.85	2.00	0.34	5.00	0.00	0.00	0.00
25.90	2.00	0.34	5.00	0.00	0.00	0.00
25.95	2.00	0.34	5.00	0.00	0.00	0.00
26.00	2.00	0.34	5.00	0.00	0.00	0.00
26.05	2.00	0.34	5.00	0.00	0.00	0.00
26.10	2.00	0.34	5.00	0.00	0.00	0.00
26.15	2.00	0.34	5.00	0.00	0.00	0.00
26.20	2.00	0.34	5.00	0.00	0.00	0.00
26.25	2.00	0.34	5.00	0.00	0.00	0.00
26.30	2.00	0.34	5.00	0.00	0.00	0.00
26.35	2.00	0.34	5.00	0.00	0.00	0.00
26.40	2.00	0.34	5.00	0.00	0.00	0.00
26.45	2.00	0.34	5.00	0.00	0.00	0.00
26.50	2.00	0.34	5.00	0.00	0.00	0.00
26.55	2.00	0.34	5.00	0.00	0.00	0.00
26.60	2.00	0.34	5.00	0.00	0.00	0.00
26.65	2.00	0.34	5.00	0.00	0.00	0.00
26.70	2.00	0.34	5.00	0.00	0.00	0.00
26.75	2.00	0.34	5.00	0.00	0.00	0.00
26.80	2.00	0.34	5.00	0.00	0.00	0.00
26.85	2.00	0.34	5.00	0.00	0.00	0.00
26.90	2.00	0.34	5.00	0.00	0.00	0.00
26.95	2.00	0.34	5.00	0.00	0.00	0.00

27.00	2.00	0.34	5.00	0.00	0.00	0.00
27.05	2.00	0.34	5.00	0.00	0.00	0.00
27.10	2.00	0.34	5.00	0.00	0.00	0.00
27.15	2.00	0.34	5.00	0.00	0.00	0.00
27.20	2.00	0.34	5.00	0.00	0.00	0.00
27.25	2.00	0.34	5.00	0.00	0.00	0.00
27.30	2.00	0.34	5.00	0.00	0.00	0.00
27.35	2.00	0.34	5.00	0.00	0.00	0.00
27.40	2.00	0.34	5.00	0.00	0.00	0.00
27.45	2.00	0.34	5.00	0.00	0.00	0.00
27.50	2.00	0.34	5.00	0.00	0.00	0.00

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* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED TRIANGLE DEVELOPMENT
SHEPHERD AND TEMPERANCE AVENUES
CLOVIS, CALIFORNIA

PROJECT NO. 012-22233
JANUARY 31, 2024

Prepared for:

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Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

January 31, 2024

KA No. 012-22233

Ms. Goldie Lewis
Wilson Homes
7550 N. Palm Avenue, Ste 102
Fresno, California 93711

RE: Geotechnical Engineering Investigation
Proposed Triangle Development
Shepherd and Temperance Avenues
Clovis, California

Dear Ms. Lewis:

In accordance with your request, we have completed a Geotechnical Engineering Investigation for the above-referenced site. The results of our investigation are presented in the attached report.

If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (559) 348-2200.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

REGISTERED PROFESSIONAL ENGINEER
DAVID R. JAROSZ II
2698
GEOTECHNICAL
STATE OF CALIFORNIA

David R. Jarosz, II
Managing Engineer
RGE No. 2698/RCE No. 60185

DRJ:ht

TABLE OF CONTENTS

INTRODUCTION 1

PURPOSE AND SCOPE 1

PROPOSED CONSTRUCTION 2

SITE LOCATION, SITE HISTORY AND SITE DESCRIPTION 2

GEOLOGIC SETTING 3

FIELD AND LABORATORY INVESTIGATIONS 4

SOIL PROFILE AND SUBSURFACE CONDITIONS 4

GROUNDWATER 5

CONCLUSIONS AND RECOMMENDATIONS 6

- Administrative Summary 6
- Groundwater Influence on Structures/Construction 8
- Site Preparation 8
- Groundwater and Surface Water Considerations 10
- Engineered Fill 11
- Drainage and Landscaping 12
- Utility Trench Backfill 12
- Foundations 13
- Floor Slabs and Exterior Flatwork 14
- Lateral Earth Pressures and Retaining Walls 14
- R-Value Test Results and Pavement Design 15
- Seismic Parameters – 2022 CBC 17
- Soil Cement Reactivity 18
- Compacted Material Acceptance 18
- Testing and Inspection 19

LIMITATIONS 19

SITE PLAN 21

LOGS OF BORINGS (1 TO 24) ..... Appendix A

GENERAL EARTHWORK SPECIFICATIONS ..... Appendix B

GENERAL PAVEMENT SPECIFICATIONS ..... Appendix C

January 31, 2024 KA Project No. 012-22233

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED TRIANGLE DEVELOPMENT
SHEPHERD AND TEMPERANCE AVENUES
CLOVIS, CALIFORNIA

INTRODUCTION

This report presents the results of our Geotechnical Engineering Investigation for the proposed Triangle Development to be located north of Shepherd Avenue near Temperance Avenue in Clovis, California. Discussions regarding site conditions are presented herein, together with conclusions and recommendations pertaining to site preparation, Engineered Fill, utility trench backfill, drainage and landscaping, foundations, concrete floor slabs and exterior flatwork, retaining walls, soil cement reactivity and pavement design.

A site plan showing the approximate boring locations is presented following the text of this report. A description of the field investigation, boring logs and the boring log legend are presented in Appendix A. Appendix A contains a description of laboratory testing phase of this study; along with laboratory test results. Appendices B and C contain guides to earthwork and pavement specifications. When conflicts in the text of the report occur with the general specifications in the appendices, the recommendations in the text of the report have precedence.

PURPOSE AND SCOPE

This investigation was conducted to evaluate the soil and groundwater conditions at the site, to make geotechnical engineering recommendations for use in design of specific construction elements and to provide criteria for site preparation and Engineered Fill construction.

Our scope of services was outlined in our original proposal dated May 16, 2022 and updated October 28, 2022 (KA Proposal No. P367-22) and included the following:

- A site reconnaissance by a member of our engineering staff to evaluate the surface conditions at the project site.
- A field investigation consisting of drilling 24 borings to depths ranging from approximately 10 to 50 feet for evaluation of the subsurface conditions at the project site.
- Performing laboratory tests on representative soil samples obtained from the borings to evaluate the physical and index properties of the subsurface soils.

- Evaluation of the data obtained from the investigation and an engineering analysis to provide recommendations for use in the project design and preparation of construction specifications.

- Preparation of this report summarizing the results, conclusions, recommendations, and findings of our investigation.

PROPOSED CONSTRUCTION

We understand that design of the proposed development is currently underway; structural load information and other final details pertaining to the structures are unavailable. On a preliminary basis, it is understood that development will consist of single-family residential lots. In addition, a community center may be included in the development. It is understood the buildings will be single- or two-story wood-framed structures utilizing conventional shallow foundations and concrete slab-on-grade construction. Footing loads are anticipated to be light to moderate. On-site landscaping and roadways will be associated with the project.

In the event these structural or grading details are inconsistent with the final design criteria, the Soils Engineer should be notified so that we may update this writing as applicable.

SITE LOCATION, SITE HISTORY AND SITE DESCRIPTION

The site is irregular in shape and encompasses approximately 160.5 acres. The approximate center of the site is located 1,800 feet north of the intersection of Shepherd Avenue and Temperance Avenue in Clovis, California. The site is identified by Assessor's Parcel Numbers (APN) 557-031-23, 27, 35, 055, and 445. The site is surrounded by a drainage canal, vacant agricultural land, and a residential development to the west; vacant agricultural land, Shepherd Avenue, and a residential development to the south; vacant agricultural land, a rural residence, and Dry Creek Reservoir to the east and northeast.

Site history was obtained by reviewing historical aerial photographs taken in 1998, 2006, 2014 and 2019. Review of the 1998 aerial photograph indicates the project site predominately consisted mainly of agricultural land and rangeland. Approximately three rural residences were located in the southern and central portions of the site. Associated with the rural residential developments and agriculture use were several barns, sheds, fences, and trees. A creek channel known as Dry Creek was located running across the central area of the site and a triangular-shaped basin was located along the west side.

Review of the 2006 aerial photograph indicates that the project site conditions appeared to be relatively similar to that noted in the 1998 aerial photograph.

Review of the 2014 and 2019 aerial photographs indicate that the project site conditions appeared to be relatively similar to that noted in the 2006 aerial photograph. A few of the barns appeared to have been removed and a landscape business was located in the northwest corner of Temperance and Shepherd Avenues.

Presently, the site conditions appear relatively similar to that noted in the previous aerial photographs. Approximately three rural residences and a landscape business with associated barns, sheds, and trees are located in the southern and central portions of the site. A triangular shaped basin is located on the west side of the property near the drainage canal. The remainder of the site is utilized as rangeland or pastureland. Buried utility lines are located within the site associated with the existing developments. The site is covered by a sparse to moderate weed growth and the surface soils have a loose consistency. The site is relatively level with no major changes in grade with approximately 10 feet of relief across the property.

GEOLOGIC SETTING

The San Joaquin Valley, which includes the Clovis area, is a topographic and structural basin that is bounded on the east by the Sierra Nevada and on the west by the Coast Ranges. The Sierra Nevada, a fault block dipping gently southwestward, is made up of igneous and metamorphic rocks of pre-Tertiary age that comprise the basement complex beneath the Valley. The Coast Ranges contain folded and faulted sedimentary rocks of Mesozoic and Cenozoic age, which are similar to those rocks that underlie the Valley at depth and nonconformably overlie the basement complex; gently dipping to nearly horizontal sedimentary rocks of Tertiary and Quaternary age overlie the older rocks. These younger rocks are mostly of continental origin and in the Clovis area, they were derived from the Sierra Nevada.

The San Joaquin River is the principal river in the area. Dry Creek is a seasonal tributary of the San Joaquin River and the original channel of the creek runs east to west across the central portion of the site. Alluvial fans formed by the San Joaquin River and Dry Creek are the largest geomorphic features in the Clovis area. The formation of the fans has resulted in rather flat regional topography.

The Coast Ranges evolved as a result of folding, faulting and accretion of diverse geologic terrains. They are composed chiefly of sedimentary and metamorphic rocks that are sharply deformed into complex structures. They are broken by numerous faults, the San Andreas Fault being the most notable structural feature.

Both the Sierra Nevada and Coast Range are geologically young mountain ranges and possess active and potentially active fault zones. Major active faults and fault zones occur at some distance to the east, west and south of the Clovis area. The Owens Valley Fault Zone bounds the eastern edge of the Sierra Nevada block and contains both active and potentially active faults.

Portions of the Ortigalita, Calaveras, Hayward and Rinconada Faults, which are to the west, are considered potentially active. The San Andreas Fault is possibly the best-known fault and is located approximately 60 to 70 miles to the west.

There are no active fault traces in the project vicinity. Accordingly, the project area is not within an Earth Quake Fault Zone (Special Studies Zone) and will not require a special site investigation by an Engineering Geologist.

Clovis residents could feel the effects of a large seismic event on one of the nearby active or potentially active fault zones. Clovis has experienced groundshaking from earthquakes in the historical past. According to the Five County Seismic Safety Element, groundshaking of VII intensity (Modified Mercali Scale) was felt in Clovis from the 1872 Owens Valley Earthquake. This is the largest known earthquake event affecting the Clovis area.

Secondary hazards from earthquakes include rupture, seiche, landslides, liquefaction and subsidence. Since there are no known active faults within the immediate area, ground rupture from surface faulting should not be a potential problem. Seiche, landslides, and liquefaction are not hazards in the area either. Lastly, deep subsidence problems may be low to moderate according to the conclusions of the Five County Seismic Safety Element. However, there are no known occurrences of structural or architectural damage due to deep subsidence in the Clovis area.

FIELD AND LABORATORY INVESTIGATIONS

Subsurface soil conditions were explored by drilling 24 borings to depths ranging from approximately 10 to 50 feet below existing site grade, using a truck-mounted drill rig. In addition, 5 bulk subgrade samples were obtained from the site for laboratory R-value testing. The approximate boring and bulk sample locations are shown on the site plan. During drilling operations, penetration tests were performed at regular intervals to evaluate the soil consistency, obtain information regarding the engineering properties of the subsoils and to retain soil samples for laboratory testing. The soils encountered were continuously examined and visually classified in accordance with the Unified Soil Classification System. A more detailed description of the field investigation is presented in Appendix A.

Laboratory tests were performed on selected soil samples to evaluate their physical characteristics and engineering properties. The laboratory-testing program was formulated with emphasis on the evaluation of natural moisture, density, gradation, shear strength, consolidation potential, plasticity, R-value and moisture-density relationships of the materials encountered. In addition, chemical tests were performed to evaluate the soil-cement reactivity. Details of the laboratory test program and the results of laboratory test are summarized in Appendix A. This information, along with the field observations, was used to prepare the final boring logs in Appendix A.

SOIL PROFILE AND SUBSURFACE CONDITIONS

Based on our findings, the subsurface conditions encountered appear typical of those found in the geologic region of the site. In general, the surface soils consisted of approximately 6 to 12 inches of very loose silty sand, sandy silt, sand, clayey sand, silty sand/clayey sand, clayey sand/sandy clay, silty sand/sand and silty sand/sandy silt. These soils are disturbed from prior discing or agriculture activities, have low strength characteristics, and are highly compressible when saturated.

Approximately 4 feet of fill material was encountered within Boring No. B15 located in the western portion of the site. The fill material predominately consisted of sandy silt. The thickness and extent of fill material was determined based on limited test borings and visual observation. Thicker fill may be

present at the site. Limited testing was performed on the fill soils during the time of our field and laboratory investigations. The limited testing indicates that the fill soils ranged from loosely placed to compacted.

Beneath the loose surface soils and fill material, approximately 2 to 3½ feet of loose to very dense silty sand, sandy silt, silty sand/sand, clayey sand, silty sand/sandy silt, clayey sand/sandy clay, silty sand/clayey sand, and sand were encountered. These soils contained varying amounts of clay and gravel. Field and laboratory tests suggest that these soils are moderately strong and slightly compressible. Penetration resistance ranged from 6 blows per foot to greater than 50 blows per six inches. Dry densities ranged from 83 to 123 pounds per cubic foot (pcf). Representative soil samples consolidated approximately 1½ to 3½ percent under a 2 ksf load when saturated. Representative soil samples had an internal angle of friction of 25 to 36 degrees.

Below approximately 2 feet in some of the borings, very dense weakly cemented silty sand, sandy silt, clayey sand, and silty sand/clayey sand, locally referred to as hardpan, were encountered. The cemented nature of the subsoil hampered recovery of undisturbed soil samples. However, these cemented soils can be generally characterized as relatively strong, slightly compressible, and have a low permeability. Penetration resistance was generally greater than 50 blows per 6 inches. These soils had higher strength characteristics than the upper soils.

Below 2½ to 4½ feet, alternating layers of predominately loose to very dense silty sand, clayey sandy silt, silty sand/clayey sand, clayey sand, sand, silty sand/sand, silty sand/sandy silt, and clayey sand/sandy clay or hard sandy clay were encountered. These soils contained varying amounts of clay and gravel. Field and laboratory tests suggest that these soils are moderately strong and slightly compressible. Penetration resistance ranged from 7 blows per foot to greater than 50 blows per 6 inches. Dry densities ranged from 90 to 131 pcf. Representative soil samples consolidated approximately 1½ to 3 percent under a 2 ksf load when saturated. These soils extended to the termination depth of our borings.

For additional information about the soils encountered, please refer to the boring logs in Appendix A.

GROUNDWATER

Test boring locations were checked for the presence of groundwater during and immediately following the drilling operations. Free groundwater was encountered at depths of 5½ to 21 feet in some of our borings during our subsurface investigation. Historic high groundwater has been as shallow as 2 feet within the project site vicinity.

Cemented silty sand, sandy silt, clayey sand, and silty sand/clayey sand, locally referred to as "hardpan," were encountered below 2 feet in several of the borings. This cementation retards the free percolation of the surface water into the soil stratum below the hardpan frequently resulting in a temporary perched water table condition at or near the ground surface.

It should be recognized that water table elevations may fluctuate with time, being dependent upon seasonal precipitation, irrigation, land use and climatic conditions as well as other factors. Therefore, water level observations at the time of the field investigation may vary from those encountered during the construction phase of the project. The evaluation of such factors is beyond the scope of this report.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of our field and laboratory investigations, along with previous geotechnical experience in the project area, the following is a summary of our evaluations, conclusions, and recommendations.

Administrative Summary

In brief, the subject site and soil conditions, with the exception of the loose surface soils, fill material, expansive nature of the clayey soils and existing residential and agricultural developments, appear to be conducive to the development of the project. The surface soils have a loose consistency. These soils are disturbed, have low strength characteristics and are highly compressible when saturated. Accordingly, it is recommended that the surface soils be recompacted. This compaction effort should stabilize the surface soils and locate any unsuitable or pliant areas not found during our field investigation.

The on-site upper soils consist of silty sand, sandy silt, clayey sand, silty sand/sandy silt, and clayey sand. The clayey soils appeared to have a low to moderate swell potential. The estimated swell pressures of the clayey soils may cause minor movement affecting slabs and possible stucco or similar brittle exterior finishes. To reduce potential soil movement, it is recommended the upper 18 inches of soil within slab-on-grade and exterior flatwork areas consist of non-expansive Engineered Fill. Preliminary testing indicates the on-site soils will be suitable for reuse as non-expansive Engineered Fill, provided they are cleansed of excessive organics and debris. During construction, it is recommended that additional tests be performed on the on-site soils to verify their physical and index properties.

Up to 4 feet of fill material was encountered within Boring No. B15 located in the western portion of the site. The fill material predominately consisted of sandy silt. The thickness and extent of fill material was determined based on limited test borings and visual observation. Thicker fill may be present at the site. Verification of the extent of fill should be determined during site grading. It is recommended that fill soils that have not been properly compacted and certified be excavated and recompacted. Prior to backfilling, the bottom of the excavation should be observed by Krazan & Associates, Inc. to verify no additional removal is required.

The upper soils within the Dry Creek are very loose and highly compressible. Therefore, it is recommended that after stripping operations and fill removal, the upper 4 feet of native soil within the area of the Dry Creek be excavated, worked until uniform and free from large clods, moisture-conditioned as necessary, and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. Excavation should extend to a minimum of 5 feet beyond the edge of the channel. The exposed subgrade soils should be proof-rolled under observation by Krazan & Associates, Inc. to verify stability prior to the placement of Engineered Fill. Soft or pliant soils should be excavated to firm native ground.

Trees are located within the project site and vicinity. Tree removal operations should include roots greater than 1 inch in diameter. The resulting excavations should be backfilled with Engineered Fill compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Approximately three rural residences with associated agricultural structures are located within the central and southern portions of the site. Associated with these developments are buried structures, such as utility lines, irrigation lines, drainage lines, septic systems and possible water wells. Demolition activities should include proper removal any buried structures. Water wells should be abandoned in accordance with county standards. The resulting excavations should be backfilled with Engineered Fill. It is suspected that demolition activities of the existing structures will disturb the upper soils. Following demolition activities, it is recommended that the disturbed soils be removed and/or recompacted. Any buried structures, including loosely backfilled excavations, encountered during construction should be properly removed and the resulting excavations backfilled with Engineered Fill. Disturbed areas caused by demolition activities should be recompacted.

Lenses of very dense, weakly cemented silty sand, sandy silt, clayey sand, and silty sand/clayey sand, locally referred to as hardpan, were encountered below 2 feet in some of the borings. Hardpan is an excellent foundation-bearing material because of its apparent rock-like properties caused by particle cementation. However, this same cementation also retards the free percolation of the surface water into the soil stratum below the hardpan, frequently resulting in a temporary perched water table condition at or near the ground surface. This perched water condition has a substantial affect on the strength characteristics of the surface soils. As a mitigation measure, very positive drainage should be established around the proposed structures.

Relatively clean sands were encountered at various locations throughout the site. The possibility exists that site grading operations could expose these soils in areas of proposed buildings, pavements, and/or retaining walls. The Contractor should note that these soils lack the cohesion necessary to stand vertically, even in shallow excavations such as footing trenches. If these conditions are encountered, it will be necessary to over-excavate the affected area(s) to a minimum of 2 feet below the proposed bearing surface. These areas may be backfilled using a mix of the silty sand and sand soils that contains at least 20 percent fines and meeting the requirements for Engineered Fill. This material may be obtained from elsewhere at the site, imported to the site from an approved off-site source, or manufactured through blending of the excavated clean sand with other suitable material containing a higher percentage of fines to result in material meeting the requirements for Engineered Fill.

Sandy and gravelly soil conditions were encountered at the site. These cohesionless soils have a tendency to cave in trench wall excavations. Shoring or sloping back trench sidewalls may be required within these sandy and gravelly soils.

After completion of the recommended site preparation, the site should be suitable for shallow footing support. The proposed structure footings may be designed utilizing an allowable bearing pressure of 2,000 psf for dead-plus-live loads. Footings should have a minimum embedment of 12 inches.

Groundwater Influence on Structures/Construction

During our recent field investigation groundwater was encountered at depths of 5½ to 21 feet in some of borings drilled as part of this investigation. In addition, groundwater has historically been encountered at depths as shallow as 2 feet below existing site grade. If groundwater is encountered, our firm should be consulted prior to dewatering the site. Installation of a standpipe piezometer is suggested prior to construction should groundwater levels be a concern. Pools located within 500 feet of the existing reservoir should incorporate anchorage and subdrain systems due to the shallow water.

In addition to the groundwater level, if earthwork is performed during or soon after periods of precipitation, the subgrade soils may become saturated, "pump," or not respond to densification techniques. Typical remedial measures include: discing and aerating the soil during dry weather; mixing the soil with dryer materials; removing and replacing the soil with an approved fill material; or mixing the soil with an approved lime or cement product. Our firm should be consulted prior to implementing remedial measures to observe the unstable subgrade conditions and provide appropriate recommendations.

Some structures in the Clovis area are founded on hardpan have experienced standing water for extended periods of time in crawl spaces below wooden floors or within sunken floor slab areas. The sources of the water were natural precipitation and landscape irrigation, and consequently, wood floor and sunken floor slab construction in hardpan soils are discouraged.

Site Preparation

General site clearing should include removal of vegetation; existing utilities; concrete structures including foundations; basement walls and floors; existing stockpiled soil; trees and associated root systems; rubble; rubbish; and any loose and/or saturated materials. Site stripping should extend to a minimum depth of 2 to 4 inches, or until all organics in excess of 3 percent by volume are removed. Deeper stripping may be required in localized areas. These materials will not be suitable for use as Engineered Fill. However, stripped topsoil may be stockpiled and reused in landscape or non-structural areas.

Up to 4 feet of fill material was encountered within Boring No. B15 located in the western portion of the site. The fill material predominately consisted of sandy silt. The thickness and extent of fill material was determined based on limited test borings and visual observation. Thicker fill may be present at the site. Verification of the extent of fill should be determined during site grading. It is recommended that fill soils that have not been properly compacted and certified be excavated and recompacted. Prior to backfilling, the bottom of the excavation should be observed by Krazan & Associates, Inc. to verify no additional removal is required.

The site is presently occupied by approximately three rural residences with associated agricultural barns and sheds. Associated with these developments are buried structures, such as utility lines, irrigation lines, septic systems, and water wells. Demolition activities should include proper removal of any buried structures. Any buried structures, including loosely backfilled excavations, encountered during construction should be properly removed and the resulting excavations backfilled. Excavations,

depressions, or soft and pliant areas extending below planned finish subgrade level should be cleaned to firm undisturbed soil, and backfilled with Engineered Fill. In general, any septic tanks, debris pits, cesspools, or similar structures should be entirely removed. Concrete footings should be removed to an equivalent depth of at least 3 feet below proposed footing elevations or as recommended by the Soils Engineer. Water wells should be abandoned in accordance with county standards. Any other buried structures should be removed in accordance with the recommendations of the Soils Engineer. Resulting excavations should be backfilled with Engineered Fill.

Trees are located within the site. Tree removal operations should include roots greater than 1 inch in diameter. The resulting excavations should be backfilled with Engineered Fill compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

The upper soils within the Dry Creek are very loose and highly compressible. Therefore, it is recommended that after stripping operations and fill removal, the upper 4 feet of native soil within the area of the Dry Creek be excavated, worked until uniform and free from large clods, moisture-conditioned as necessary, and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. Excavation should extend to a minimum of 5 feet beyond the edge of the channel. The exposed subgrade soils should be proof-rolled under observation by Krazan & Associates, Inc. to verify stability prior to the placement of Engineered Fill. Soft or pliant soils should be excavated to firm native ground.

Following stripping, fill removal, tree removal, demolition activities, and prior to fill placement, the exposed subgrade within proposed building areas should be excavated to a depth of at least 12 inches, worked until uniform and free from large clods, moisture-conditioned as necessary, and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. Limits of recompaction should extend 5 feet beyond structural elements. Prior to backfilling, the bottom of the excavation should be proofrolled and observed by Krazan & Associates, Inc. to verify stability. Soft or pliant areas encountered should be excavated to firm native ground.

Following stripping, fill removal, tree removal, demolition activities, and prior to fill placement, the exposed subgrade within proposed exterior flatwork and pavement areas should be excavated/scarified to a depth of at least 12 inches, worked until uniform and free from large clods, moisture-conditioned as necessary, and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. Limits of recompaction should extend a minimum of 2 feet beyond flatwork and pavements.

The on-site clayey soils appear to have a low to moderate swell potential. The estimated swell pressures of the clayey soils may cause minor movement affecting slabs and possible stucco or similar brittle exterior finishes. To reduce potential soil movement, it is recommended the upper 12 inches of soil within slab-on-grade and exterior flatwork areas consist of non-expansive Engineered Fill. Preliminary testing indicates the on-site soils that do not contain clay will be suitable for reuse as non-expansive Engineered Fill, provided they are cleansed of excessive organics and debris. During construction, it is recommended that additional tests be performed on the on-site soils to verify their physical and index properties.

Relatively clean sands were encountered at various locations throughout the site. The possibility exists that site grading operations could expose these soils in areas of proposed buildings, pavements, and/or retaining walls. The Contractor should note that these soils lack the cohesion necessary to stand vertically, even in shallow excavations such as footing trenches. If these conditions are encountered, it will be necessary to over-excavate the affected area(s) to a minimum of 12 inches below the proposed bearing surface. These areas may be backfilled using a mix of the silty sand and sand soils that contains at least 20 percent fines and meeting the requirements for Engineered Fill. This material may be obtained from elsewhere at the site, imported to the site from an approved off-site source, or manufactured through blending of the excavated clean sand with other suitable material containing a higher percentage of fines to result in material meeting the requirements for Engineered Fill.

The upper soils, during wet winter months, become very moist due to the absorptive characteristics of the soil. Earthwork operations performed during winter months may encounter very moist unstable soils, which may require removal to grade a stable building foundation. Project site winterization consisting of placement of aggregate base and protecting exposed soils during the construction phase should be performed.

A representative of our firm should be present during all site clearing and grading operations to test and observe earthwork construction. This testing and observation is an integral part of our service as acceptance of earthwork construction is dependent upon compaction of the material and the stability of the material. The Soils Engineer may reject any material that does not meet compaction and stability requirements. Further recommendations of this report are predicated upon the assumption that earthwork construction will conform to recommendations set forth in this section and the Engineered Fill section.

Groundwater and Surface Water Considerations

Surface water runoff associated with the existing reservoir levee is the predominate concern for the planned development. During the recent period of high-water storage in the reservoir (second highest level in the last 18 years), the toe drain for the levee was not able to handle the high volume of water. This resulting in piping of soil on the FMFCD property near the property line which resulted in surface water collecting on the parcels planned for development. Within the eastern portion of the planned development located adjacent to the Big Dry Creek Reservoir levee, surface water has ponded on the site. Based on our observations in the field, this surface water is directly related to the water piping out of the soil immediately adjacent to the west side of the reservoir. The inadequacy of the toe drain has resulted in impacts to the subject property that will preclude development of a portion of the property and additional improvements to collect and drain water resulting from the reservoir onto this property. In order to intercept this water from the areas of planned construction, it is recommended interceptor trenches be installed at a distance of approximately 250 feet southwest of the property line adjacent to the levee and near the property line adjacent to the spillway.

The interceptor trench should be 2 feet wide and at least 10 feet deep. The trench sidewalls should be raked to reduce the effects of soil smearing, which may occur during construction and adversely affect soil permeability. A geotextile filter fabric should be installed along the trench walls. A Schedule 40

perforated pipe should be placed no higher than 6 inches above the bottom of the trench. The pipe should be at least 4 inches in diameter and of sufficient strength to resist applied soil pressure and external loads. The perforated drain pipe should be installed at a gradient of at least 1 percent and should discharge to a suitable project drainage system. A detail of the interceptor trench is shown in Figure 2.

The trench shall be backfilled with 9 feet of 1½-inch round river gravel or crushed rock. A permeable barrier, such as untreated construction paper, should be placed between the backfill gravel and native soils to prevent migration of fine materials into the gravel. Native backfill soils should then be backfilled over the paper. The backfill material should be placed in 6-inch lifts and compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Failure of the reservoir levee is outside of the scope of our evaluation.

Engineered Fill

The on-site upper soils consist of silty sand, silty sand/clayey sand, clayey sand/sandy clay, sandy silt, clayey sand, sand, silty sand/sand, and silty sand/sandy silt. The soils that do not contain clay will be suitable for reuse as non-expansive Engineered Fill, provided they are cleansed of excessive organics, debris and fragments greater than 4 inches in maximum dimension. Soils with an expansion index greater than 20 will not be suitable for reuse as non-expansive Engineered Fill and should not be used in the upper 12 inches of slab-on-grade and exterior flatwork areas. These soils may be used for General Engineered Fill within non-structural areas, paved areas, and within slab-on-grade and exterior flatwork areas below 12 inches from finished pad grade, provided they are cleansed of excessive organics and debris. Clayey soils should be moisture-conditioned to at least 2 percent above optimum moisture content during placement. During construction it is recommended that additional tests be performed on the on-site soils to verify their physical and index properties.

Relatively clean sands were encountered at various locations throughout the site. The possibility exists that site grading operations could expose these soils in areas of proposed buildings, pavements, and/or retaining walls. The Contractor should note that these soils lack the cohesion necessary to stand vertically, even in shallow excavations such as footing trenches. If these conditions are encountered, it will be necessary to over-excavate the affected area(s) to a minimum of 2 feet below the proposed bearing surface. These areas may be backfilled using a mix of the silty sand and sand soils that contains at least 20 percent fines and meeting the requirements for Engineered Fill. This material may be obtained from elsewhere at the site, imported to the site from an approved off-site source, or manufactured through blending of the excavated clean sand with other suitable material containing a higher percentage of fines to result in material meeting the requirements for Engineered Fill.

The preferred materials specified for Engineered Fill are suitable for most applications with the exception of exposure to erosion. Project site winterization and protection of exposed soils during the construction phase should be the sole responsibility of the Contractor, since he has complete control of the project site at that time.

Imported Fill should consist of a well-graded, slightly cohesive, fine silty sand or sandy silt, with relatively impervious characteristics when compacted. This material should be approved by the Soils Engineer prior to use and should typically possess the following characteristics:

Percent Passing No. 200 Sieve	20 to 50
Plasticity Index	10 maximum
UBC Standard 29-2 Expansion Index	20 maximum

Fill soils should be placed in lifts approximately 6 inches thick, moisture-conditioned as necessary, and compacted to achieve at least 90 percent of maximum density based on ASTM D1557. Additional lifts should not be placed if the previous lift did not meet the required dry density or if soil conditions are not stable.

Drainage and Landscaping

The ground surface should slope away from building pad and pavement areas toward appropriate drop inlets or other surface drainage devices. In accordance with Section 1804 of the 2022 California Building Code, it is recommended that the ground surface adjacent to foundations be sloped a minimum of 5 percent for a minimum distance of 10 feet away from structures, or to an approved alternative means of drainage conveyance. Swales used for conveyance of drainage and located within 10 feet of foundations should be sloped a minimum of 2 percent. Impervious surfaces, such as pavement and exterior concrete flatwork, within 10 feet of building foundations should be sloped a minimum of 1 percent away from the structure. Drainage gradients should be maintained to carry all surface water to collection facilities and off-site. These grades should be maintained for the life of the project.

Slots or weep holes should be placed in drop inlets or other surface drainage devices in pavement areas to allow free drainage of adjoining base course materials. Cutoff walls should be installed at pavement edges adjacent to vehicular traffic areas; these walls should extend to a minimum depth of 12 inches below pavement subgrades to limit the amount of seepage water that can infiltrate the pavements. Where cutoff walls are undesirable, subgrade drains can be constructed to transport excess water away from planters to drainage interceptors. If cutoff walls can be successfully used at the site, construction of subgrade drains is considered unnecessary.

Utility Trench Backfill

Utility trenches should be excavated according to accepted engineering practice following OSHA (Occupational Safety and Health Administration) standards by a Contractor experienced in such work. The responsibility for the safety of open trenches should be borne by the Contractor. Traffic and vibration adjacent to trench walls should be reduced and cyclic wetting and drying of excavation side slopes should be avoided. Depending upon the location and depth of some utility trenches, groundwater flow into open excavations could be experienced, especially during or shortly following periods of precipitation.

Sandy and gravelly soil conditions were encountered at the site. These cohesionless soils have a tendency to cave in trench wall excavations. Shoring or sloping back trench sidewalls may be required within these sandy and gravelly soils.

Utility trench backfill placed in or adjacent to buildings and exterior slabs should be compacted to at least 90 percent of maximum density based on ASTM Test Method D1557. The utility trench backfill placed in pavement areas should be compacted to at least 90 percent of maximum density based on ASTM Test Method D1557. Pipe bedding should be in accordance with pipe manufacturer's recommendations.

The Contractor is responsible for removing all water sensitive soils from the trench regardless of the backfill location and compaction requirements. The Contractor should use appropriate equipment and methods to avoid damage to the utilities and/or structures during fill placement and compaction.

Foundations

The proposed structures may be supported on a shallow foundation system bearing on undisturbed native soils or Engineered Fill. Spread and continuous footings can be designed for the following maximum allowable soil bearing pressures:

Load	Allowable Loading
Dead Load Only	1,500 psf
Dead-Plus-Live Load	2,000 psf
Total Load, including wind or seismic loads	2,650 psf

The footings should have a minimum depth of 12 inches below pad subgrade (soil grade) or adjacent exterior grade, whichever is lower. Footings should have a minimum width of 12 inches, regardless of load.

The footing excavations should not be allowed to dry out at any time prior to pouring concrete. It is recommended that all footings be reinforced by at least one No. 4 reinforcing bar in both top and bottom.

The total movement is not expected to exceed 1 inch. Differential movement should be less than 1 inch. Most of the settlement is expected to occur during construction as the loads are applied. However, additional post-construction settlement may occur if the foundation soils are flooded or saturated.

Resistance to lateral footing displacement can be computed using an allowable friction factor of 0.35 acting between the base of foundations and the supporting subgrade. Lateral resistance for footings can alternatively be developed using an allowable equivalent fluid passive pressure of 300 pounds per cubic foot acting against the appropriate vertical footing faces. The frictional and passive resistance of the soil may be combined without reduction in determining the total lateral resistance. A ⅓ increase in the above value may be used for short duration, wind, or seismic loads.

Floor Slabs and Exterior Flatwork

The 2022 California Residential Code (CRC) Section R506.2.3 specifies that "a 10-mil polyethylene or *approved* vapor retarder with joints lapped not less than 6 inches shall be placed between the concrete floor slab and the base course or the prepared subgrade where no base course exists." Prior to adoption of this code section, traditional construction practice in the Fresno/Clovis area was to place an additional layer of sand or rock dust (per American Concrete Institute) to act as a blotting layer between the vapor retarder and the underside of the concrete slab. This blotting layer acted not only to protect the vapor barrier from punctures or tears during construction, but also served to promote even curing of the concrete slab. In the semi-arid climate of the Fresno/Clovis area, placement of the vapor retarder directly beneath the concrete slab has been known to result in rapid curing of the upper slab surface, especially during periods of elevated temperatures and/or sustained wind, as compared to the lower slab surface. Uneven curing of the upper and lower slab surfaces can result in excessive slab cracking and/or slab curling.

Based on our conversations, it is our understanding that Wilson Homes has developed a standard design for residential interior concrete slab-on-grade floors. The design incorporates a 2-inch layer of sand as a capillary break over the compacted subgrade soil. The sand layer is overlain by a layer of 10-mil PVC vapor retarder membrane, which is overlain by a 2-inch layer of sand, and finally by a minimum 3½-inch thick concrete slab. This system has reportedly been utilized by Wilson Homes with success in the past and has resulted in adequate performance of interior flooring materials.

It is recommended that the concrete slabs be reinforced at a minimum with #3 bars at 18 inches on center to reduce crack separation and possible vertical offset at the cracks. Thicker floor slabs with increased concrete strength and reinforcement should be designed wherever heavy concentrated loads, heavy equipment, or machinery is anticipated.

After reviewing Wilson Homes' standard design for residential interior concrete slab-on-grade floors for use in the Fresno/Clovis area, it is our opinion that this design, while deviating from Section R506.2.3 of the 2022 CRC, is an acceptable equivalent alternative to the criteria specified in the 2022 CRC. Based on our recommendation, Krazan & Associates requests that the local building official, i.e., City of Clovis, allow this standard design to be utilized for the subject residential tract.

Because this standard design does potentially allow for excessive moisture to be contained in the upper sand or rock dust layer from either rainfall or excessive moistening prior to pouring the slab, Krazan & Associates recommends that the upper sand layer be inspected prior to concrete placement to confirm that no ponding or standing water is present.

Lateral Earth Pressures and Retaining Walls

Walls retaining horizontal backfill and capable of deflecting a minimum of 0.1 percent of its height at the top may be designed using an equivalent fluid active pressure of 40 pounds per square foot per foot of depth. Walls incapable of this deflection or are fully constrained walls against deflection may be designed for an equivalent fluid at-rest pressure of 60 pounds per square foot per foot of depth. Expansive soils should not be used for backfill against walls. The wedge of non-expansive backfill

material should extend from the bottom of each retaining wall outward and upward at a slope of 2:1 (horizontal to vertical) or flatter. The stated lateral earth pressures do not include the effects of hydrostatic water pressures generated by infiltrating surface water that may accumulate behind the retaining walls; or loads imposed by construction equipment, foundations, or roadways.

Retaining and/or below grade walls should be drained with either perforated pipe encased in free-draining gravel or a prefabricated drainage system. The gravel zone should have a minimum width of 12 inches and should extend upward to within 12 inches of the top of the wall. The upper 12 inches of backfill should consist of native soils, concrete, asphaltic concrete, or other suitable backfill to reduce surface drainage into the wall drain system. The aggregate should conform to Class 2 permeable materials graded in accordance with CalTrans Standard Specifications (2018). Prefabricated drainage systems, such as Miradrain®, Enkadrain®, or an equivalent substitute, are acceptable alternatives in lieu of gravel provided they are installed in accordance with the manufacturer's recommendations. If a prefabricated drainage system is proposed, our firm should review the system for final acceptance prior to installation.

Drainage pipes should be placed with perforations down and should discharge in a non-erosive manner away from foundations and other improvements. The pipes should be placed no higher than 6 inches above the heel of the wall, in the center line of the drainage blanket and should have a minimum diameter of four inches. Collector pipes may be either slotted or perforated. Slots should be no wider than ⅛ inch in diameter, while perforations should be no more than ¼ inch in diameter. If retaining walls are less than 6 feet in height, the perforated pipe may be omitted in lieu of weep holes on 4 feet maximum spacing. The weep holes should consist of 4-inch diameter holes (concrete walls) or unmortared head joints (masonry walls) and not be higher than 18 inches above the lowest adjacent grade. Two 8-inch square overlapping patches of geotextile fabric (conforming to CalTrans Standard Specifications for "edge drains") should be affixed to the rear wall opening of each weep hole to retard soil piping.

During grading and backfilling operations adjacent to any walls, heavy equipment should not be allowed to operate within a lateral distance of 5 feet from the wall, or within a lateral distance equal to the wall height, whichever is greater, to avoid developing excessive lateral pressures. Within this zone, only hand-operated equipment ("whackers," vibratory plates, or pneumatic compactors) should be used to compact the backfill soils.

R-Value Test Results and Pavement Design

Five subgrade soil samples were obtained from the project site for R-value testing at the locations shown on the attached site plan. The samples were tested in accordance with the State of California Materials Manual Test Designation 301. Results of the tests are as follows:

Sample	Depth	Description	R-Value at Equilibrium
1	12-24"	Silty Sand (SM)	59
2	12-24"	Silty Sand (SM)	57
3	12-24"	Silty Sand (SM)	58
4	12-24"	Sandy Silt (ML)	21
5	12-24"	Sandy Silt (ML)	27

The test results are moderate and indicate fair to good subgrade support characteristics under dynamic traffic loads. The following table shows the recommended pavement sections for various traffic indices based on an R-value of 57.

Traffic Index	Asphaltic Concrete	Class II Aggregate Base*	Compacted Subgrade**
4.0	2.0"	4.0"	12.0"
4.5	2.5"	4.0"	12.0"
5.0	2.5"	4.0"	12.0"
5.5	3.0"	4.0"	12.0"
6.0	3.0"	4.0"	12.0"
6.5	3.5"	4.0"	12.0"
7.0	4.0"	4.0"	12.0"
7.5	4.0"	4.0"	12.0"

**** 95% compaction based on ASTM Test Method D1557 or CAL 216***
***** 90% compaction based on ASTM Test Method D1557 or CAL 216***

The following table shows the recommended pavement sections for various traffic indices based on an R-value of 21.

Traffic Index	Asphaltic Concrete	Class II Aggregate Base*	Class III Aggregate Subbase*	Compacted Subgrade**
4.0"	2.0"	6.5"	--	12.0"
4.0"	2.0"	4.5"	2.0"	12.0"
4.5"	2.5"	6.5"	--	12.0"
4.5"	2.5"	4.0"	3.0"	12.0"
5.0"	2.5"	8.0"	--	12.0"
5.0"	2.5"	5.0"	3.5"	12.0"
5.5"	3.0"	8.0"	--	12.0"
5.5"	3.0"	5.0"	3.5"	12.0"
6.0"	3.0"	10.0"	--	12.0"
6.0"	3.0"	6.5"	4.0"	12.0"

6.5"	3.5"	10.5"	--	12.0"
6.5"	3.5"	6.0"	5.0"	12.0"
7.0"	4.0"	11.5"	--	12.0"
7.0"	4.0"	6.5"	5.5"	12.0"
7.5"	4.0"	13.0"	--	12.0"
7.5"	4.0"	7.5"	6.0"	12.0"

** 95% compaction based on ASTM Test Method D1557 or CAL 216*
*** 90% compaction based on ASTM Test Method D1557 or CAL 216*

If traffic indices are not available, an estimated (typical value) index of 4.5 may be used for light automobile traffic and an index of 7.0 may be used for light truck traffic.

The following recommendations are for light-duty and heavy-duty Portland Cement Concrete pavement sections.

PORTLAND CEMENT PAVEMENT
LIGHT DUTY

Traffic Index	Portland Cement Concrete***	Class II Aggregate Base*	Compacted Subgrade**
4.5	5.0"	4.0"	12.0"

HEAVY DUTY

Traffic Index	Portland Cement Concrete***	Class II Aggregate Base*	Compacted Subgrade**
7.0	7.0"	4.0"	12.0"

** 95% compaction based on ASTM Test Method D1557 or CAL 216*
*** 90% compaction based on ASTM Test Method D1557 or CAL 216*
****Minimum compressive strength of 3000 psi*

It is recommended that any uncertified fill material encountered within pavement areas be removed and/or recompacted. The fill material should be moisture-conditioned to near optimum moisture and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. As an alternative, the Owner may elect not to recompact the existing fill within paved areas. However, the Owner should be aware that the paved areas may settle which may require annual maintenance. At a minimum, it is recommended that the upper 12 inches of subgrade soil be moisture-conditioned to a minimum of 2 percent above optimum moisture content and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Seismic Parameters – 2022 California Building Code

The Site Class per Section 1613 of the 2022 California Building Code (2022 CBC) and ASCE 7-16, Chapter 20 is based upon the site soil conditions. It is our opinion that a Site Class D is most consistent with the subject site soil conditions. For seismic design of the structures based on the seismic provisions of the 2022 CBC, we recommend the following parameters:

Seismic Item	Value	CBC Reference
Site Class	D	Section 1613.2.2
Site Coefficient F_a	1.386	Table 1613.2.3 (1)
S_s	0.517	Section 1613.2.1
S_{MS}	0.717	Section 1613.2.3
S_{DS}	0.478	Section 1613.2.4
Site Coefficient F_v	2.182	Table 1613.2.3 (2)
S_1	0.209	Section 1613.2.1
S_{M1}	0.456	Section 1613.2.3
S_{D1}	0.304	Section 1613.2.4
T_S	0.636	Section 1613.2

* Based on Equivalent Lateral Force (ELF) Design Procedure being used.

Soil Cement Reactivity

Excessive sulfate in either the soil or native water may result in an adverse reaction between the cement in concrete (or stucco) and the soil. HUD/FHA and CBC have developed criteria for evaluation of sulfate levels and how they relate to cement reactivity with soil and/or water.

Soil samples were obtained from the site and tested in accordance with State of California Materials Manual Test Designation 417. The sulfate concentrations detected from these soil samples were less than 150 ppm (2.3 to 5.6 ppm) and are below the maximum allowable values established by HUD/FHA and CBC. Therefore, no special design requirements are necessary to compensate for sulfate reactivity with the cement. Representative soil samples had a chloride concentration of 15 to 18 ppm and a pH of 7.3 to 8.1.

Compacted Material Acceptance

Compaction specifications are not the only criteria for acceptance of the site grading or other such activities. However, the compaction test is the most universally recognized test method for assessing the performance of the Grading Contractor. The numerical test results from the compaction test cannot be used to predict the engineering performance of the compacted material. Therefore, the acceptance of compacted materials will also be dependent on the stability of that material. The Soils Engineer has the option of rejecting any compacted material regardless of the degree of compaction if that material is considered to be unstable or if future instability is suspected. A specific example of rejection of fill material passing the required percent compaction is a fill which has been compacted with an in-situ moisture content significantly less than optimum moisture. This type of dry fill (brittle fill) is susceptible to future settlement if it becomes saturated or flooded.

Testing and Inspection

A representative of Krazan & Associates, Inc. should be present at the site during the earthwork activities to confirm that actual subsurface conditions are consistent with the exploratory fieldwork. This activity is an integral part of our service, as acceptance of earthwork construction is dependent upon compaction testing and stability of the material. This representative can also verify that the intent of these recommendations is incorporated into the project design and construction. Krazan & Associates, Inc. will not be responsible for grades or staking, since this is the responsibility of the Prime Contractor.

LIMITATIONS

Soils Engineering is one of the newest divisions of Civil Engineering. This branch of Civil Engineering is constantly improving as new technologies and understanding of earth sciences advance. Although your site was analyzed using the most appropriate and most current techniques and methods, undoubtedly there will be substantial future improvements in this branch of engineering. In addition to advancements in the field of Soils Engineering, physical changes in the site, either due to excavation or fill placement, new agency regulations, or possible changes in the proposed structure after the soils report is completed may require the soils report to be professionally reviewed. In light of this, the Owner should be aware that there is a practical limit to the usefulness of this report without critical review. Although the time limit for this review is strictly arbitrary, it is suggested that 2 years be considered a reasonable time for the usefulness of this report.

Foundation and earthwork construction is characterized by the presence of a calculated risk that soil and groundwater conditions have been fully revealed by the original foundation investigation. This risk is derived from the practical necessity of basing interpretations and design conclusions on limited sampling of the earth. The recommendations made in this report are based on the assumption that soil conditions do not vary significantly from those disclosed during our field investigation. If any variations or undesirable conditions are encountered during construction, the Soils Engineer should be notified so that supplemental recommendations may be made.

The conclusions of this report are based on the information provided regarding the proposed construction. If the proposed construction is relocated or redesigned, the conclusions in this report may not be valid. The Soils Engineer should be notified of any changes so the recommendations may be reviewed and re-evaluated.

This report is a Geotechnical Engineering Investigation with the purpose of evaluating the soil conditions in terms of foundation design. The scope of our services did not include any Environmental Site Assessment for the presence or absence of hazardous and/or toxic materials in the soil, groundwater, or atmosphere; or the presence of wetlands. Any statements, or absence of statements, in this report or on any boring log regarding odors, unusual or suspicious items, or conditions observed, are strictly for descriptive purposes and are not intended to convey engineering judgment regarding potential hazardous and/or toxic assessment.

The geotechnical engineering information presented herein is based upon professional interpretation utilizing standard engineering practices and a degree of conservatism deemed proper for this project. It is not warranted that such information and interpretation cannot be superseded by future geotechnical engineering developments. We emphasize that this report is valid for the project outlined above and should not be used for any other sites.

If you have any questions or if we may be of further assistance, please do not hesitate to contact our office at (559) 348-2200.

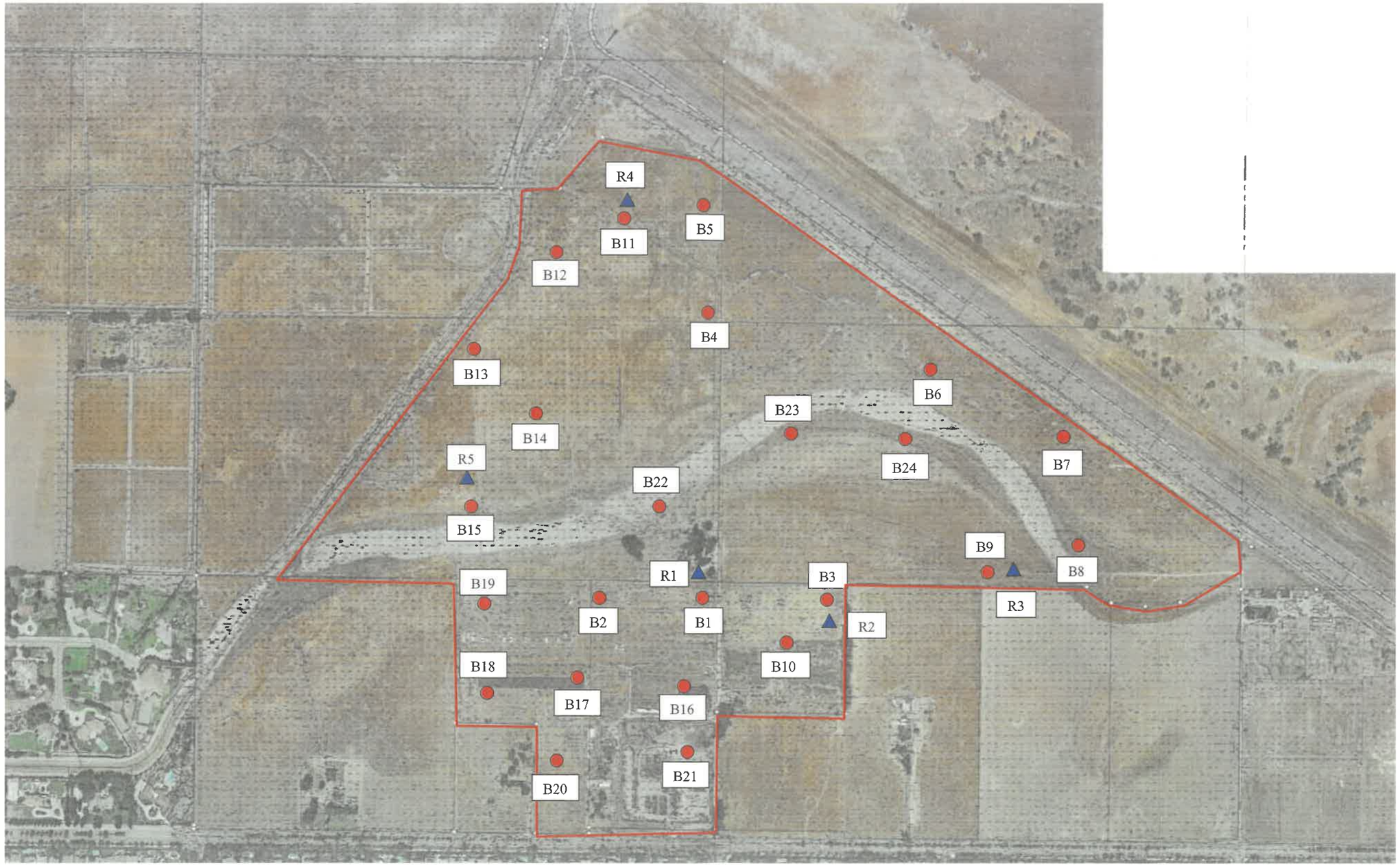
Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

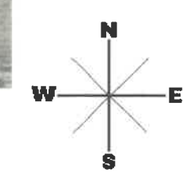
Wayne Andrade
Project Geologist

David R. Jarosz, II
Managing Engineer
RGE No. 2698/RCE No. 60185

REGISTERED PROFESSIONAL ENGINEER
DAVID R. JAROSZ II
2698
GEOTECHNICAL
STATE OF CALIFORNIA

WA/DRJ:ht





APPROXIMATE BORING LOCATION

APPROXIMATE R-VALUE LOCATION

SITE MAP	Scale: NTS	Date: December 2023	Krazan GEOTECHNICAL ENGINEERING
Proposed Triangle Development Shepherd and Temperance Avenues Clovis, California	Drawn by: WA	Approved by: DJ	
	Project No. 012-22233	Figure No. 1	

APPENDIX A

FIELD AND LABORATORY INVESTIGATIONS

Field Investigation

The field investigation consisted of a surface reconnaissance and a subsurface exploratory program. Twenty-four exploratory borings were advanced. The boring locations are shown on the site plan.

The soils encountered were logged in the field during the exploration and, with supplementary laboratory test data, are described in accordance with the Unified Soil Classification System.

Modified standard penetration tests and standard penetration tests were performed at selected depths. These tests represent the resistance to driving a 2½-inch and 1½-inch diameter split barrel sampler, respectively. The driving energy was provided by a hammer weighing 140 pounds falling 30 inches. Relatively undisturbed soil samples were obtained while performing this test. Bag samples of the disturbed soil were obtained from the auger cuttings. The modified standard penetration tests are identified in the sample type on the boring logs with a full shaded in block. The standard penetration tests are identified in the sample type on the boring logs with half of the block shaded. All samples were returned to our Clovis laboratory for evaluation.

Laboratory Investigation

The laboratory investigation was programmed to determine the physical and mechanical properties of the foundation soil underlying the site. Test results were used as criteria for determining the engineering suitability of the surface and subsurface materials encountered.

In situ moisture content, dry density, consolidation, direct shear and sieve analysis tests were determined for the undisturbed samples representative of the subsurface material. Atterberg limits and R-value tests were completed for select bag samples obtained from the auger cuttings. These tests, supplemented by visual observation, comprised the basis for our evaluation of the site material.

The logs of the exploratory borings and laboratory determinations are presented in this Appendix.

UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)		
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)	
	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
	GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	
	GM	Silty gravels, gravel-sand-silt mixtures
	GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)	
	SW	Well-graded sands, gravelly sands, little or no fines
	SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	
	SM	Silty sands, sand-silt mixtures
	SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)		
SILTS AND CLAYS Liquid limit less than 50%	ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity
	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
	CH	Inorganic clays of high plasticity, fat clays
	OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS	PT	Peat and other highly organic soils

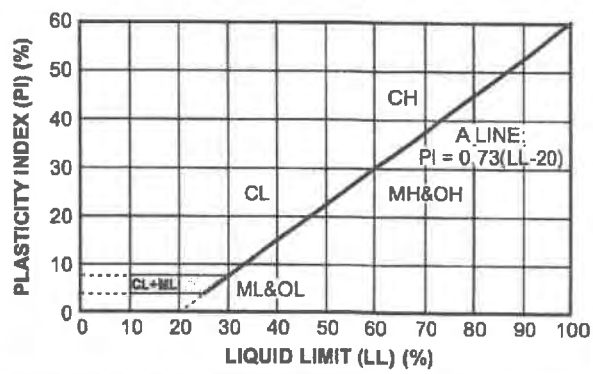
CONSISTENCY CLASSIFICATION

Description	Blows per Foot
Granular Soils	
Very Loose	< 5
Loose	5 – 15
Medium Dense	16 – 40
Dense	41 – 65
Very Dense	> 65
Cohesive Soils	
Very Soft	< 3
Soft	3 – 5
Firm	6 – 10
Stiff	11 – 20
Very Stiff	21 – 40
Hard	> 40

GRAIN SIZE CLASSIFICATION

Grain Type	*Standard Sieve Size*	*Grain Size in Millimeters*
Boulders	Above 12 inches	Above 305
Cobbles	12 to 13 inches	305 to 76.2
Gravel	3 inches to No. 4	76.2 to 4.76
Coarse-grained	3 to ¾ inches	76.2 to 19.1
Fine-grained	¾ inches to No. 4	19.1 to 4.76
Sand	No. 4 to No. 200	4.76 to 0.074
Coarse-grained	No. 4 to No. 10	4.76 to 2.00
Medium-grained	No. 10 to No. 40	2.00 to 0.42
Fine-grained	No. 40 to No. 200	0.42 to 0.074
Silt and Clay	Below No. 200	Below 0.074

PLASTICITY CHART



Log of Boring B1

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-1

Location: East Shepherd Avenue, Clovis, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained with trace CLAY; brown, damp, drills easily Loose below 12 inches						
2			113.8	4.0		13		
4		Medium dense below 5 feet						
6			107.7	7.6		16		
8								
10		***SANDY CLAY (CL)*** Hard, fine- to medium-grained; brown, moist, drills hard	119.0	15.8		50+		
12								
14								
16		End of Borehole						
18								
20								

Drill Method: Solid Flight

Drill Date: 7-17-23

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B2

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-2

Location: East Shepherd Avenue, Clovis, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained with trace CLAY; brown, damp, drills easily						
2		Loose below 12 inches Medium dense below 2 feet	105.4	2.1		21		
4								
		Very dense and drills hard below 5 feet	111.4	3.9		50+		
6								
8								
10		Medium dense and drills easily below 10 feet	119.4	9.0		17		
12								
14								
		Fine-grained below 15 feet	112.4	7.9		17		
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 7-17-23

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 20 Feet

Sheet: 1 of 1

Log of Boring B3

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-3

Location: East Shepherd Avenue, Clovis, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine-grained; light brown, damp, drills easily						
2		Medium dense below 12 inches Very dense and drills hard below 18 inches		3.5		50+		
4		Dense, with trace CLAY and drills firmly below 4 feet						
6			125.5	10.3		53		
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 7-17-23

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B4

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-4

Location: East Shepherd Avenue, Clovis, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND/CLAYEY SAND (SM/SC) Very loose, fine-grained; brown, damp, drills easily						
2		Medium dense below 12 inches						
		Very dense and drills hard below 2 feet	111.3	4.5		50+		
4								
		CLAYEY SAND (SC) Dense, fine-grained; dark brown, moist, drills firmly	111.7	7.1		43		
6								
8								
10		Medium dense below 10 feet	114.0	16.1		21		
12								
14								
16		End of Borehole						
18								
20								

Drill Method: Solid Flight

Drill Date: 7-17-23

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B5

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-5

Location: East Shepherd Avenue, Clovis, California

Logged By: Michael Rupright

Depth to Water> **Initial:** 8 Feet **At Completion:** 7 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SANDY SILT (ML)*** Very loose, fine- to medium-grained; brown, damp, drills easily Medium dense below 12 inches Very dense and drills hard below 2 feet						
2			116.0	4.0		50+		
		SILTY SAND (SM) Very dense, fine-grained; brown, damp, drills hard						
4		***CLAYEY SAND (SC)*** Medium dense, fine-grained; dark brown, moist, drills easily						
6			117.9	16.1		34		
		Saturated below 7 feet						
8		***GRAVELLY SAND (SP)*** Medium dense, fine- to coarse-grained; dark gray-brown, saturated, drills easily						
10		***SILTY SAND/CLAYEY SAND (SM/SC)*** Medium dense, fine- to medium-grained; brown, saturated, drills easily	114.6	17.2		18		
12								
14		***SILTY SAND/SANDY SILT (SM/ML)*** Very dense, fine-grained with trace CLAY; brown, saturated, drills hard						
16			112.9	17.7		50+		
18								
20								

Drill Method: Solid Flight

Drill Date: 7-17-23

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 20 Feet

Log of Boring B6

Project: Triangle Development | **Project No:** 012-22233

Client: Wilson Homes | **Figure No.:** A-6

Location: East Shepherd Avenue, Clovis, California | **Logged By:** Michael Rupright

Depth to Water> | **Initial:** None | **At Completion:** None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND/SANDY SILT (SM/ML)*** Very loose, fine-grained; brown, moist, drills easily						
2		Loose below 12 inches Medium dense below 2 feet	100.6	7.2		38		
4								
6			119.0	10.8		32		
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight | **Drill Date:** 7-17-23

Drill Rig: CME 45B | **Hole Size:** 4½ Inches

Driller: Brent Snyder | **Elevation:** 10 Feet

Krazan and Associates

Sheet: 1 of 1

Log of Boring B7

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-7

Location: East Shepherd Avenue, Clovis, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND/SANDY SILT (SM/ML)*** Very loose, fine-grained; brown, moist, drills easily						
2		Loose below 12 inches Dense below 2 feet	97.4	7.1		42		
4		***CLAYEY SAND/SANDY CLAY (SC/CL)*** Medium dense, fine-grained; brown, moist, drills easily						
6			121.9	11.6		23		
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 7-17-23

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B8

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-8

Location: East Shepherd Avenue, Clovis, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND/SAND (SM/SP) Very loose, fine- to coarse-grained; gray-brown, damp, drills easily Loose below 12 inches						
2			111.7	1.5		11		
4		***SAND (SP)*** Loose, fine- to coarse-grained with trace GRAVEL; gray-brown, damp, drills easily						
6			108.5	4.4		14		
8								
10			119.5	3.5		12		
12								
14								
16		End of Borehole						
18								
20								

Drill Method: Solid Flight

Drill Date: 7-17-23

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B9

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-9

Location: East Shepherd Avenue, Clovis, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine-grained; light brown, damp, drills easily Loose below 12 inches Dense below 2 feet						
2			117.0	4.2		42		
4								
		SILTY SAND (SM) Very dense, fine-grained, moderately cemented; brown, moist, drills hard						
5			109.9	6.9		50+		
6								
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 7-17-23

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B10

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-10

Location: East Shepherd Avenue, Clovis, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine-grained; dark gray-black, damp, drills easily Loose below 12 inches						
2			122.4	5.4		38		
4		Loose and brown below 4 feet						
			114.6	5.5		15		
6								
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 7-18-23

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B11

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-11

Location: East Shepherd Avenue, Clovis, California

Logged By: Michael Rupright

Depth to Water> **Initial:** 7½ Feet **At Completion:** 5½ Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		CLAYEY SAND (SC) Very loose, fine-grained; reddish-brown, moist, drills easily						
2		Medium dense below 12 inches Very dense and drills hard below 2 feet	110.4	6.3		50+		
4		Medium dense and drills easily below 4 feet						
		Saturated below 5½ feet	116.4	15.6		17		
6								
8								
10			113.5	20.0		33		
12								
14								
		End of Borehole						
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 7-18-23

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B12

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-12

Location: East Shepherd Avenue, Clovis, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine-grained; reddish-brown, damp, drills easily						
2		Medium dense below 12 inches						
		CLAYEY SAND (SC) Very dense, fine-grained, moderately cemented; reddish-brown, damp, drills hard	113.8	3.4		50+		
4								
		SILTY SAND/SANDY SILT (SM/ML) Dense, fine-grained; grayish-brown, moist, drills firmly	113.8	15.5		45		
6								
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 7-18-23

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B13

Project: Triangle Development | **Project No:** 012-22233

Client: Wilson Homes | **Figure No.:** A-13

Location: East Shepherd Avenue, Clovis, California | **Logged By:** Michael Rupright

Depth to Water> | **Initial:** None | **At Completion:** None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		CLAYEY SAND/SANDY CLAY (SC/CL) Very loose, fine-grained; brown, moist, drills easily Loose below 12 inches						
2			122.8	10.2		11		
4		***CLAYEY SAND (SC)*** Medium dense, fine- to medium-grained; brown, moist, drills easily						
6			122.0	13.2		19		
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight | **Drill Date:** 7-18-23

Drill Rig: CME 45B | **Hole Size:** 4½ Inches

Driller: Brent Snyder | **Elevation:** 10 Feet

Krazan and Associates

Sheet: 1 of 1

Log of Boring B14

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-14

Location: East Shepherd Avenue, Clovis, California

Logged By: Michael Rupright

Depth to Water> **Initial:** 9 Feet **At Completion:** 7 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		CLAYEY SAND (SC) Very loose, fine-grained; brown, moist, drills easily Loose below 12 inches						
2		***SANDY SILT (ML)*** Loose, fine-grained; brown, moist, drills easily	107.2	9.5		15		
4		***CLAYEY SAND/SANDY CLAY (SC/CL)*** Medium dense, fine- to medium-grained; brown, moist, drills easily	109.5	10.4		16		
6		Saturated below 7 feet						
8								
10		***CLAYEY SAND (SC)*** Medium dense, fine- to medium-grained; brown, saturated, drills easily	121.3	13.1		37		
12								
14								
16		End of Borehole						
18								
20								

Drill Method: Solid Flight

Drill Date: 7-18-23

Drill Rig: CME 45B

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Krazan and Associates

Log of Boring B15

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-15

Location: East Shepherd Avenue, Clovis, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SANDY SILT (ML)*** FILL, fine-grained; grayish-brown, moist, drills easily						
2			83.2	13.4		2		
4		***SILTY SAND (SM)*** Medium dense, fine-grained; brown, moist, drills easily						
6			107.4	7.7		18		
8		***SILTY SAND/CLAYEY SAND (SM/SC)*** Medium dense, fine- to medium-grained; reddish-brown, damp, drills easily						
10			122.2	4.5		27		
12								
14		***CLAYEY SAND (SC)*** Dense, fine- to coarse-grained; brown, moist, drills firmly						
16			128.0	10.3		58		
18								
20								

Drill Method: Solid Flight

Drill Date: 7-18-23

Drill Rig: CME 45B

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 20 Feet

Log of Boring B16

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-16

Location: East Shepherd Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, moist, drills easily Loose below 12 inches						
2			114.8	6.5		13		
4		***CLAYEY SAND (SC)*** Medium dense, fine- to medium-grained; brown, moist, drills easily						
6			125.0	9.2		26		
8		***SILTY SAND/CLAYEY SAND (SM/SC)*** Dense, fine- to medium-grained; brown, moist, drills easily	123.9	9.6		50		
10								
12								
14								
16		End of Borehole						
18								
20								

Drill Method: Solid Flight

Drill Date: 7-20-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B17

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-17

Location: East Shepherd Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained with CLAY; brown, moist, drills easily Loose below 12 inches						
2			115.7	6.0		12		
4		***SILTY SAND/CLAYEY SAND (SM/SC)*** Medium dense, fine- to medium-grained; brown, moist, drills easily						
6			123.6	9.7		18		
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 7-20-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B18

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-18

Location: East Shepherd Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches						
2			112.3	2.6		13		
4		Medium dense below 5 feet						
6			128.7	2.6		19		
8			128.0	7.0		27		
10								
12								
14								
16		End of Borehole						
18								
20								

Drill Method: Solid Flight

Drill Date: 7-20-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B19

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-19

Location: East Shepherd Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** None **At Completion:** None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; brown, moist, drills easily Loose below 12 inches						
2			109.3	6.5		12		
4		Medium dense below 5 feet						
6			109.4	7.2		17		
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 7-20-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B20

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-20

Location: East Shepherd Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches						
2			110.3	3.9		9		
4		***CLAYEY SAND (SC)*** Medium dense, fine- to medium-grained; brown, moist, drills easily						
6			125.6	8.8		18		
8			111.0	10.0		17		
10								
12								
14								
16		End of Borehole						
18								
20								

Drill Method: Solid Flight

Drill Date: 7-20-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B21

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-21

Location: East Shepherd Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Ground Surface						
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches						
2			115.7	4.6		12		
4		Medium dense with CLAY below 4 feet						
6			116.1	8.8		34		
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Date: 7-20-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B22

Project: Triangle Development | **Project No:** 012-22233

Client: Wilson Homes | **Figure No.:** A-22

Location: East Shepherd Avenue, Clovis, California | **Logged By:** Dave Adams

Depth to Water> **Initial:** 22 Feet | **At Completion:** 21 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches						
2		***SILTY SAND/SAND (SM/SP)*** Loose, fine- to medium-grained with trace GRAVEL; brown, damp, drills easily	102.3	0.7		6		
4		***SAND (SP)*** Loose, fine- to medium-grained with trace GRAVEL; brown, damp, drills easily	103.1	2.2		8		
6								
8								
10		Medium dense below 10 feet	110.2	4.0		12		
12								
14		***SILTY SAND/SAND (SM/SP)*** Medium dense, fine- to medium-grained; brown, moist, drills easily	115.5	5.8		15		
16								
18								
20								

Drill Method: Hollow Stem | **Drill Date:** 10-30-23

Drill Rig: CME 45C-4 | **Krazan and Associates** | **Hole Size:** 5½ Inches

Driller: Jim Watts | **Elevation:** 50 Feet

Log of Boring B22

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-22

Location: East Shepherd Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 22 Feet **At Completion:** 21 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Loose and saturated below 21 feet	106.2	18.7		14		
22								
24								
26			113.4	14.6		9		
28								
30		***SILTY SAND (SM)*** Medium dense, fine- to coarse-grained with trace GRAVEL; brown, saturated, drills easily	124.6	16.1		24		
32								
34		***SILTY SAND/SAND (SM/SP)*** Medium dense, fine- to medium-grained; brown, saturated, drills easily						
36			109.0	16.5		17		
38								
40		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained; gray, saturated, drills easily						

Drill Method: Hollow Stem

Drill Date: 10-30-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 5½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B22

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-22

Location: East Shepherd Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 22 Feet **At Completion:** 21 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
			94.6	26.3		17		
42								
44		***CLAYEY SAND/SANDY CLAY (SC/CL)*** Medium dense, fine- to medium-grained; gray, saturated, drills easily						
			89.6	44.5		18		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 10-30-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 5½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B23

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-23

Location: East Shepherd Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 23 Feet **At Completion:** 21 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches						
2		***SAND (SP)*** Loose, fine- to coarse-grained with trace GRAVEL; light brown, damp, drills easily	97.3	1.0		6		
4								
6			109.8	2.7		7		
8								
10		***SILTY SAND/SAND (SM/SP)*** Medium dense, fine- to coarse-grained; light brown, damp, drills easily	111.4	4.4		12		
12								
14								
16			115.4	7.5		12		
18								
20								

Drill Method: Hollow Stem

Drill Date: 10-30-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 5½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B23

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-23

Location: East Shepherd Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 23 Feet **At Completion:** 21 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Saturated below 21 feet	103.3	21.5		12		
22								
24								
26			115.7	14.5		14		
28								
30		***SAND (SP)*** Medium dense, fine- to coarse-grained; light brown, saturated, drills easily	131.6	23.5		12		
32								
34								
36		***CLAYEY SANDY SILT (ML)*** Medium dense, fine- to medium-grained; red-brown, saturated, drills easily	110.9	16.7		13		
38		***SANDY SILT (ML)*** Medium dense, fine- to medium-grained; red-brown, saturated, drills easily						
40								

Drill Method: Hollow Stem

Drill Date: 10-30-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 5½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B23

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-23

Location: East Shepherd Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 23 Feet **At Completion:** 21 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
			83.5	36.6		11		■
42								
44								
			79.0	42.2		12		■
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 10-30-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 5½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Sheet: 3 of 3

Log of Boring B24

Project: Triangle Development | **Project No:** 012-22233

Client: Wilson Homes | **Figure No.:** A-24

Location: East Shepherd Avenue, Clovis, California | **Logged By:** Dave Adams

Depth to Water> **Initial:** 23 Feet | **At Completion:** 21 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches						
2		***SAND (SP)*** Loose, fine- to coarse-grained with trace GRAVEL; light brown, damp, drills easily	94.1	1.0		7		
4		***SILTY SAND/SAND (SM/SP)*** Medium dense, fine- to medium-grained; light brown, damp, drills easily	121.0	3.0		11		
6								
8		***SAND (SP)*** Medium dense, fine- to medium-grained; light brown, damp, drills easily						
10			110.5	4.6		12		
12								
14		***SILTY SAND/SAND (SM/SP)*** Medium dense, fine- to coarse-grained with trace GRAVEL; brown, moist, drills easily	111.4	7.2		13		
16								
18		***SAND (SP)*** Medium dense, fine- to coarse-grained; light brown, moist, drills easily						
20								

Drill Method: Hollow Stem | **Drill Date:** 10-30-23

Drill Rig: CME 45C-4 | **Hole Size:** 5½ Inches

Driller: Jim Watts | **Elevation:** 50 Feet

Krazan and Associates

Log of Boring B24

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-24

Location: East Shepherd Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 23 Feet **At Completion:** 21 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
		Saturated below 21 feet	112.8	13.5		13		
22								
24		***SILTY SAND/SAND (SM/SP)*** Medium dense, fine- to medium-grained; light brown, saturated, drills easily						
26			104.0	22.9		10		
28		***SAND (SP)*** Medium dense, fine- to medium-grained; light brown, saturated, drills easily						
30			106.5	18.8		12		
32								
34		***SILTY SAND/SAND (SM/SP)*** Medium dense, fine- to medium-grained; light brown, saturated, drills easily						
36			115.0	14.4		21		
38								
40								

Drill Method: Hollow Stem

Drill Date: 10-30-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 5½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B24

Project: Triangle Development

Project No: 012-22233

Client: Wilson Homes

Figure No.: A-24

Location: East Shepherd Avenue, Clovis, California

Logged By: Dave Adams

Depth to Water> **Initial:** 23 Feet **At Completion:** 21 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
			112.5	15.0		20		
42								
44		***CLAYEY SAND (SC)*** Medium dense, fine- to medium-grained; red-brown, saturated, drills easily						
			95.4	28.0		27		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Date: 10-30-23

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 5½ Inches

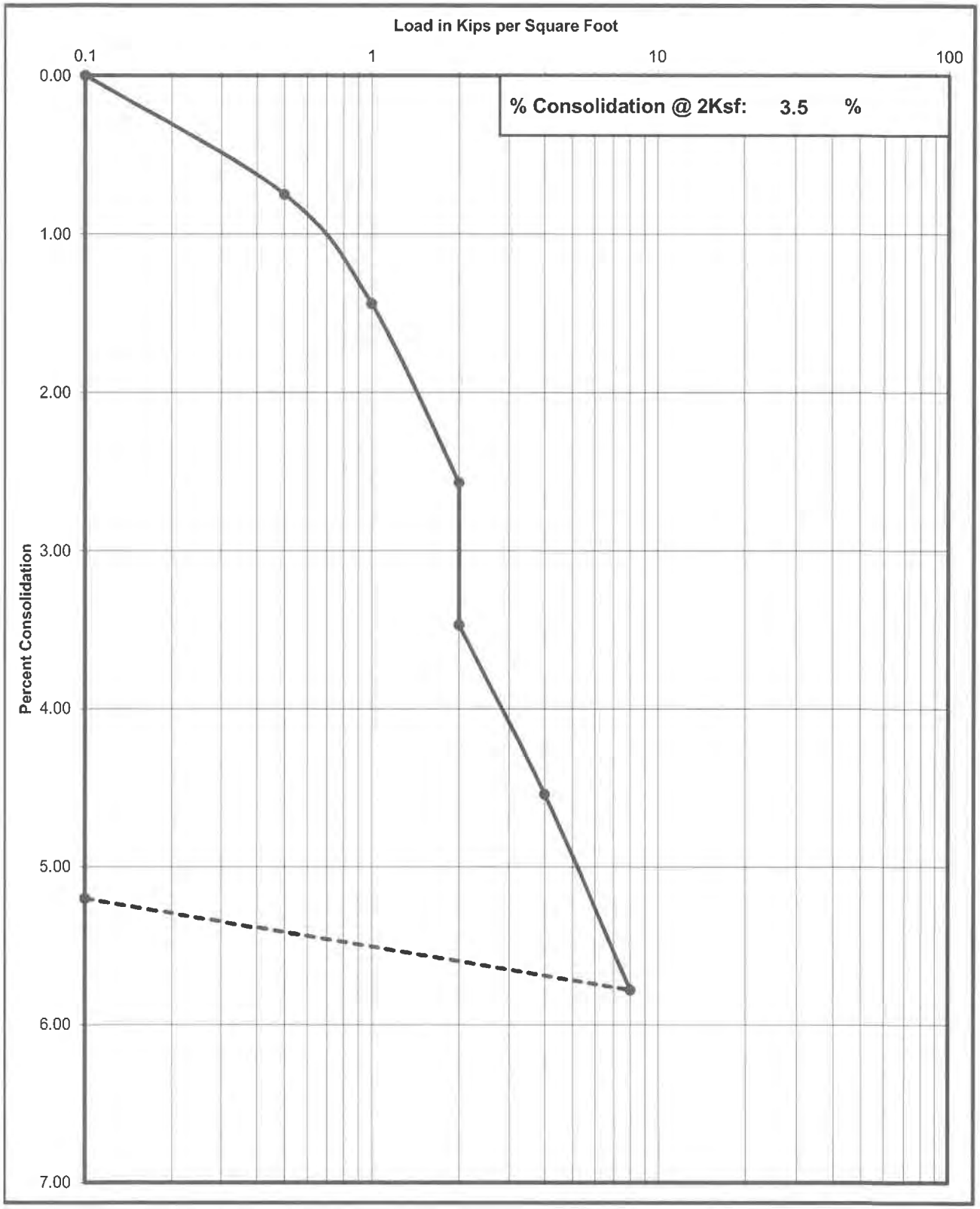
Driller: Jim Watts

Elevation: 50 Feet

Sheet: 3 of 3

Consolidation Test

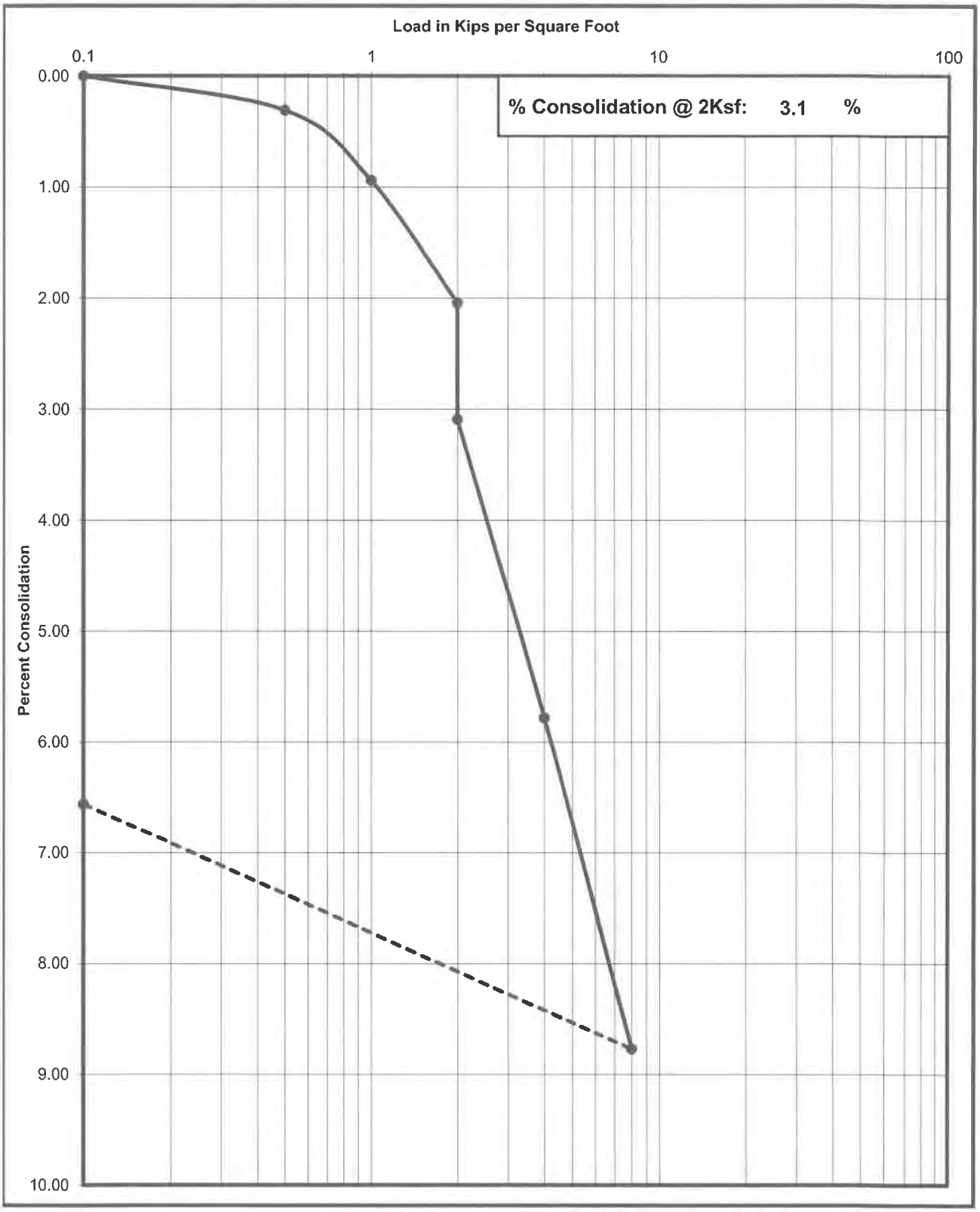
Project No	Boring No. & Depth	Date	Soil Classification
012-22233	B1 @ 2-3'	7/27/2023	SM



Krazan Testing Laboratory

Consolidation Test

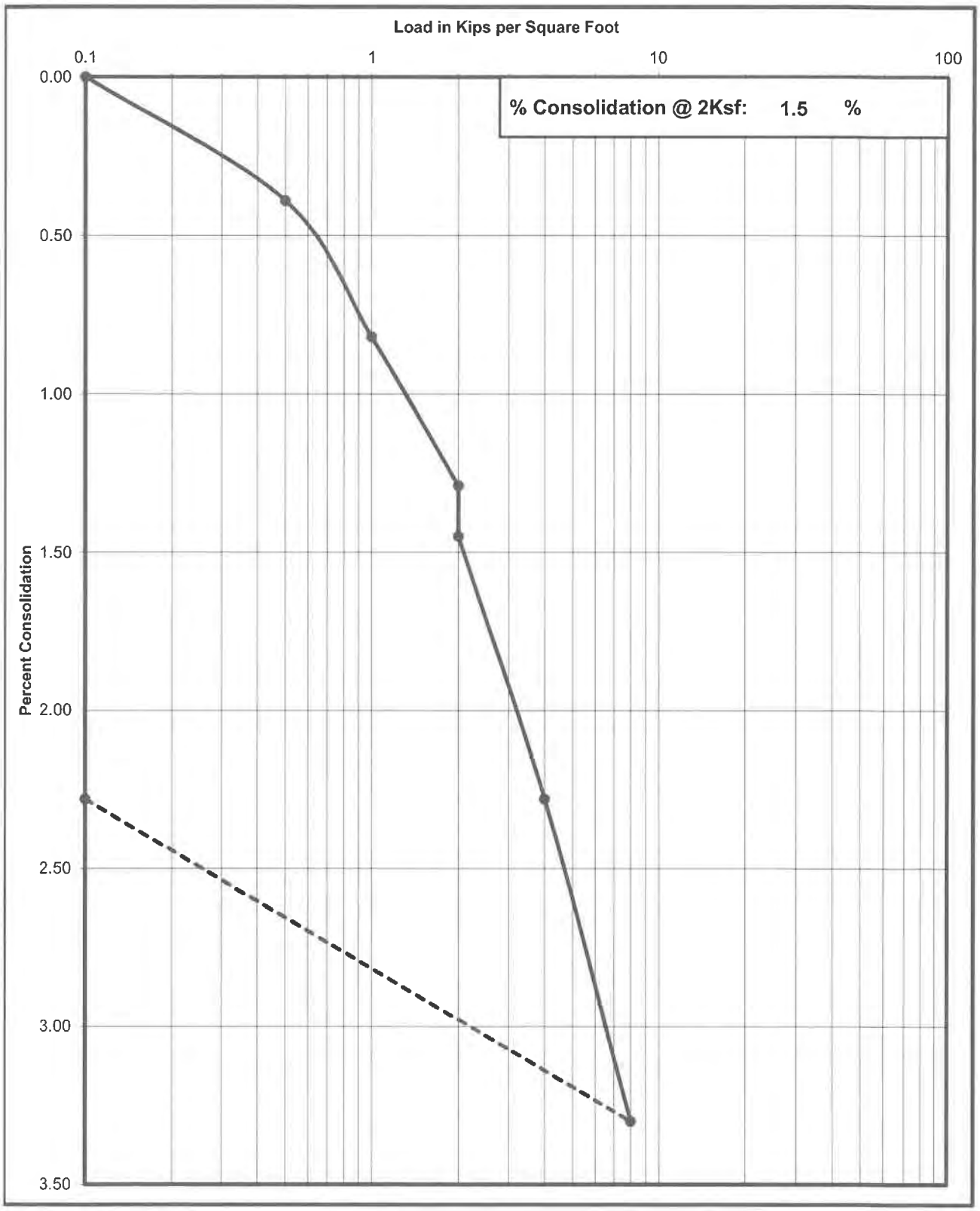
Project No	Boring No. & Depth	Date	Soil Classification
012-22233	B1 @ 5-6'	7/27/2023	SM



Krazan Testing Laboratory

Consolidation Test

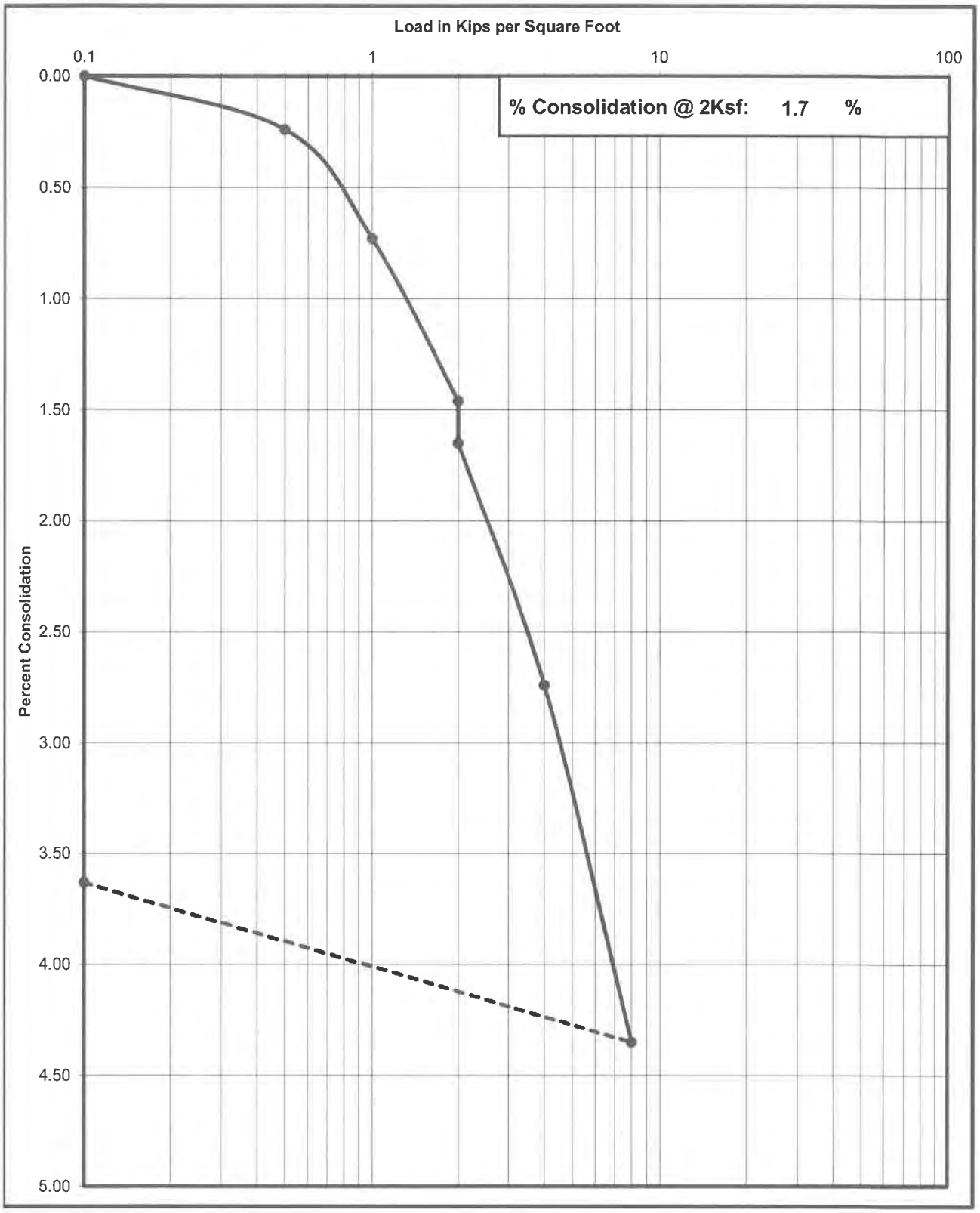
Project No	Boring No. & Depth	Date	Soil Classification
012-22233	B8 @ 2-3'	7/27/2023	SM/SP



Krazan Testing Laboratory

Consolidation Test

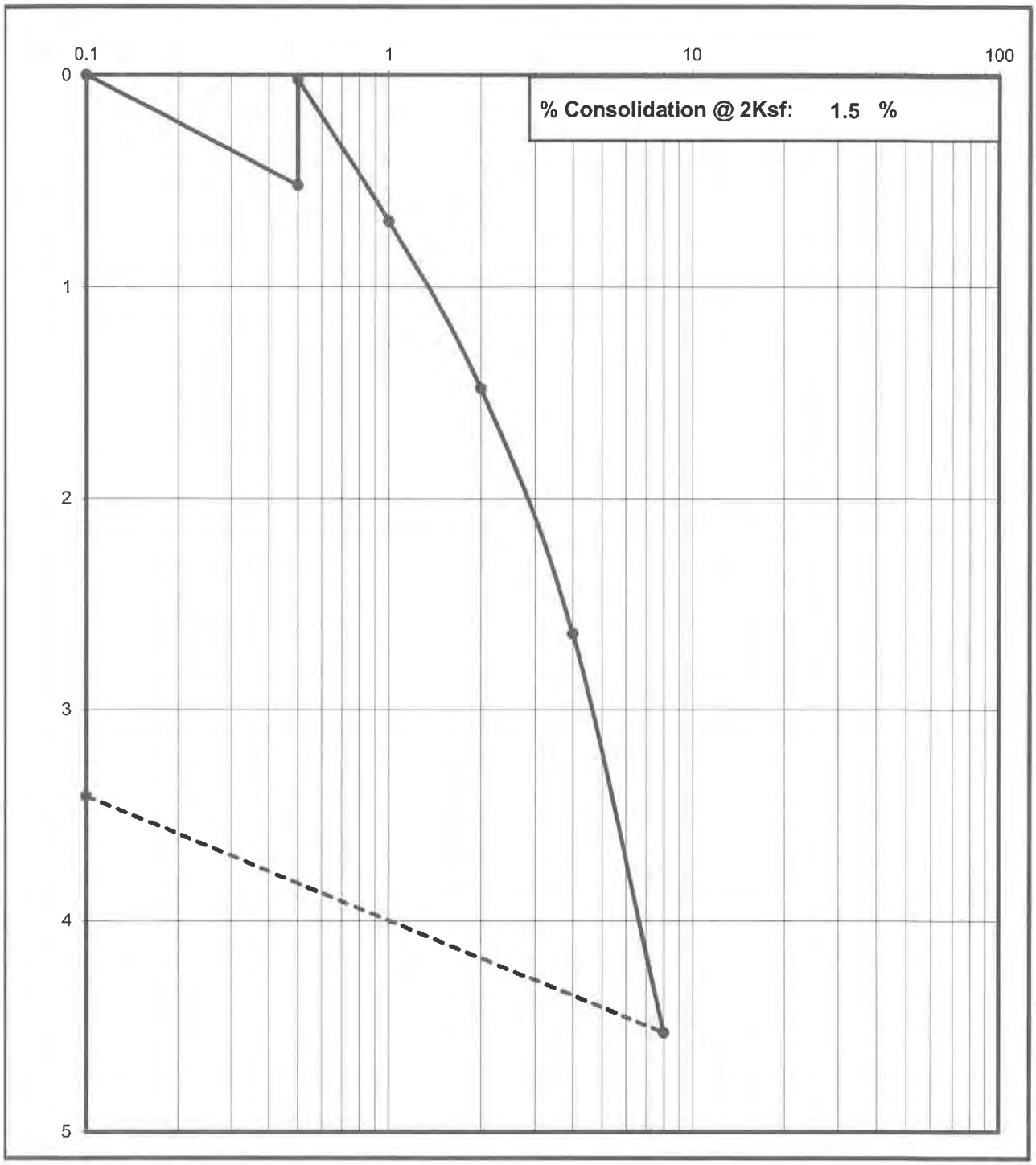
Project No	Boring No. & Depth	Date	Soil Classification
012-22233	B8 @ 5-6'	7/27/2023	SP



Krazan Testing Laboratory

Consolidation Test

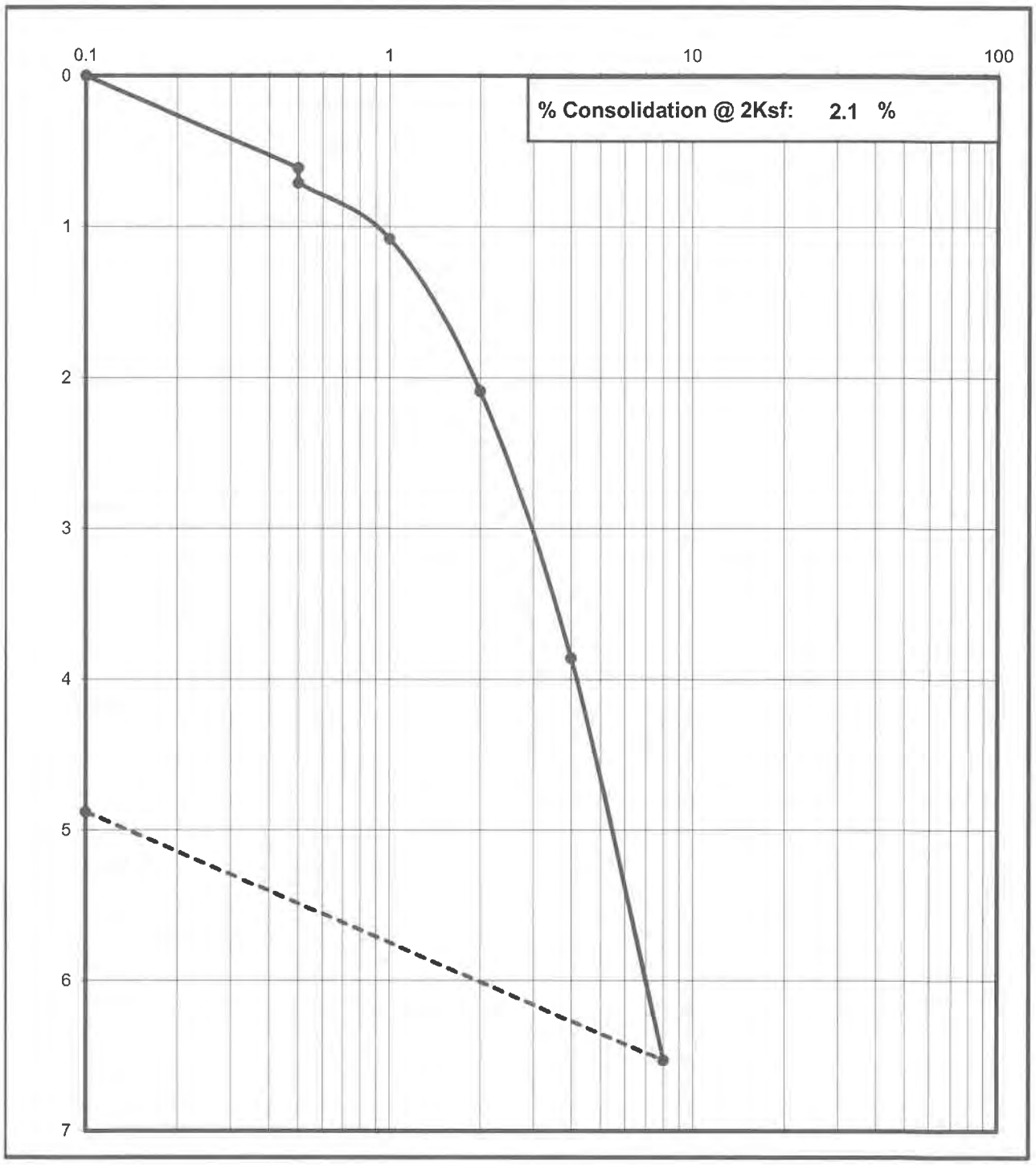
Project No	Boring No. & Depth	Date	Soil Classification
012-22233	B13 @ 2-3'	7/27/2023	SC/CL



Krazan Testing Laboratory

Consolidation Test

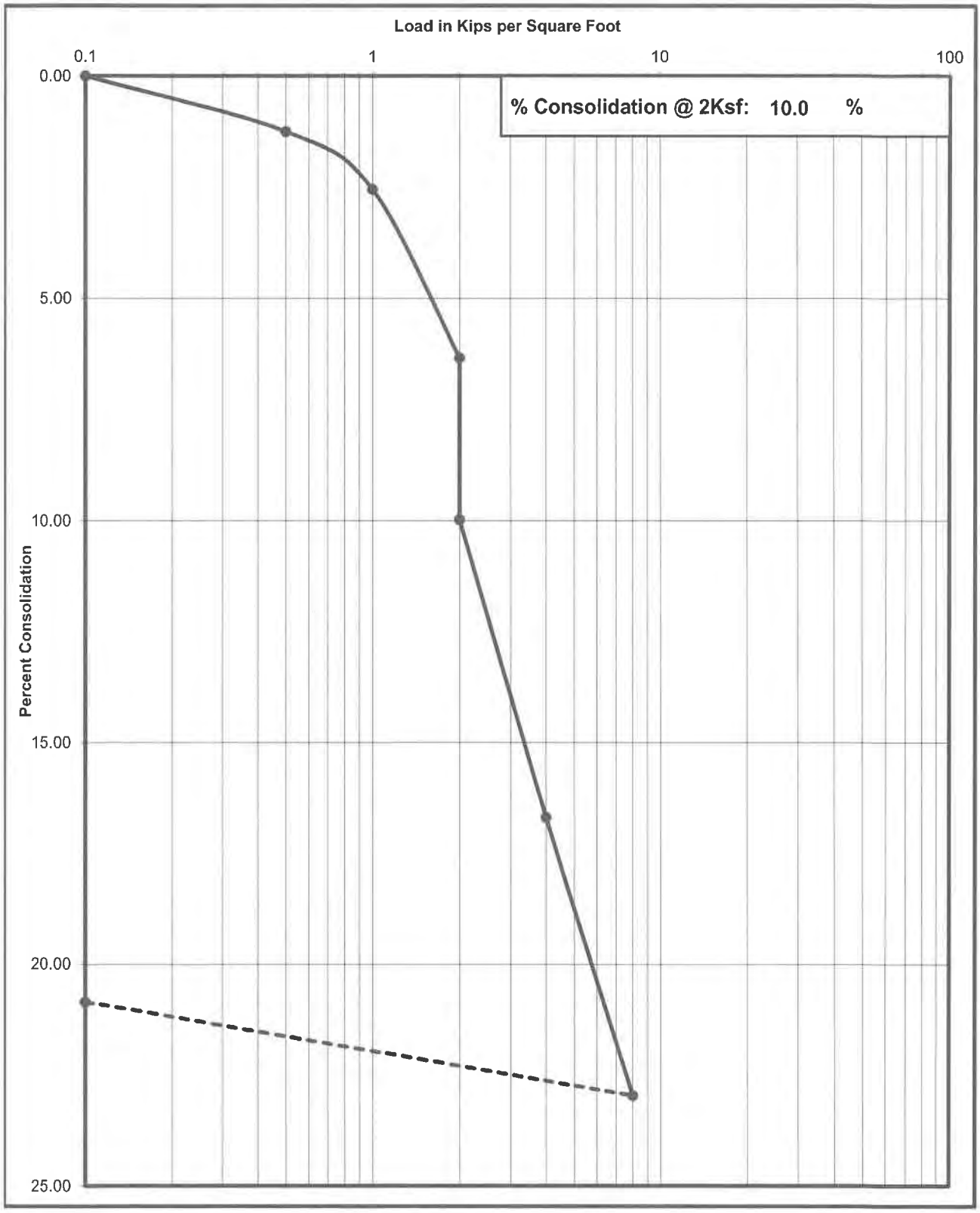
Project No	Boring No. & Depth	Date	Soil Classification
012-22233	B13 @ 5-6'	7/27/2023	SC



Krazan Testing Laboratory

Consolidation Test

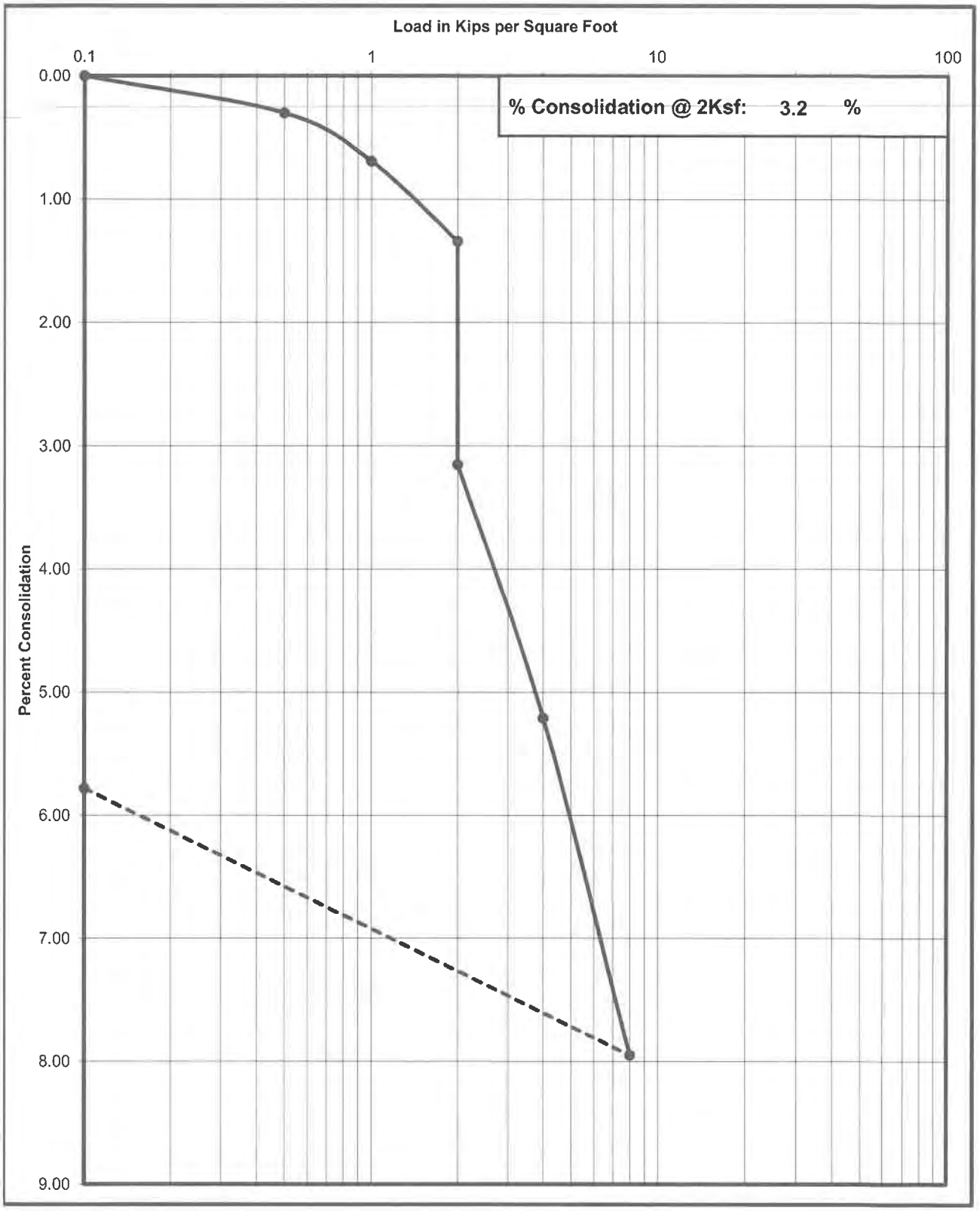
Project No	Boring No. & Depth	Date	Soil Classification
012-22233	B15 @ 2-3'	7/27/2023	ML



Krazan Testing Laboratory

Consolidation Test

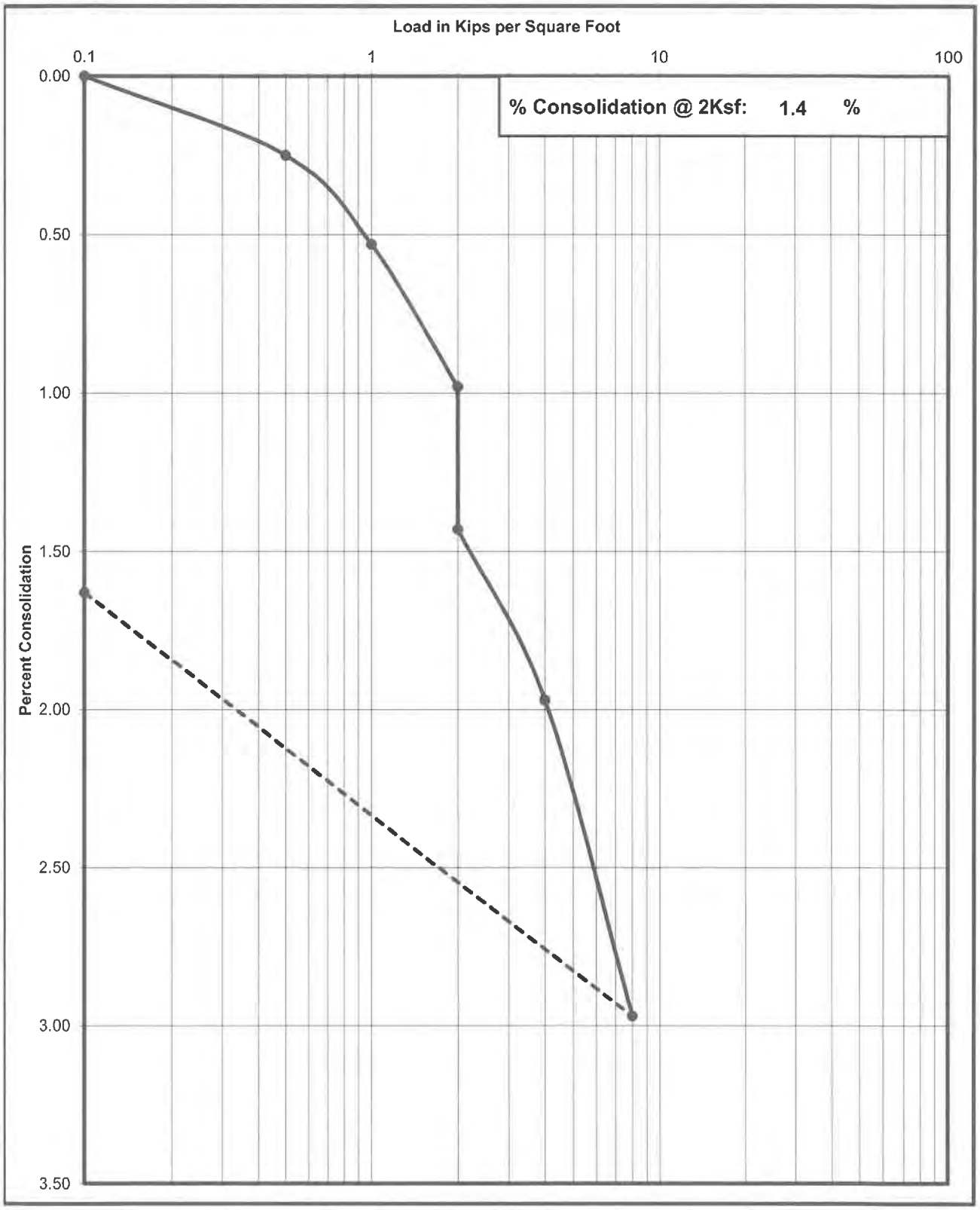
Project No	Boring No. & Depth	Date	Soil Classification
012-22233	B15 @ 5-6'	7/27/2023	SM



Krazan Testing Laboratory

Consolidation Test

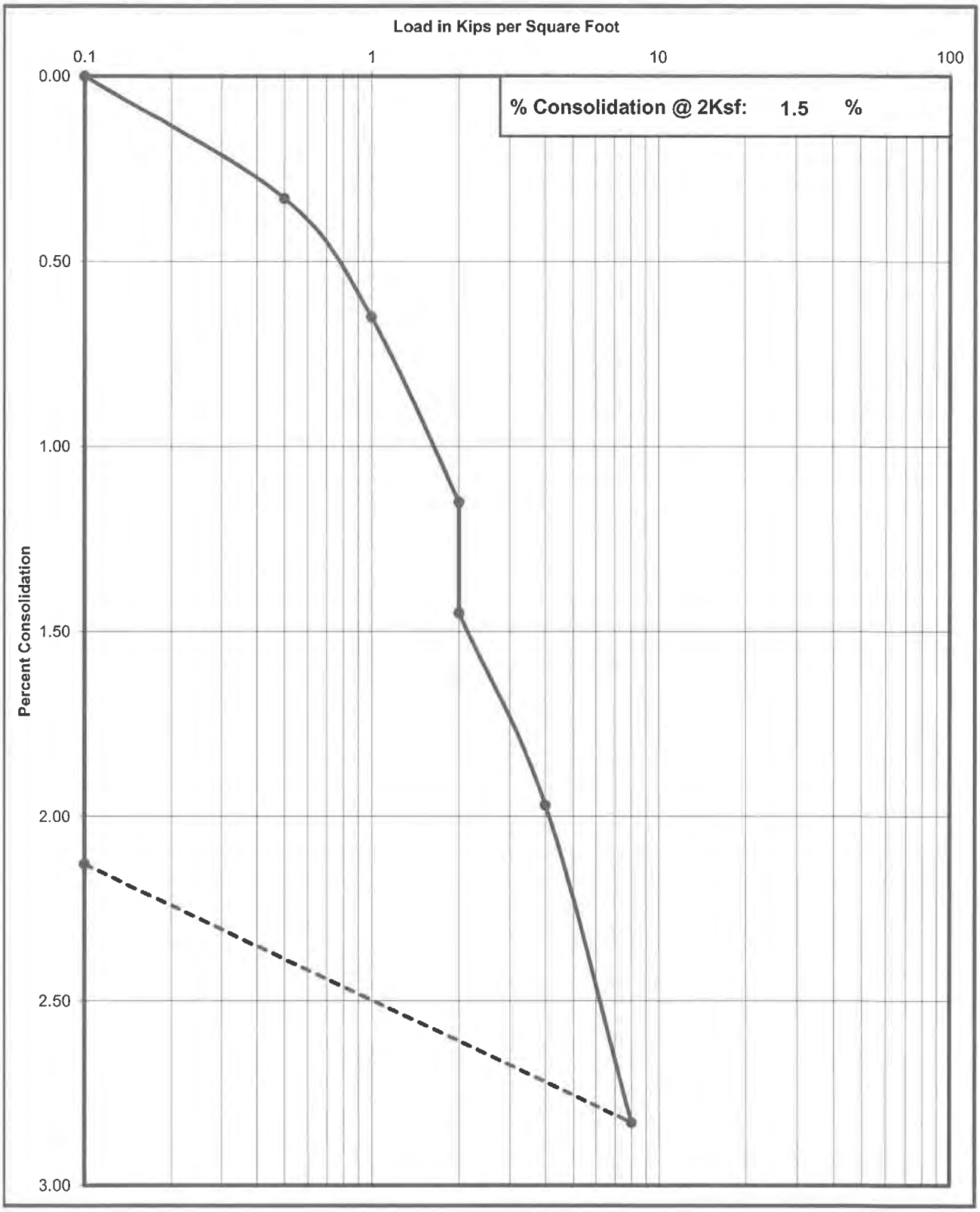
Project No	Boring No. & Depth	Date	Soil Classification
012-22233	B17 @ 2-3'	7/26/2023	SM w/ trace of clay



Krazan Testing Laboratory

Consolidation Test

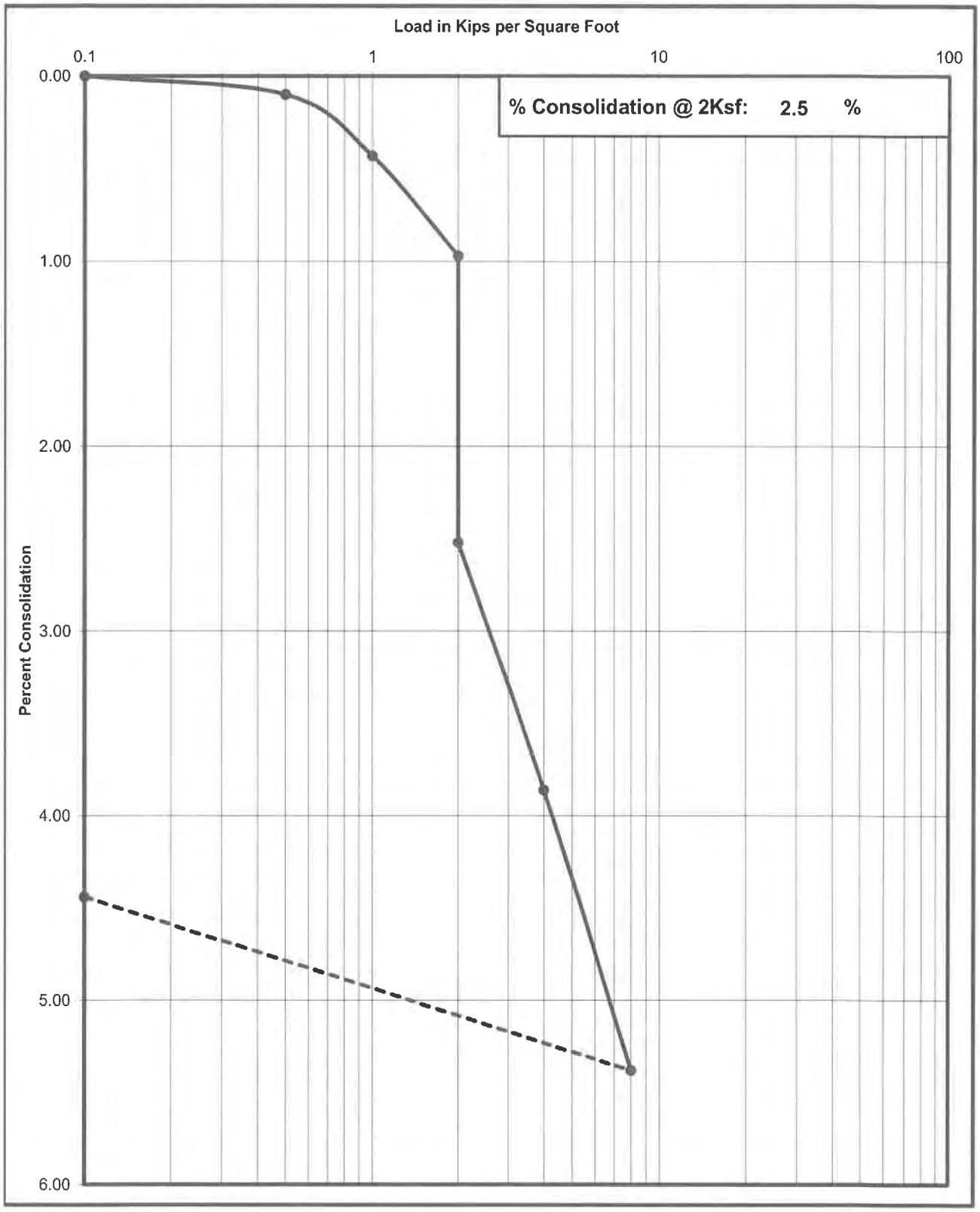
Project No	Boring No. & Depth	Date	Soil Classification
012-22233	B17 @ 5-6'	7/26/2023	SM/SC



Krazan Testing Laboratory

Consolidation Test

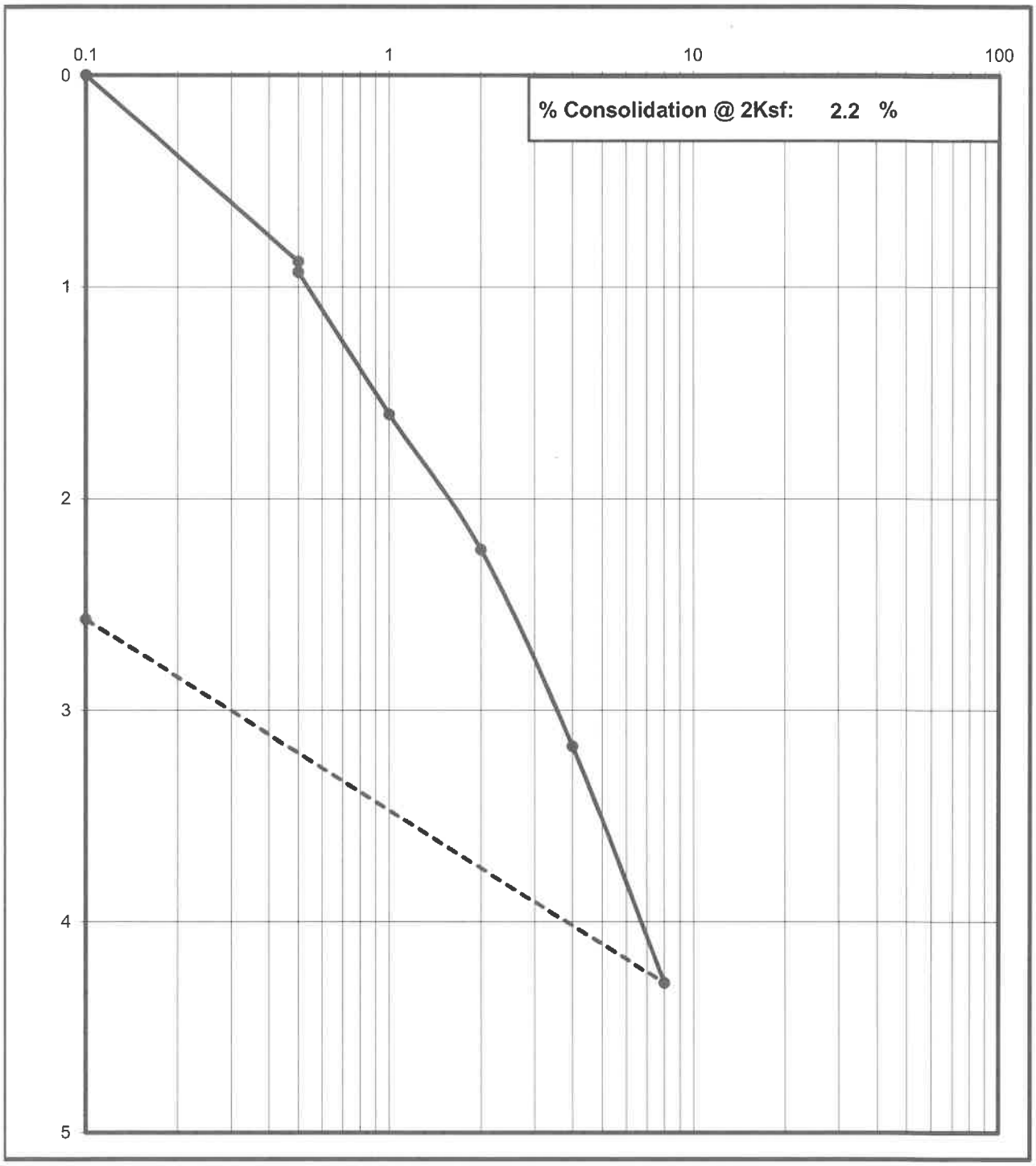
Project No	Boring No. & Depth	Date	Soil Classification
012-22233	B20 @ 2-3'	7/26/2023	SM



Krazan Testing Laboratory

Consolidation Test

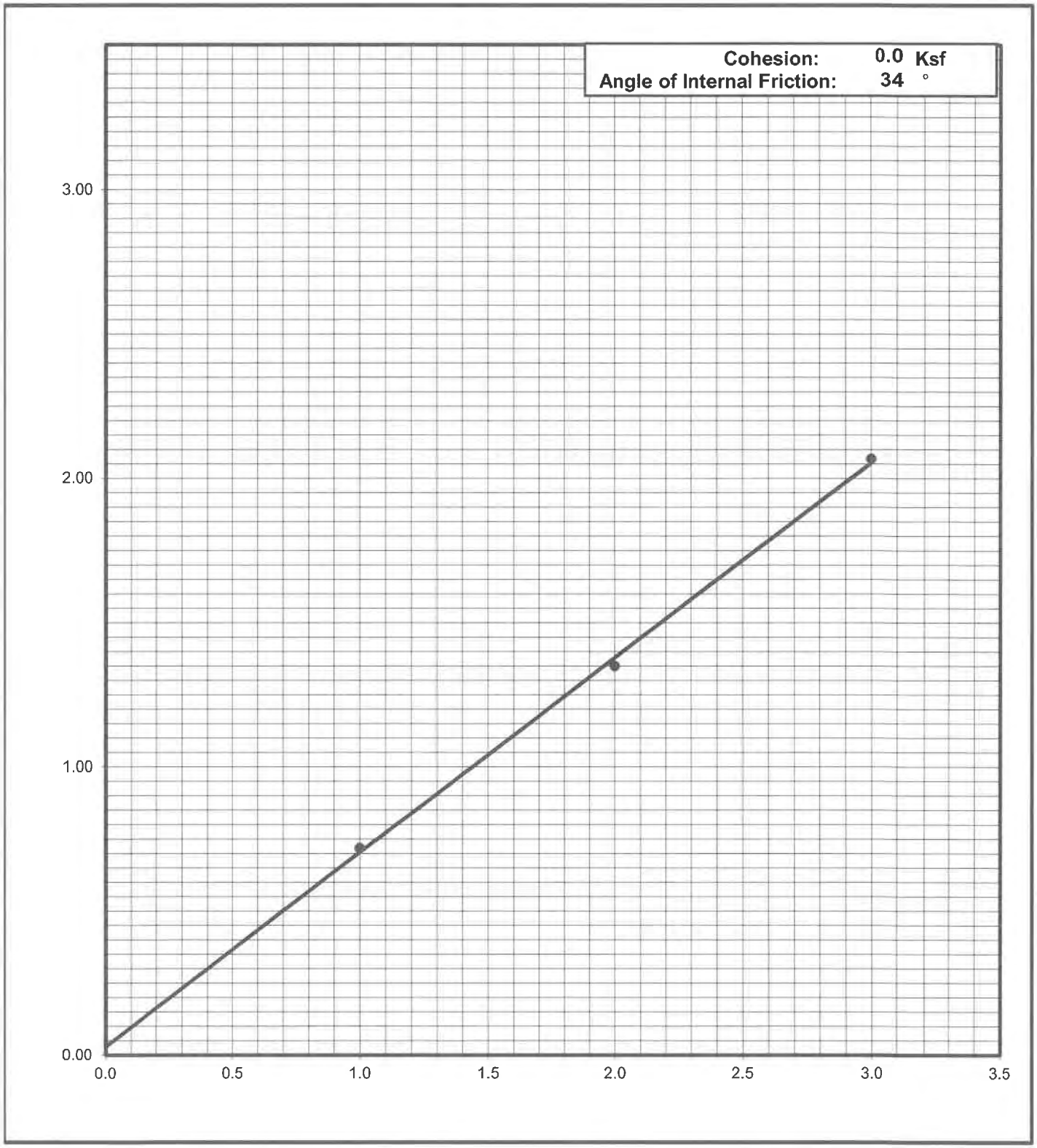
Project No	Boring No. & Depth	Date	Soil Classification
012-22233	B20 @ 5-6'	7/26/2023	SC



Krazan Testing Laboratory

Shear Strength Diagram (Direct Shear)
ASTM D - 3080 / AASHTO T - 236

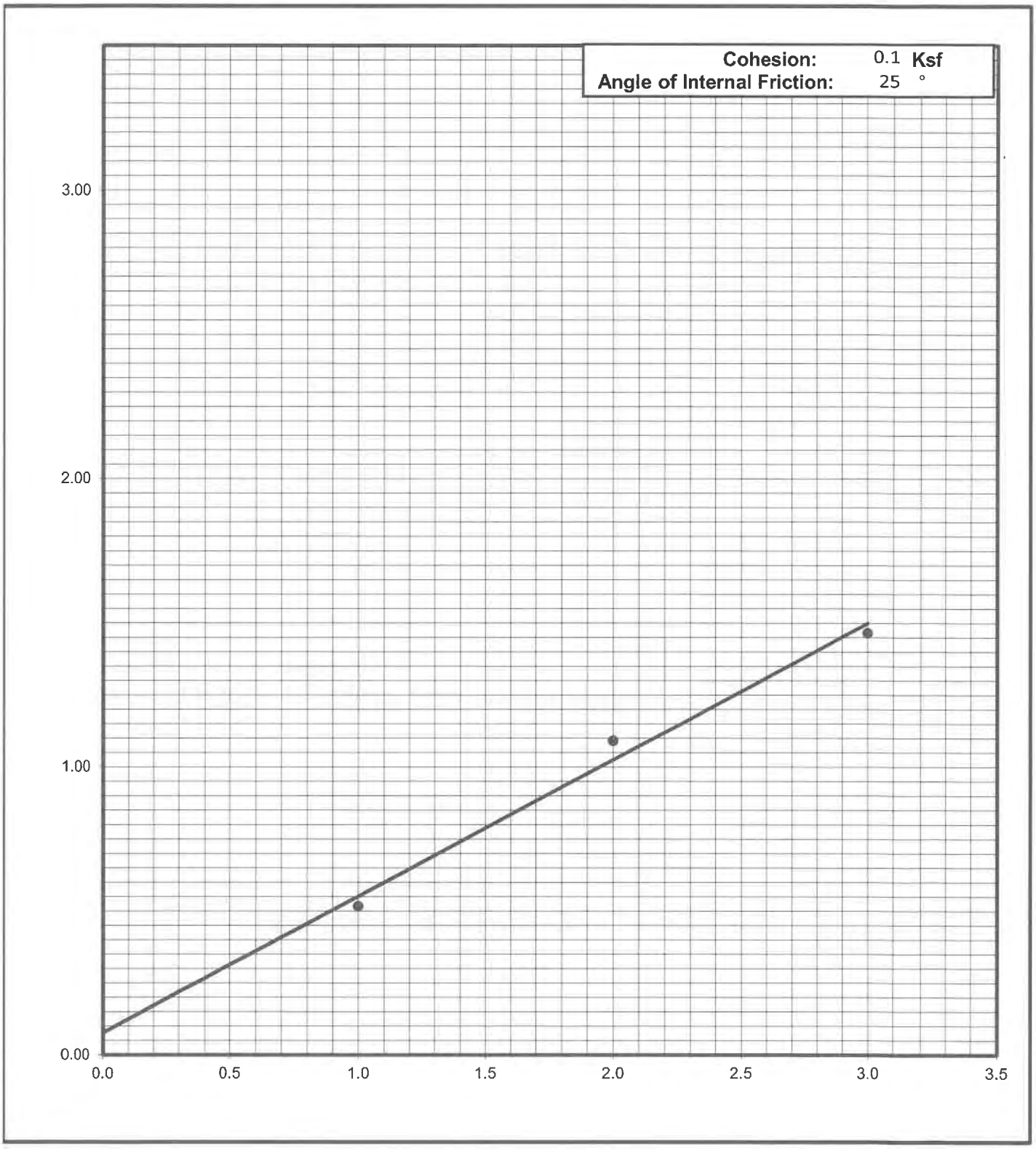
Project Number	Boring No. & Depth	Soil Type	Date
012-22233	B2 @ 2-3'	SM	7/27/2023



Krazan Testing Laboratory

Shear Strength Diagram (Direct Shear)
ASTM D - 3080 / AASHTO T - 236

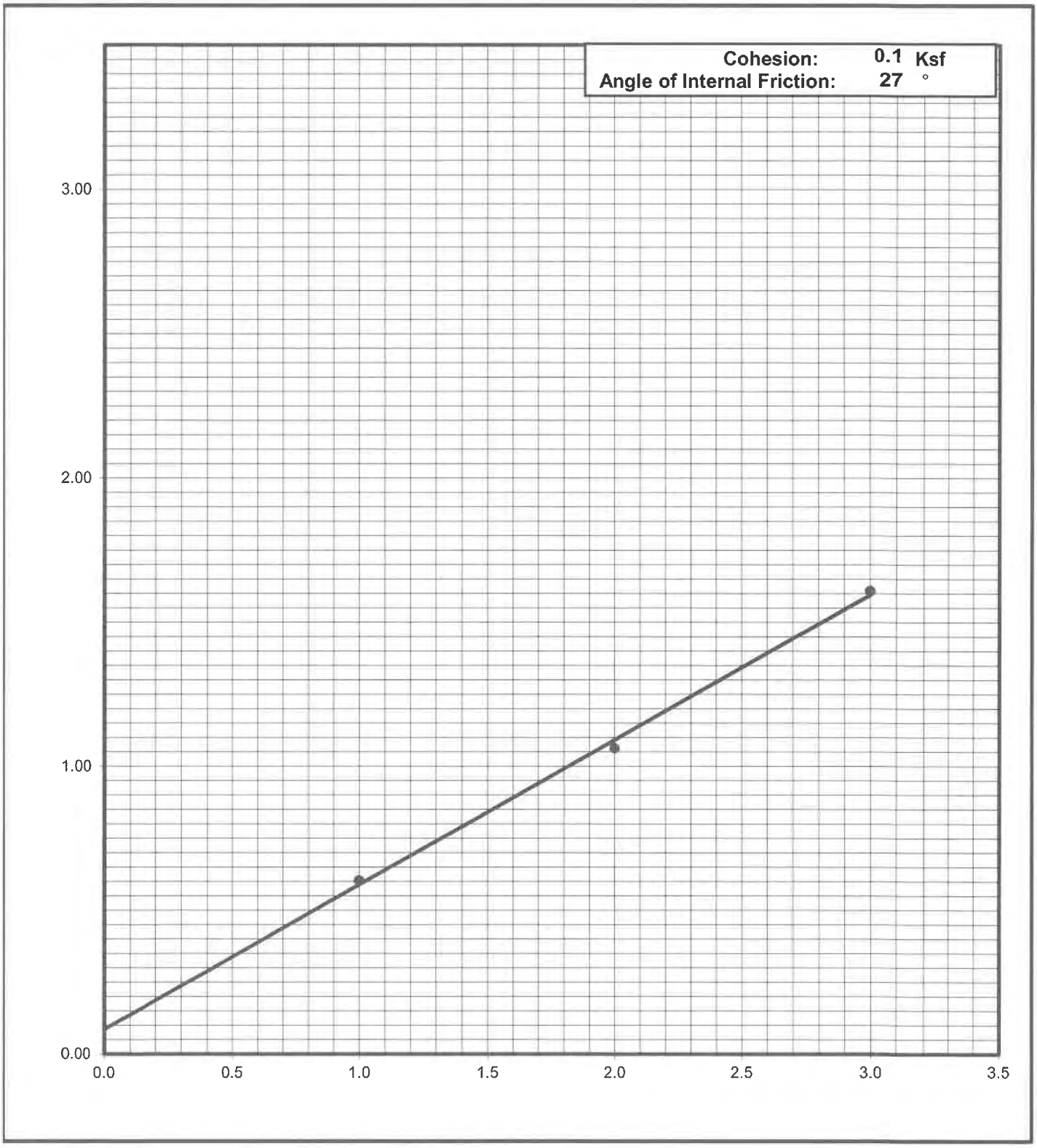
Project Number	Boring No. & Depth	Soil Type	Date
012-22233	B7 @ 2-3'	SM/ML	7/27/2023



Krazan Testing Laboratory

Shear Strength Diagram (Direct Shear)
ASTM D - 3080 / AASHTO T - 236

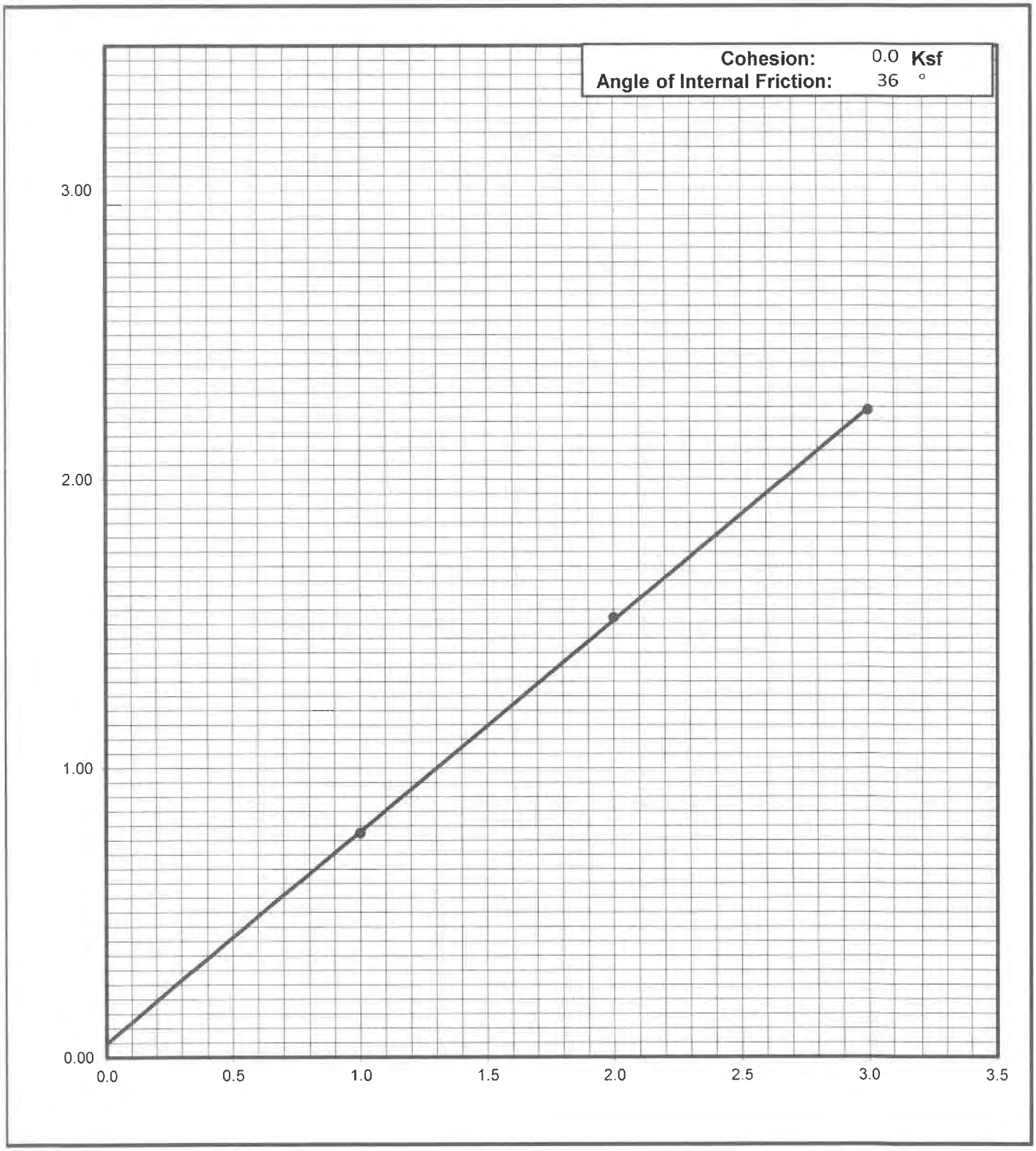
Project Number	Boring No. & Depth	Soil Type	Date
012-22233	B14 @ 2-3'	ML	7/27/2023



Krazan Testing Laboratory

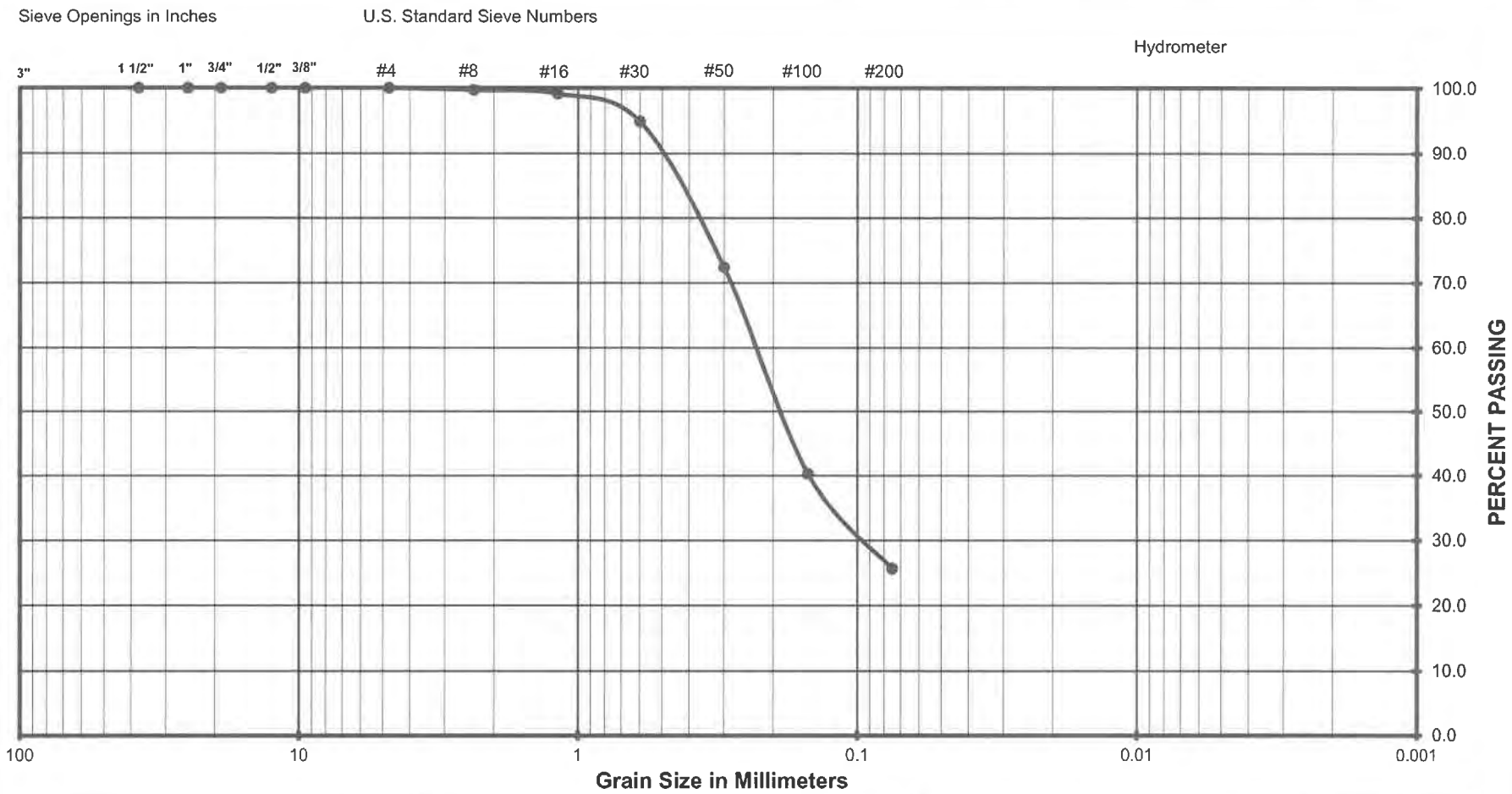
Shear Strength Diagram (Direct Shear)
ASTM D - 3080 / AASHTO T - 236

Project Number	Boring No. & Depth	Soil Type	Date
012-22233	B19 @ 2-3'	SM	7/26/2023



Krazan Testing Laboratory

Grain Size Analysis



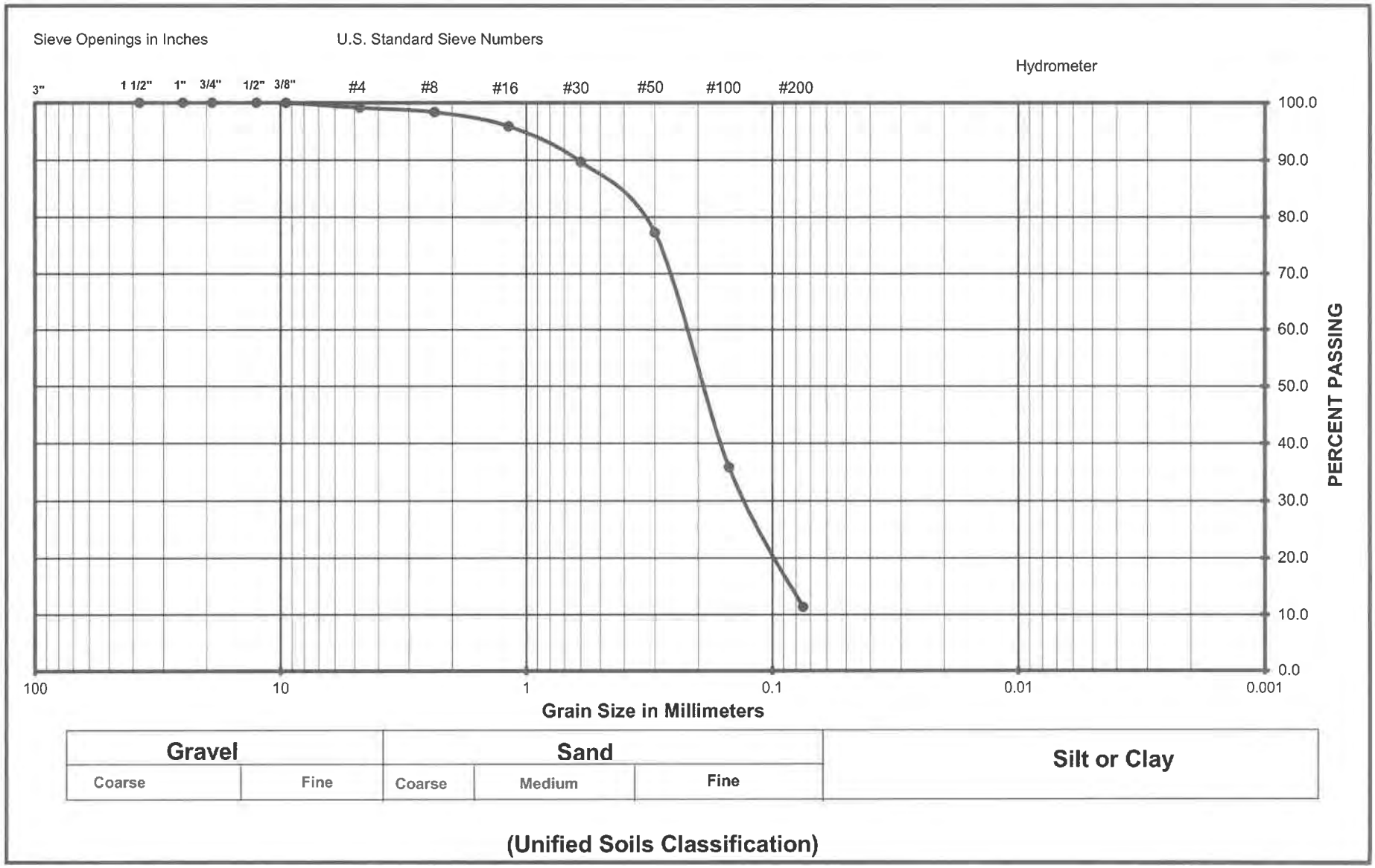
Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22233
Soil Classification	SM
Sample Number	B1 @ 2-3'

Krazan Testing Laboratory

Grain Size Analysis

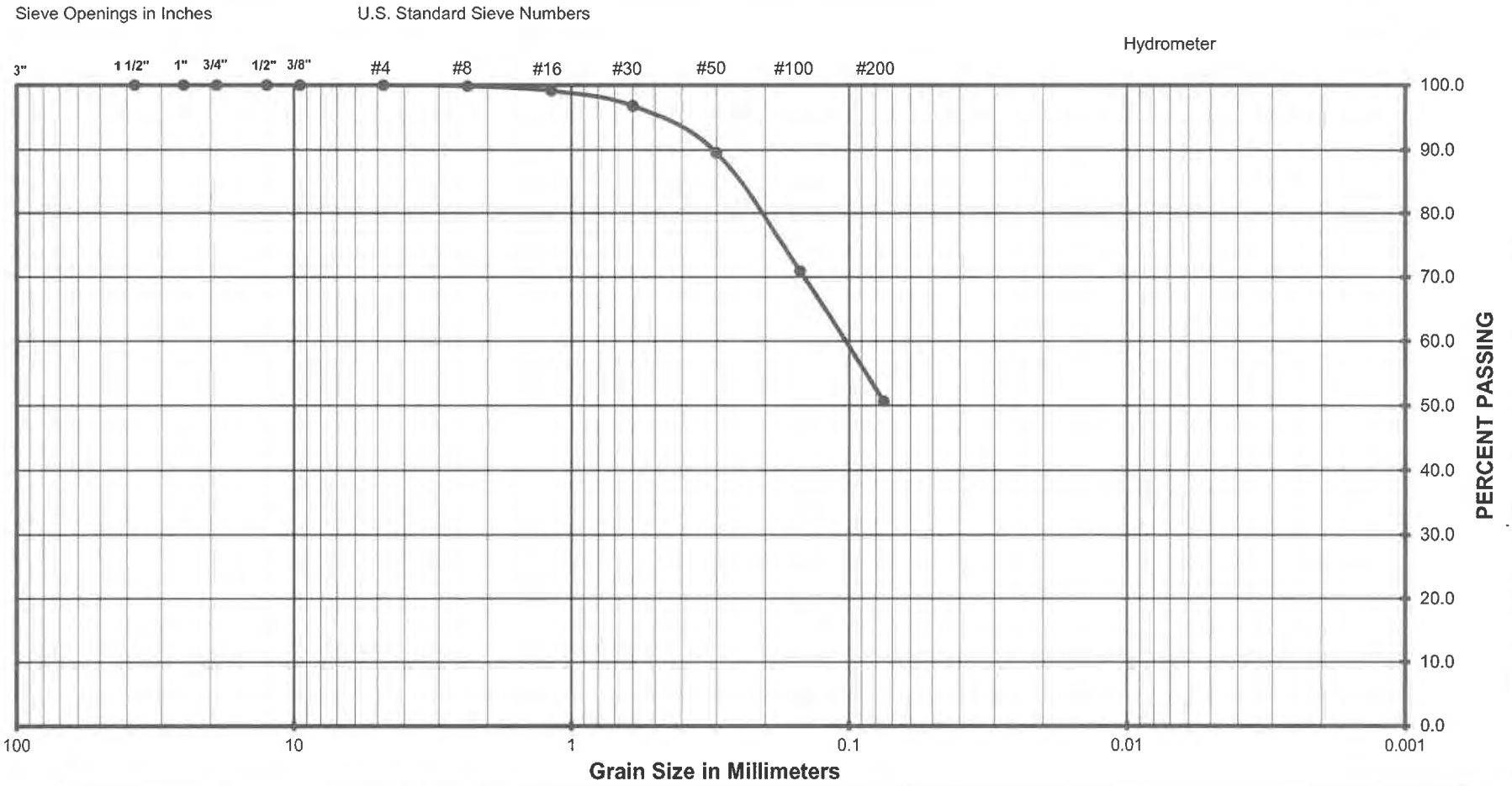


(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22233
Soil Classification	SM/SP
Sample Number	B8 @ 2-3'

Krazan Testing Laboratory

Grain Size Analysis



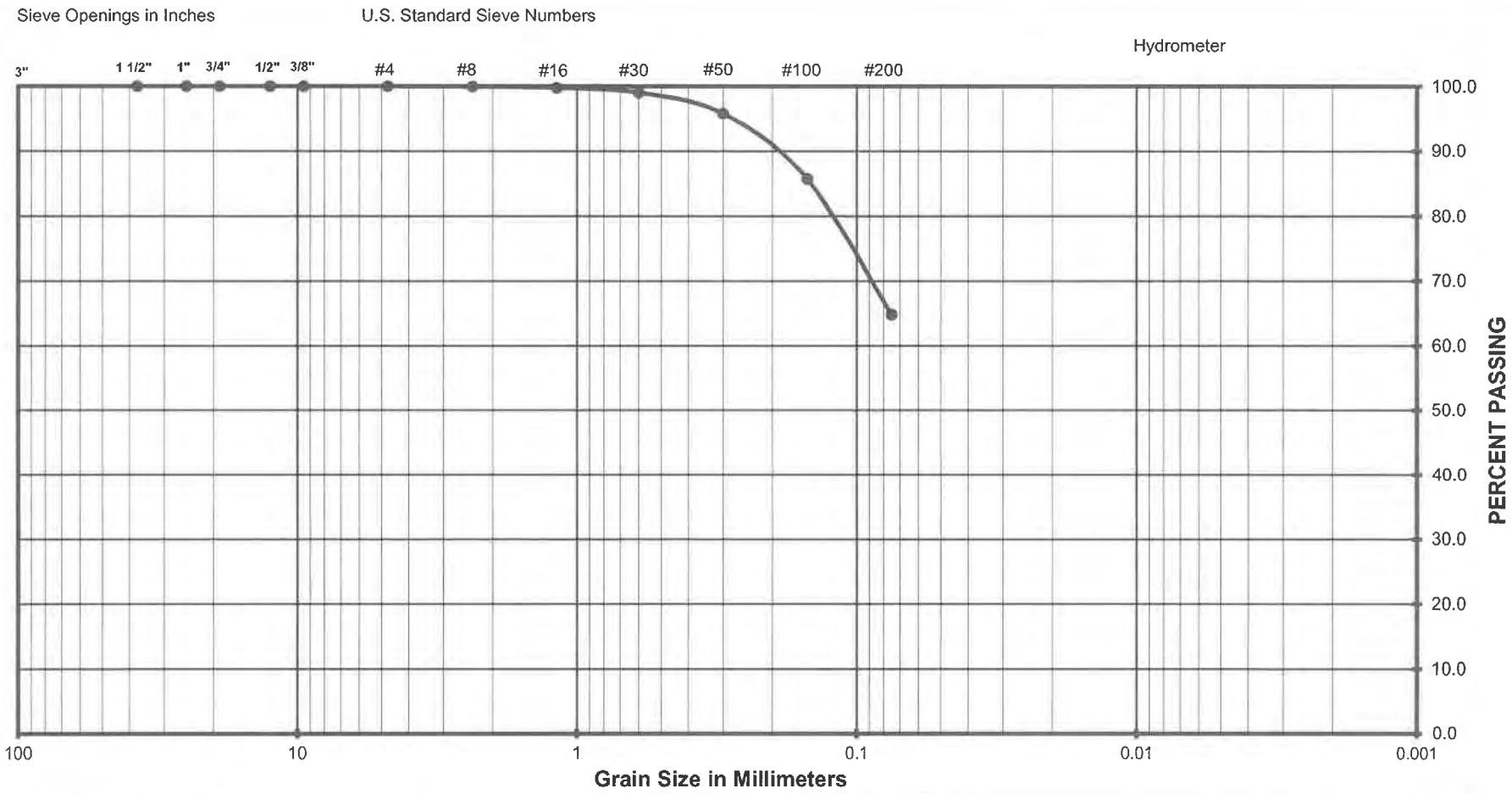
Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22233
Soil Classification	SC/CL
Sample Number	B13 @ 2-3'

Krazan Testing Laboratory

Grain Size Analysis



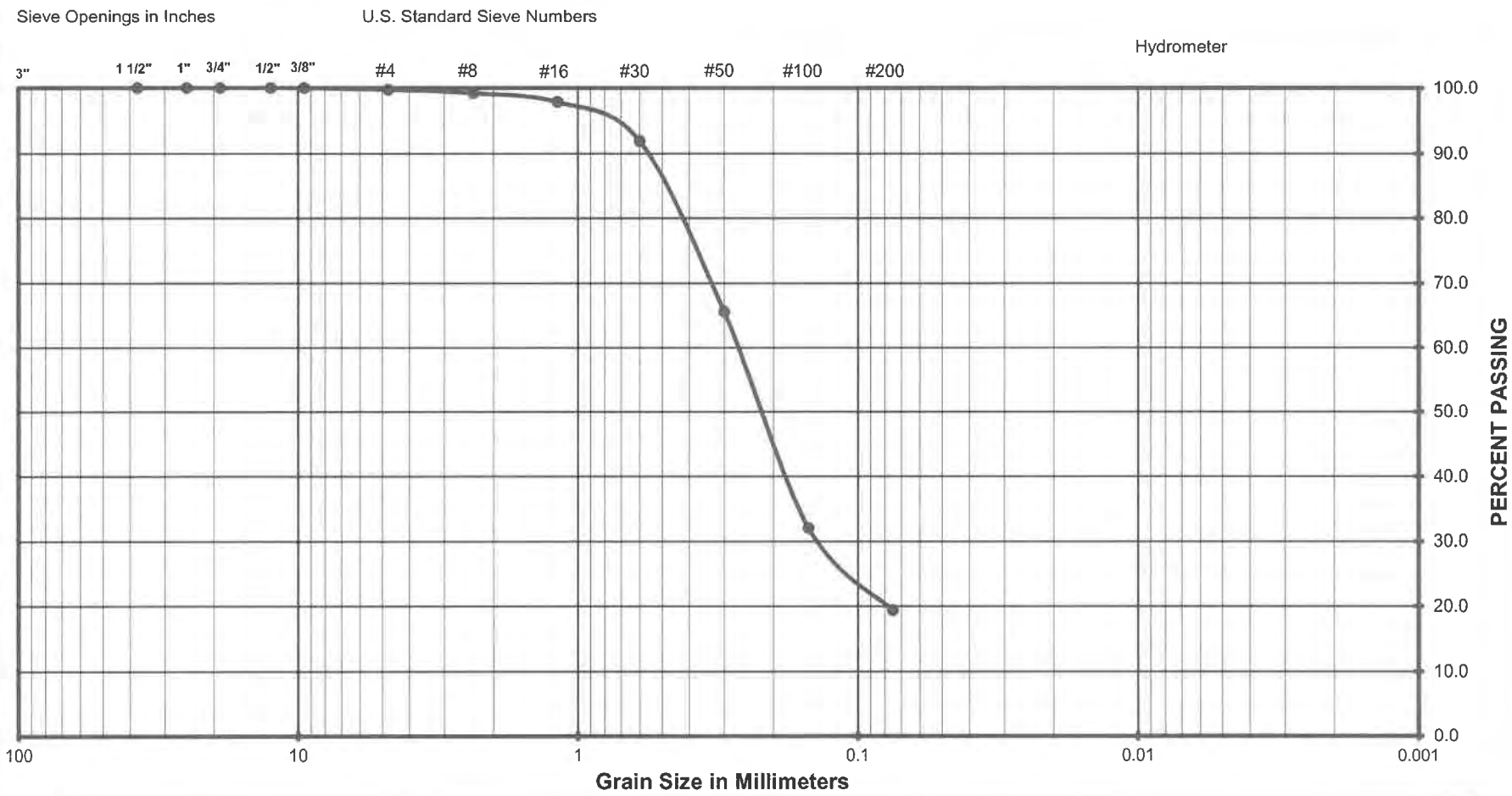
Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22233
Soil Classification	ML
Sample Number	B15 @ 2-3'

Krazan Testing Laboratory

Grain Size Analysis



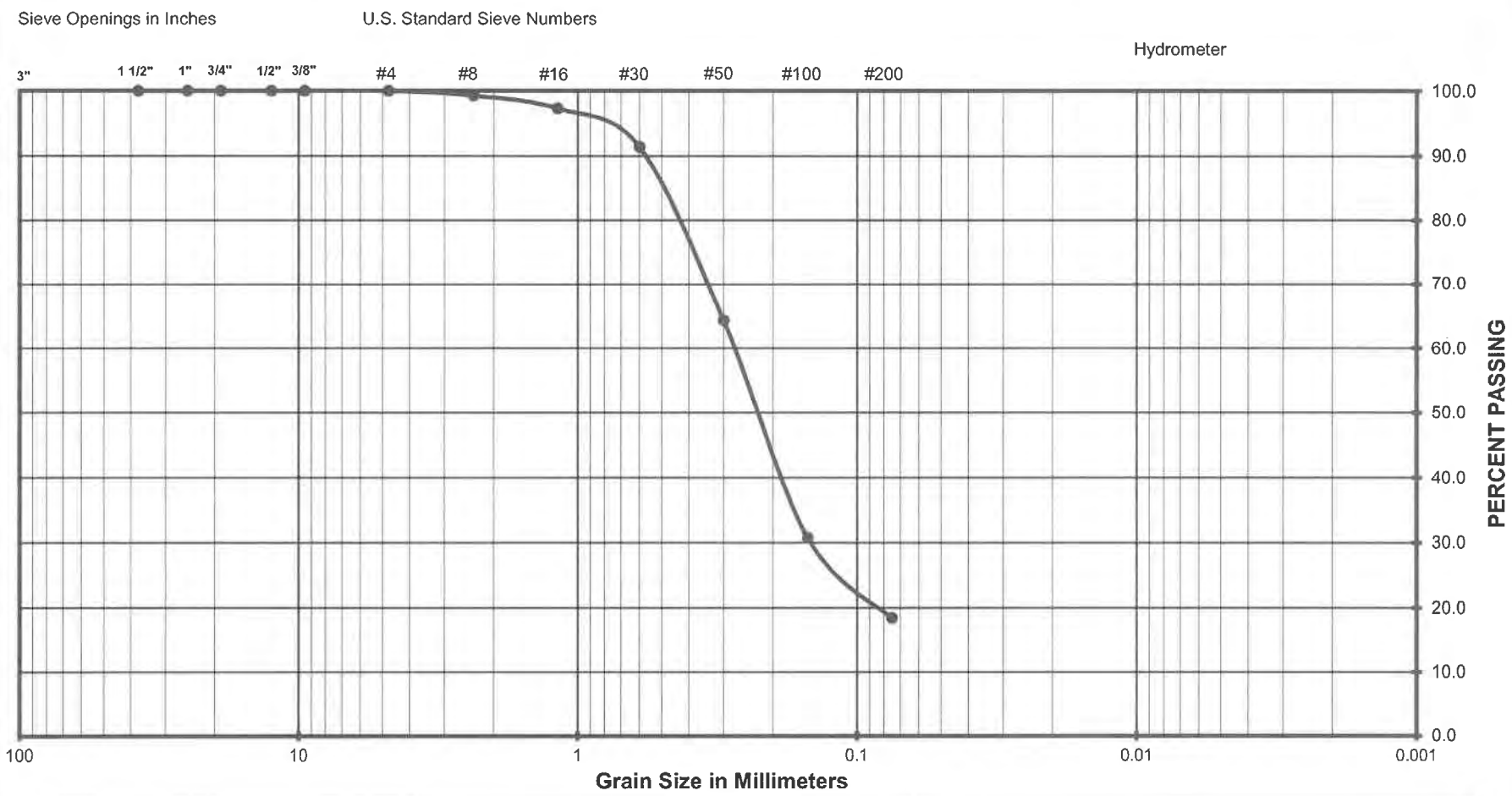
Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22233
Soil Classification	SM w/ trece of clay
Sample Number	B17 @ 2-3'

Krazan Testing Laboratory

Grain Size Analysis



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Triangle Development
Project Number	012-22233
Soil Classification	SM
Sample Number	B20 @ 2-3'

Krazan Testing Laboratory

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

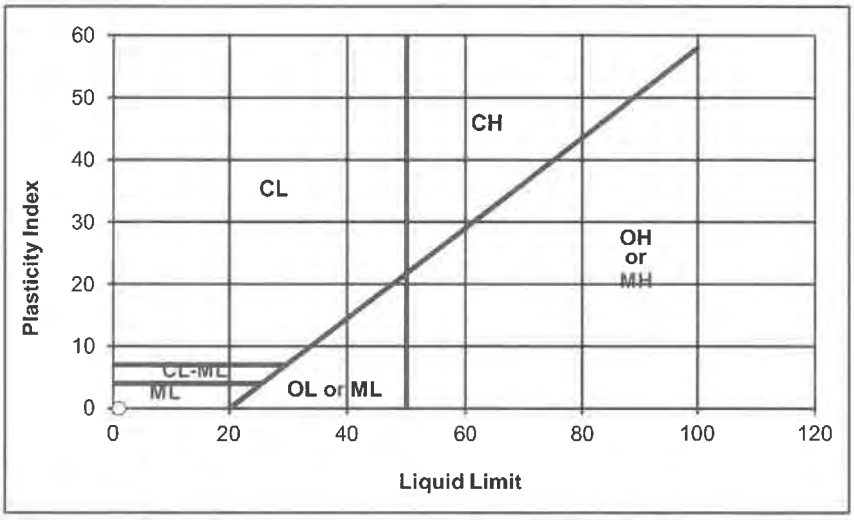
Project: **Triangle Development**
Project Number: **012-22233**
Date Sampled: 10/30/2023
Sampled By: DA
Sample Number: -
Sample Location: B22 @ 30-31'
Sample Description: SM

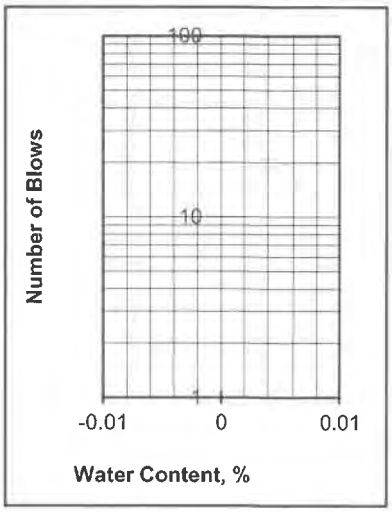
Date Tested: 11/7/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

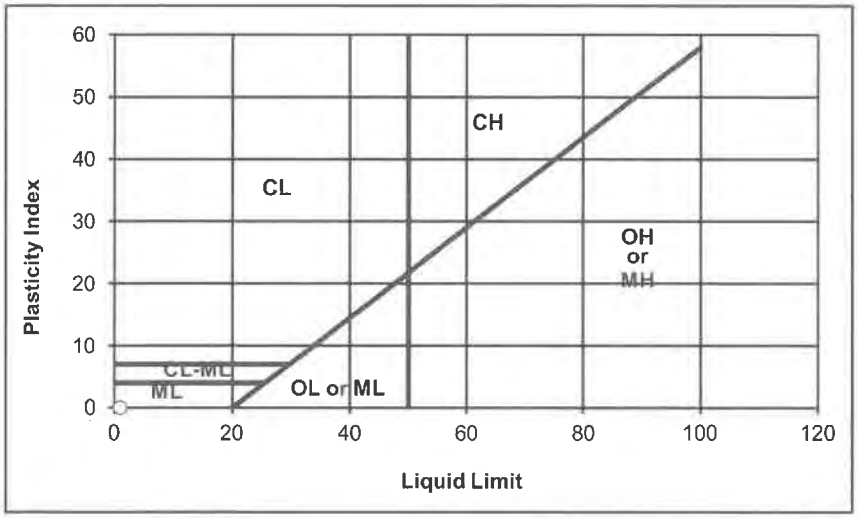
Project: **Triangle Development**
Project Number: **012-22233**
Date Sampled: 10/30/2023
Sampled By: DA
Sample Number: -
Sample Location: B22 @ 35-36'
Sample Description: SM/SP

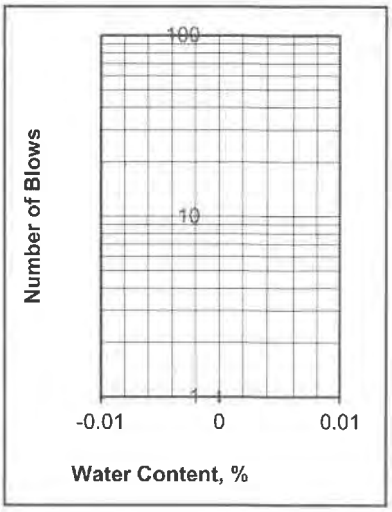
Date Tested: 11/7/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

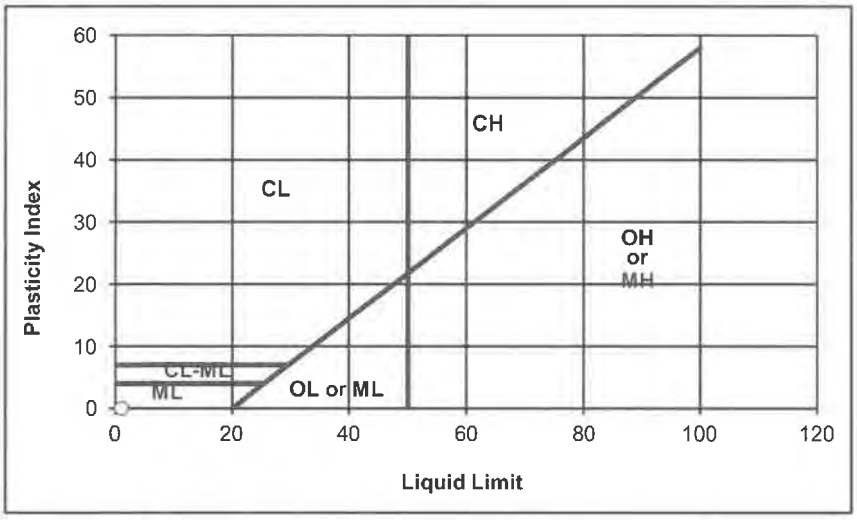
Project: **Triangle Development**
Project Number: **012-22233**
Date Sampled: 10/30/2023
Sampled By: DA
Sample Number: -
Sample Location: B22 @ 40-41'
Sample Description: SM

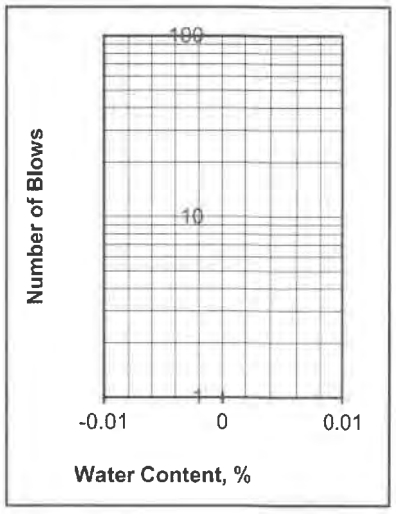
Date Tested: 11/7/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

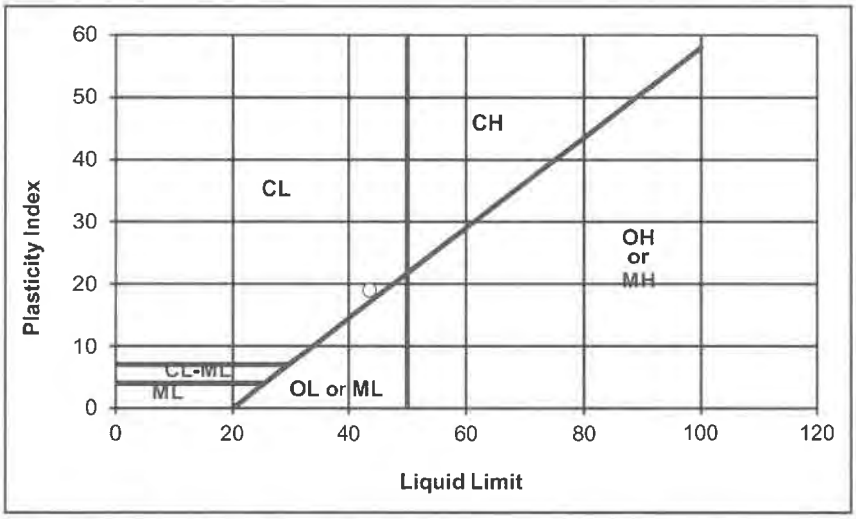
Project: **Triangle Development**
Project Number: **012-22233**
Date Sampled: 10/30/2023
Sampled By: DA
Sample Number: -
Sample Location: B22 @ 45-46'
Sample Description: SC/CL

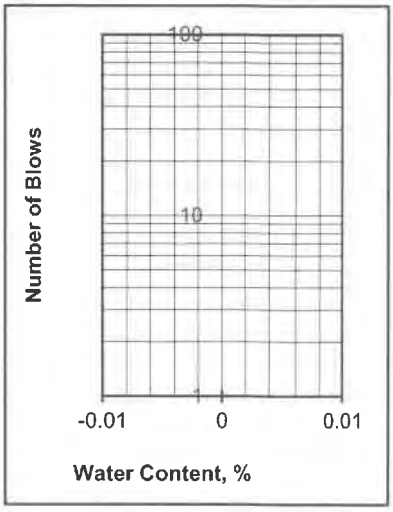
Date Tested: 11/7/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	35.87	33.34		43.35	32.99	
Weight of Dry Soil & Tare (g)	33.64	31.67		37.80	29.16	
Weight of Tare (g)	24.69	24.95		24.98	20.42	
Weight of water (g)	2.23	1.67		5.55	3.83	
Weight of Dry Soil (g)	8.95	6.72		12.82	8.74	
Water Content (% of dry wt.)	24.9%	24.9%		43.3%	43.8%	
Number of Blows				25	25	

Plastic Limit : 25 **Liquid Limit : 44**

Plasticity Index : 19
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

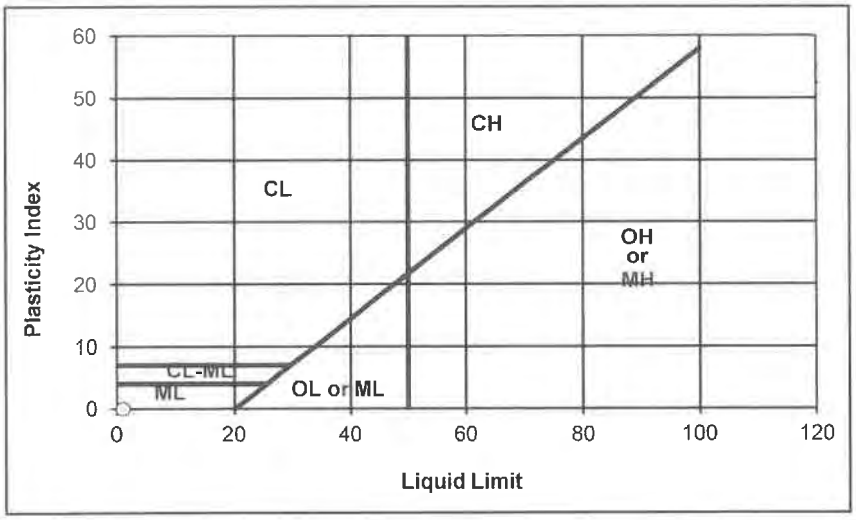
Project: **Triangle Development**
Project Number: **012-22233**
Date Sampled: 10/30/2023
Sampled By: DA
Sample Number: -
Sample Location: B23 @ 35-36'
Sample Description: SP

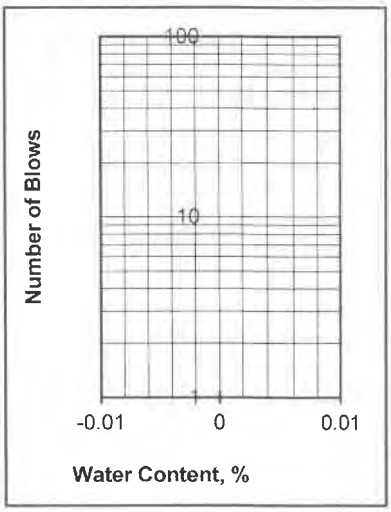
Date Tested: 11/7/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

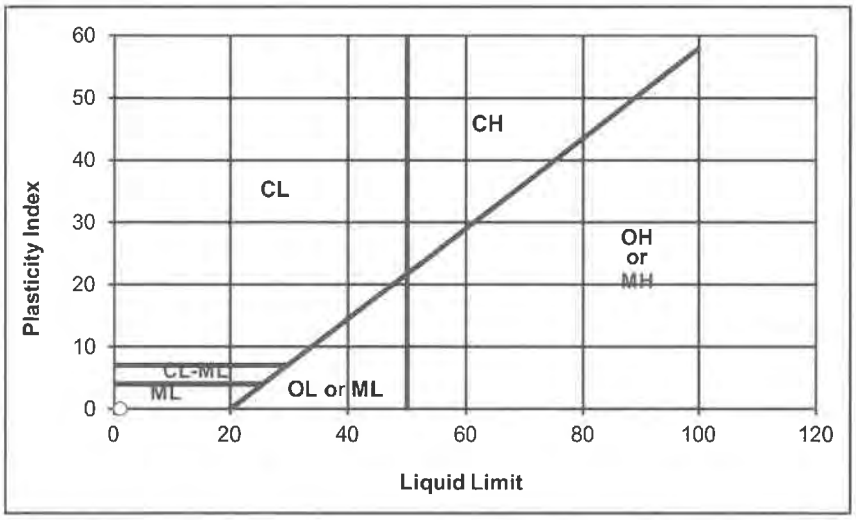
Project: **Triangle Development**
Project Number: **012-22233**
Date Sampled: 10/30/2023
Sampled By: DA
Sample Number: -
Sample Location: B23 @ 40-41'
Sample Description: ML

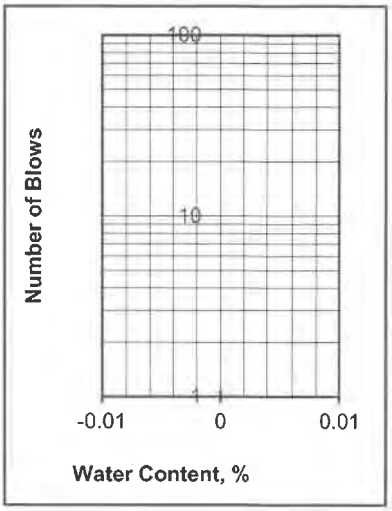
Date Tested: 11/7/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

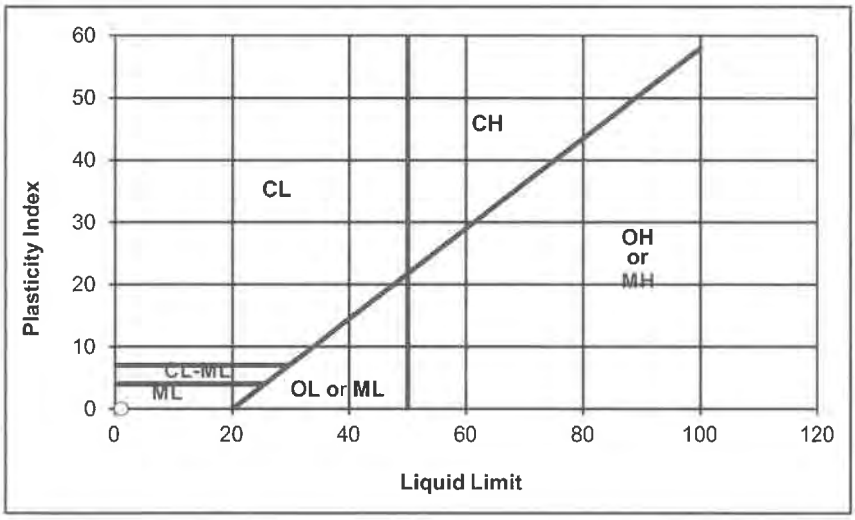
Project: **Triangle Development**
Project Number: **012-22233**
Date Sampled: 10/30/2023
Sampled By: DA
Sample Number: -
Sample Location: B23 @ 45-46'
Sample Description: ML

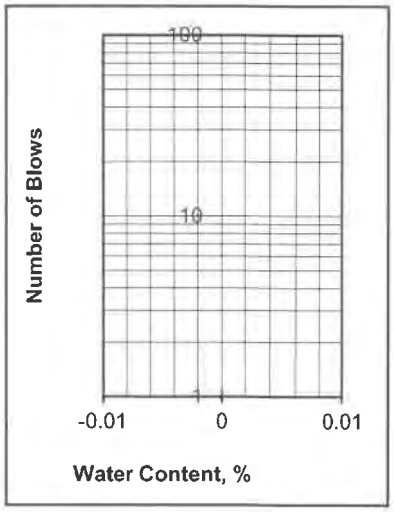
Date Tested: 11/7/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

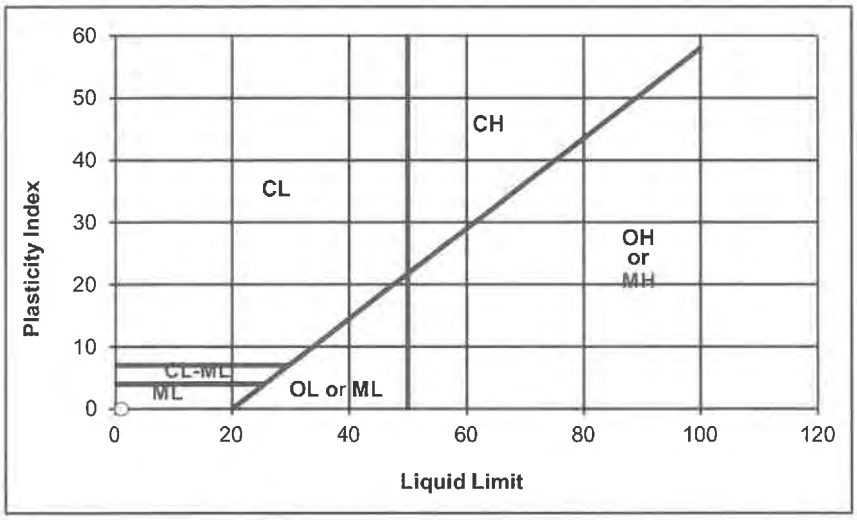
Project: **Triangle Development**
Project Number: **012-22233**
Date Sampled: 10/30/2023
Sampled By: DA
Sample Number: -
Sample Location: B24 @ 15-16'
Sample Description: SM/SP

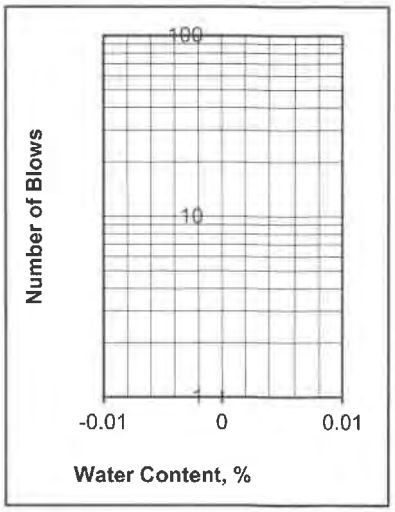
Date Tested: 11/7/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

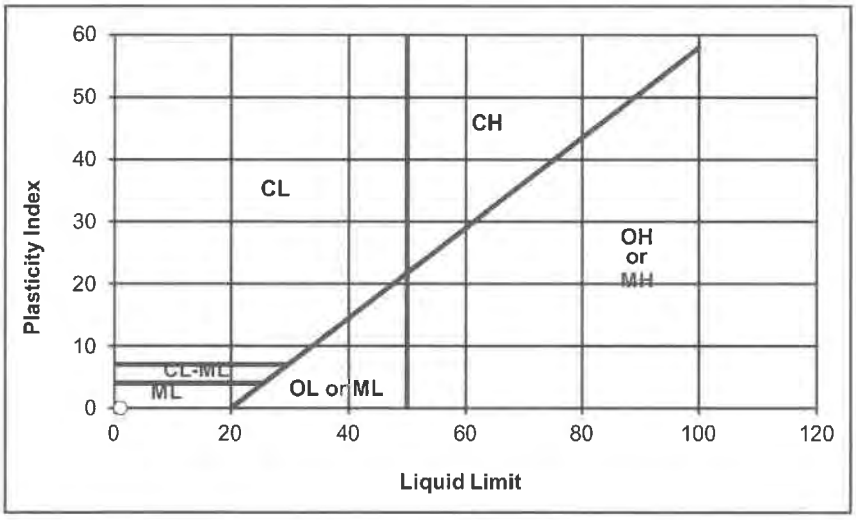
Project: **Triangle Development**
Project Number: **012-22233**
Date Sampled: 10/30/2023
Sampled By: DA
Sample Number: -
Sample Location: B24 @ 40-41'
Sample Description: SM/SP

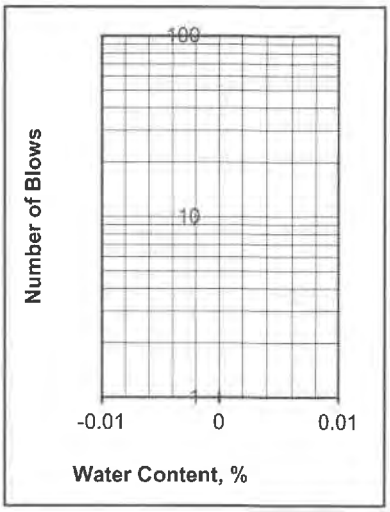
Date Tested: 11/7/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

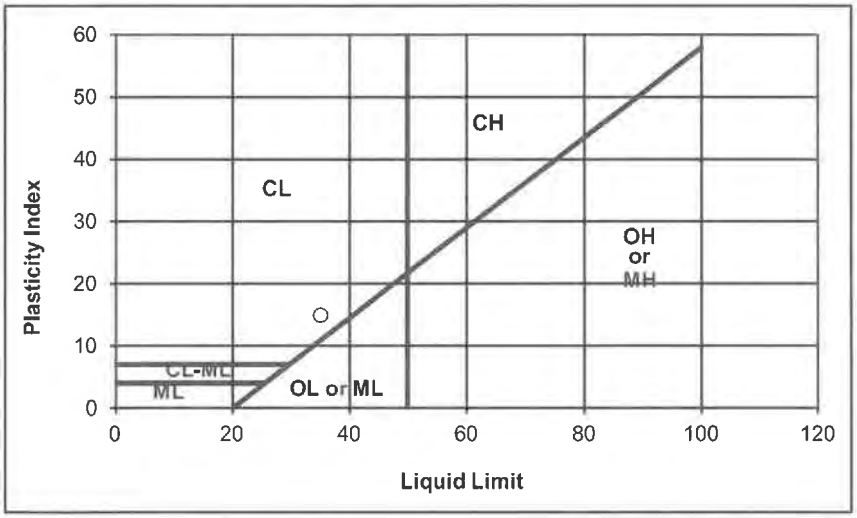
Project: **Triangle Development**
Project Number: **012-22233**
Date Sampled: 10/30/2023
Sampled By: DA
Sample Number: -
Sample Location: B24 @ 45-46'
Sample Description: SC

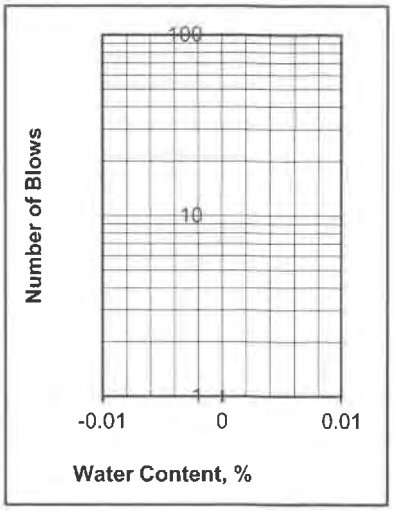
Date Tested: 11/7/2023
Tested By: JM
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	36.73	35.86		30.58	33.81	
Weight of Dry Soil & Tare (g)	34.78	34.01		27.85	28.53	
Weight of Tare (g)	24.86	24.73		20.15	13.30	
Weight of water (g)	1.95	1.85		2.73	5.28	
Weight of Dry Soil (g)	9.92	9.28		7.70	15.23	
Water Content (% of dry wt.)	19.7%	19.9%		35.5%	34.7%	
Number of Blows				25	25	

Plastic Limit : 20 **Liquid Limit : 35**

Plasticity Index : 15
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

APPENDIX B

EARTHWORK SPECIFICATIONS

GENERAL

When the text of the report conflicts with the general specifications in this appendix, the recommendations in the report have precedence.

SCOPE OF WORK: These specifications and applicable plans pertain to and include all earthwork associated with the site rough grading, including but not limited to the furnishing of all labor, tools, and equipment necessary for site clearing and grubbing, stripping, preparation of foundation materials for receiving fill, excavation, processing, placement and compaction of fill and backfill materials to the lines and grades shown on the project grading plans, and disposal of excess materials.

PERFORMANCE: The Contractor shall be responsible for the satisfactory completion of all earthwork in accordance with the project plans and specifications. This work shall be inspected and tested by a representative of Krazan and Associates, Inc., hereinafter known as the Soils Engineer and/or Testing Agency. Attainment of design grades when achieved shall be certified to by the project Civil Engineer. Both the Soils Engineer and the Civil Engineer are the Owner's representatives. If the Contractor should fail to meet the technical or design requirements embodied in this document and on the applicable plans, he shall make the necessary readjustments until all work is deemed satisfactory as determined by both the Soils Engineer and the Civil Engineer. No deviation from these specifications shall be made except upon written approval of the Soils Engineer, Civil Engineer or project Architect.

No earthwork shall be performed without the physical presence or approval of the Soils Engineer. The Contractor shall notify the Soils Engineer at least 2 working days prior to the commencement of any aspect of the site earthwork.

The Contractor agrees that he shall assume sole and complete responsibility for job site conditions during the course of construction of this project, including safety of all persons and property; that this requirement shall apply continuously and not be limited to normal working hours; and that the Contractor shall defend, indemnify and hold the Owner and the Engineers harmless from any and all liability, real or alleged, in connection with the performance of work on this project, except for liability arising from the soil negligence of the Owner or the Engineers.

TECHNICAL REQUIREMENTS: All compacted materials shall be densified to a density not less that 90 percent relative compaction based on ASTM Test Method D1557-78, UBC or CAL-216, as specified in the technical portion of the Soil Engineer's report. The location and frequency of field density tests shall be as determined by the Soils Engineer. The results of these tests and compliance with these specifications shall be the basis upon which satisfactory completion of work will be judged by the Soils Engineer.

SOILS AND FOUNDATION CONDITIONS: The Contractor is presumed to have visited the site and to have familiarized himself with existing site conditions and the contents of the data presented in the soil report.

The Contractor shall make his own interpretation of the data contained in said report, and the Contractor shall not be relieved of liability under the Contractor for any loss sustained as a result of any variance between conditions indicated by or deduced from said report and the actual conditions encountered during the progress of the work.

DUST CONTROL: The work includes dust control as required for the alleviation or prevention of any dust nuisance on or about the site or the borrow area, or off-site if caused by the Contractor's operation either during the performance of the earthwork or resulting from the conditions in which the Contractor leaves the site. The Contractor shall assume all liability, including court costs of codefendants, for all claims related to dust or windblown materials attributable to his work.

SITE PREPARATION

Site preparation shall consist of site clearing and grubbing and the preparations of foundation materials for receiving fill.

CLEARING AND GRUBBING: The Contractor shall accept the site in this present condition and shall demolish and/or remove from the area of designated project, earthwork all structures, both surface and subsurface, trees, brush, roots, debris, organic matter, and all other matter determined by the Soils Engineer to be deleterious. Such materials shall become the property of the Contractor and shall be removed from the site.

Tree root systems in proposed building areas should be removed to a minimum depth of 3 feet and to such an extent which would permit removal of all roots larger than 1 inch. Tree root removed in parking areas may be limited to the upper 1½ feet of the ground surface. Backfill or tree root excavation should not be permitted until all exposed surfaces have been inspected and the Soils Engineer is present for the proper control of backfill placement and compaction. Burning in areas which are to receive fill materials shall not be permitted.

SUBGRADE PREPARATION: Surfaces to receive Engineered Fill, building or slab loads shall be prepared as outlined above, scarified to a depth of 6 inches, moisture-conditioned as necessary, and compacted to 90 percent relative compaction.

Loose soil areas, areas of uncertified fill, and/or areas of disturbed soils shall be moisture-conditioned as necessary and recompacted to 90 percent relative compaction. All ruts, hummocks, or other uneven surface features shall be removed by surface grading prior to placement of any fill materials. All areas, which are to receive fill materials, shall be approved by the Soils Engineer prior to the placement of any of the fill material.

EXCAVATION: All excavation shall be accomplished to the tolerance normally defined by the Civil Engineer as shown on the project grading plans. All over excavation below the grades specified shall be backfilled at the Contractor's expense and shall be compacted in accordance with the applicable technical requirements.

FILL AND BACKFILL MATERIAL: No material shall be moved or compacted without the presence of the Soils Engineer. Material from the required site excavation may be utilized for construction site fills provided prior approval is given by the Soils Engineer. All materials utilized for constructing site fills shall be free from vegetation or other deleterious matter as determined by the Soils Engineer.

PLACEMENT, SPREADING AND COMPACTION: The placement and spreading of approved fill materials and the processing and compaction of approved fill and native materials shall be the responsibility of the Contractor. However, compaction of fill materials by flooding, ponding, or jetting shall not be permitted unless specifically approved by local code, as well as the Soils Engineer.

Both cut and fill shall be surface compacted to the satisfaction of the Soils Engineer prior to final acceptance.

SEASONAL LIMITS: No fill material shall be placed, spread, or rolled while it is frozen or thawing or during unfavorable wet weather conditions. When the work is interrupted by heavy rains, fill operations shall not be resumed until the Soils Engineer indicates that the moisture content and density of previously placed fill are as specified.

APPENDIX C

PAVEMENT SPECIFICATIONS

1. DEFINITIONS - The term "pavement" shall include asphaltic concrete surfacing, untreated aggregate base, and aggregate subbase. The term "subgrade" is that portion of the area on which surfacing, base, or subbase is to be placed.

The term "Standard Specifications": hereinafter referred to is the 2018 Standard Specifications of the State of California, Department of Transportation, and the "Materials Manual" is the Materials Manual of Testing and Control Procedures, State of California, Department of Public Works, Division of Highways. The term "relative compaction" refers to the field density expressed as a percentage of the maximum laboratory density as defined in the applicable tests outlined in the Materials Manual.

2. SCOPE OF WORK - This portion of the work shall include all labor, materials, tools, and equipment necessary for, and reasonably incidental to the completion of the pavement shown on the plans and as herein specified, except work specifically notes as "Work Not Included."

3. PREPARATION OF THE SUBGRADE - The Contractor shall prepare the surface of the various subgrades receiving subsequent pavement courses to the lines, grades, and dimensions given on the plans. The upper 12 inches of the soil subgrade beneath the pavement section shall be compacted to a minimum relative compaction of 90 percent. The finished subgrades shall be tested and approved by the Soils Engineer prior to the placement of additional pavement courses.

4. UNTREATED AGGREGATE BASE - The aggregate base material shall be spread and compacted on the prepared subgrade in conformity with the lines, grades, and dimensions shown on the plans. The aggregate base material shall conform to the requirements of Section 26 of the Standard Specifications for Class 2 material, 1½ inches maximum size. The aggregate base material shall be compacted to a minimum relative compaction of 95 percent. The aggregate base material shall be spread and compacted in accordance with Section 26 of the Standard Specifications. The aggregate base material shall be spread in layers not exceeding 6 inches and each layer of aggregate material course shall be tested and approved by the Soils Engineer prior to the placement of successive layers.

5. AGGREGATE SUBBASE - The aggregate subbase shall be spread and compacted on the prepared subgrade in conformity with the lines, grades, and dimensions shown on the plans. The aggregate subbase material shall conform to the requirements of Section 25 of the Standard Specifications for Class 2 material. The aggregate subbase material shall be compacted to a minimum relative compaction of 95 percent, and it shall be spread and compacted in accordance with Section 25 of the Standard Specifications. Each layer of aggregate subbase shall be tested and approved by the Soils Engineer prior to the placement of successive layers.

6. ASPHALTIC CONCRETE SURFACING - Asphaltic concrete surfacing shall consist of a mixture of mineral aggregate and paving grade asphalt, mixed at a central mixing plant and spread and compacted on a prepared base in conformity with the lines, grades and dimensions shown on the plans. The viscosity grade of the asphalt shall be PG 64-10. The mineral aggregate shall be Type B, ½ inch maximum size, medium grading and shall conform to the requirements set forth in Section 39. The drying, proportioning and mixing of the materials shall conform to Section 39.

The prime coat, spreading and compacting equipment and spreading and compacting mixture shall conform to the applicable chapters of Section 39, with the exception that no surface course shall be placed when the atmospheric temperature is below 50° F. The surfacing shall be rolled with a combination of steel wheel and pneumatic rollers, as described in Section 39-6. The surface course shall be placed with an approved self-propelled mechanical spreading and finishing machine.

7. FOG SEAL COAT - The fog seal (mixing type asphaltic emulsion) shall conform to and be applied in accordance with the requirements of Section 37.

Appendix G

Phase 1 and 2 ESA

Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

February 3, 2023 Project No. 014-22171

Ms. Goldie Lewis
Wilson Homes
7550 North Palm Avenue, Suite 102
Fresno, California 93711
glewis@wilsondevelopment.com

RE: Phase I Environmental Site Assessment
Triangle Property
East Shepherd and North Temperance Avenues
(APN 557-031-023, 558-010-25, 557-031-35, 557-031-44S, 557-031-05S)
Fresno, California

Dear Ms. Lewis:

Krazan & Associates, Inc., (Krazan) completed a Phase I Environmental Site Assessment at the referenced site summarized in a report dated February 3, 2023. We appreciate the opportunity to serve your environmental due diligence needs.

During the course of this assessment, Krazan identified no evidence of controlled RECs (CRECs) or historical RECs (HRECs) in connection with the subject site as defined by ASTM E 1527-13. However, the following recognized environmental conditions (RECs), ASTM Non-Scope Issues, and Site Development Issues were identified:

REC

Evidence of an underground chemical storage tank (UST) was observed adjacent to the southeastern corner of a storage shed to the adjacent west of the Landscape Connection, Inc. commercial operation. One metal vent pipe was observed adjacent to a metallic pipe protruding from the ground with a hand pump fixed to the top. According to Mr. Richard Smith, owner, the UST was removed approximately 40 years ago. According to the SWEEPS UST and documents reviewed via the link to the SWRCB GeoTracker database (HIST UST), one 500-gallon unleaded gasoline UST was utilized at the subject site in association with the former poultry/turkey ranch. Both the SWEEPS UST and CA FID UST databases identify the UST's status as "active". No records of the UST removal, soil sample analysis, or a Closure Letter are on file with the Fresno County Environmental Health Services (FCEHS), and no additional information is included on the State Water Resources Control Board (SWRCB) database. Based on the presence of the former UST, the potential exists for petroleum hydrocarbon constituents to have impacted the subsurface in the event a past release occurred. The subsurface conditions in the area of the reported former UST are unknown; therefore, the lack of documentation pertaining to the removal of the gasoline UST represents a REC at the subject site.

Krazan recommends conducting a limited subsurface survey to assess the presence of a potential UST.

ASTM Non-scope Issues

- The structures located on the subject site were constructed prior to 1978; therefore, based on the date of construction, asbestos-containing materials (ACMs) or lead-based paint (LBP) may be present at the subject site. An asbestos and/or LBP survey and sampling of the on-site structures was not included within the scope of this assessment; therefore, it is unknown whether the on-site structures contain ACMs or LBP.

  Prior to the disturbance of any of the suspect ACMs or LBP at the subject site via renovation or demolition, a comprehensive asbestos and LBP survey is recommended.

- Big Dry Creek stream wash extends east to west across the northern portion of the subject site and is classified by the U. S. Fish & Wildlife Service (USFWS) National Wetlands Inventory as a temporary flooded, intermittent, riverine, streambed (R4SBA). Big Dry Creek is part of a riverine subsystem that contains flowing water only part of the year, is completely dewatered at low tide, has surface water that is present only for brief periods during the growing season, and a water table that usually lies well below the ground surface for most of the season. This riverine portion of wetlands is part of a greater Palustrine, freshwater wetland system to the northeast of the subject site. The ephemeral tributary, known as Big Dry Creek, was observed as holding water at the time of the site reconnaissance. Therefore, regulations pertaining to wetlands may impact future development at the subject site.

  Krazan recommends a qualified wetlands biologist survey the subject site.

- According to the USFWS, the subject site is in a known range extent for the California tiger salamander (Ambystoma californiense); a large, stocky salamander with yellow dots or stripes against a black body. The USFWS has classified the California tiger salamander (CTS) into three Distinct Population Segments (DPS). CTSs near the subject site are of the central California DPS and are listed as a "threatened species" for both state and federal statuses. The wetlands to the northeast of the subject site are a typical habitat of the CTS.

  Krazan recommends a qualified biologist survey the area potential for California tiger salamander habitat at or near the subject site.

Site Development Issues

- The subject site has been developed with a domestic water well, septic and leach field system, propane fuel tanks, and an irrigation well and pump.

  Prior to redevelopment activities, these systems should be properly removed in accordance with State and local guidelines.

- Numerous trash piles and various types of debris piles, including waste tires, glass bottles, scrap wood, metal piping, empty rusted drums, empty buckets, concrete irrigation pipes, wooden pallets, appliances, various pieces of farm equipment, and green waste/vegetation were observed in numerous areas of the subject site, specifically in the southern portion near the former poultry operations and across Landscape Connection, Inc.'s yard and vehicle maintenance/repair shed. Not all areas were able to be observed due to the excessive quantity of materials in the debris piles and/or access limitations during the site reconnaissance.

  During the removal of debris from across the subject site in preparation for grading and construction activities associated with the proposed residential development planned by Wilson Homes, should indications of potential hazardous materials or evidence of soil impacts be

observed, or if screening for constituents of potential concern (COCPs) is required per landfill requirements, Krazan should be contacted to determine whether surficial soils have been potentially impacted and whether sampling would be recommended. In addition, debris should be removed and transported off-site for proper disposal.

If you have any questions regarding the information presented in this report, please call me at (559) 348-2200.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

Mark D. Edwards, PG 7714, HG 1072
Sr. Project Manager

MDE/mlt

PHASE I ENVIRONMENTAL SITE ASSESSMENT

TRIANGLE PROPERTY
EAST SHEPHERD AND NORTH TEMPERANCE AVENUES
APNS 557-031-023, 558-010-25, 557-031-35, 557-031-44S, 557-031-05S
FRESNO, CALIFORNIA

Project No. 014-22171
February 3, 2023

Prepared for:
Ms. Goldie Lewis
Wilson Homes
7550 North Palm Avenue, Suite 102
Fresno, California 93711
(559) 224-7550

Prepared by:
Krazan & Associates, Inc.
215 West Dakota Avenue
Clovis, California 93612
(559) 348-2200

Krazan & ASSOCIATES, INC.
SITE DEVELOPMENT ENGINEERS

TABLE OF CONTENTS

EXECUTIVE SUMMARY ..... **i**

1.0 INTRODUCTION **1**

2.0 PURPOSE AND SCOPE OF ASSESSMENT **2**

2.1 Purpose 2
2.2 Scope of Work 2

3.0 SUBJECT SITE SETTING **3**

3.1 Geology and Hydrogeology 4

4.0 SITE BACKGROUND **5**

4.1 Sanborn Fire Insurance Maps 5
4.2 USGS Topographic Quadrangle Maps 5
4.3 City Cross Reference Directories 6
4.4 Aerial Photograph Interpretation 7
4.5 Municipal Records 9
4.6 Previous Environmental Assessments 10
4.7 Agricultural Chemicals 10

5.0 USER-PROVIDED INFORMATION **11**

5.1 Environmental Lien Search 11
5.2 Title Report 11
5.3 Interviews 11
5.4 Phase I Environmental Site Assessment User Questionnaire 13

6.0 SITE RECONNAISSANCE **15**

6.1 Observations 15
6.2 Adjacent Streets and Property Usage 20
6.3 ASTM Non-Scope Considerations 20
6.4 Regulatory Agency Records Review 24

7.0 DISCUSSION OF FINDINGS **28**

7.1 Evaluation of Data Gaps/Data Failure 28

8.0 CONCLUSIONS **29**

9.0 RELIANCE **31**

10.0 LIMITATIONS **31**

11.0 QUALIFICATIONS **32**

REFERENCES **34**

GLOSSARY OF TERMS **35**

TABLE OF CONTENTS (continued)

FIGURES

Figure No. 1 Vicinity Map
Figure No. 2 Parcel Map
Figure No. 3 Site Map
Figure No. 4 Wetlands Map

SITE PHOTOGRAPHS

APPENDICES

Appendix A EDR – Certified Sanborn® Map Report
EDR – Historical Topo Map Report
EDR – City Directory Image Report
EDR – Aerial Photos
Municipal Records

Appendix B Environmental Lien Search Documents
Phase I ESA Questionnaires

Appendix C EDR – Radius Map Report
Regulatory Agency Records

EXECUTIVE SUMMARY

Krazan & Associates, Inc. (Krazan) has conducted a Phase I Environmental Site Assessment (ESA) of the Triangle Property which consists of five parcels with the associated Fresno County Assessor's Parcel Numbers (APNs) of 557-031-023, 558-010-25, 557-031-35, 557-031-44S, and 557-031-05S. The parcels are located at East Shepherd and North Temperance Avenues. The subject site is approximately 106 acres in area. The northern portion of the subject site has historically been undeveloped. The southern portion of the subject site has been utilized for poultry farming, agricultural uses, commercial businesses and residences.

During the course of this assessment, Krazan identified no evidence of controlled RECs (CRECs) or historical RECs (HRECs) in connection with the subject site as defined by ASTM E 1527-13. However, the following recognized environmental conditions (RECs), ASTM Non-Scope Issues, and Site Development Issues were identified:

REC

Evidence of an underground chemical storage tank (UST) was observed adjacent to the southeastern corner of a storage shed to the adjacent west of the Landscape Connection, Inc. commercial operation. One metal vent pipe was observed adjacent to a metallic pipe protruding from the ground with a hand pump fixed to the top. According to Mr. Richard Smith, owner, the UST was removed approximately 40 years ago. According to the SWEEPS UST and documents reviewed via the link to the SWRCB GeoTracker database (HIST UST), one 500-gallon unleaded gasoline UST was utilized at the subject site in association with the former poultry/turkey ranch. Both the SWEEPS UST and CA FID UST databases identify the UST's status as "active". No records of the UST removal, soil sample analysis, or a Closure Letter are on file with the FCEHS, and no additional information is included on the SWRCB database. Based on the presence of the former UST, the potential exists for petroleum hydrocarbon constituents to have impacted the subsurface in the event a past release occurred. The subsurface conditions in the area of the reported former UST are unknown; therefore, the lack of documentation pertaining to the removal of the gasoline UST represent a REC at the subject site.

Krazan recommends conducting a limited subsurface survey to assess the presence of a potential UST.

ASTM Non-scope Issues

- The structures located on the subject site were constructed prior to 1978; therefore, based on the date of construction, asbestos-containing materials (ACMs) or lead-based paint (LBP) may be present at the subject site. An asbestos and/or LBP survey and sampling of the on-site structures was not included within the scope of this assessment; therefore, it is unknown whether the on-site structures contain ACMs or LBP.

  Prior to the disturbance of any of the suspect ACMs or LBP at the subject site via renovation or demolition, a comprehensive asbestos and LBP survey is recommended.

- Big Dry Creek stream wash extends east to west across the northern portion of the subject site and is classified by the U. S. Fish & Wildlife Service (USFWS) National Wetlands Inventory as a temporary flooded, intermittent, riverine, streambed (R4SBA). Big Dry Creek is part of a riverine subsystem that contains flowing water only part of the year, is completely dewatered at low tide, has surface water that is present only for brief periods during the growing season, and a water table that usually lies well below the ground surface for most of the season. This riverine portion of wetlands is part of a greater Palustrine, freshwater wetland system to the northeast of the subject site. The ephemeral tributary, known as Big Dry Creek, was observed as holding water at the time of the site reconnaissance. Therefore, regulations pertaining to wetlands may impact future development at the subject site.

Krazan recommends a qualified wetlands biologist survey the subject site.

- According to the USFWS, the subject site is in a known range extent for the California tiger salamander (Ambystoma californiense); a large, stocky salamander with yellow dots or stripes against a black body. The USFWS has classified the California tiger salamander (CTS) into three Distinct Population Segments (DPS). CTSs near the subject site are of the central California DPS and are listed as a "threatened species" for both state and federal statuses. The wetlands to the northeast of the subject site are a typical habitat of the CTS.

  Krazan recommends a qualified biologist survey the area potential for California tiger salamander habitat at or near the subject site.

Site Development Issues

- The subject site has been developed with a domestic water well, septic and leach field system, propane fuel tanks, and an irrigation well and pump.

  Prior to redevelopment activities, these systems should be properly removed in accordance with State and local guidelines.

- Numerous trash piles and various types of debris piles, including waste tires, glass bottles, scrap wood, metal piping, empty rusted drums, empty buckets, concrete irrigation pipes, wooden pallets, appliances, various pieces of farm equipment, and green waste/vegetation were observed in numerous areas of the subject site, specifically in the southern portion near the former poultry operations and across Landscape Connection, Inc.'s yard and vehicle maintenance/repair shed. Not all areas were able to be observed due to the excessive quantity of materials in the debris piles and/or access limitations during the site reconnaissance.

  During the removal of debris from across the subject site in preparation for grading and construction activities associated with the proposed residential development planned by Wilson Homes, should indications of potential hazardous materials or evidence of soil impacts be observed, or if screening for constituents of potential concern (COCPs) is required per landfill requirements, Krazan should be contacted to determine whether surficial soils have been potentially impacted and whether sampling would be recommended. In addition, debris should be removed and transported off-site for proper disposal.

1.0 INTRODUCTION

The Triangle Property consists of five rural mixed-use parcels with the associated Fresno County Assessor's Parcel Numbers (APNs) 557-031-23, 557-031-35, 557-031-44S, 557-031-05S, and 558-010-25. The parcels are located at East Shepherd and North Temperance Avenues. The subject site is approximately 106 acres in area. The northern portion of the subject site has historically been undeveloped. The southern portion of the subject site has been utilized for poultry farming, agricultural uses, commercial businesses and residences. The adjacent properties consist of rural and suburban residential areas to the south and west of the subject site, and undeveloped herbaceous grassland and wetlands to the north and east of the subject site including Dry Creek and the Dry Creek Dam.

Krazan conducted the Phase I ESA of the subject site in conformance with the American Society for Testing and Materials (ASTM) E 1527-13 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.* This Phase I ESA constitutes all appropriate inquiry (AAI) designed to identify recognized environmental conditions (RECs) in connection with the previous ownership and uses of the subject site as defined by ASTM E 1527-13.

ASTM E 1527-13 Section 1.1.1 *Recognized Environmental Conditions* – In defining a standard of good commercial and customary practice for conducting an environmental site assessment of a parcel of property, the goal of the processes established by this practice is to identify recognized environmental conditions. The term recognized environmental conditions means the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. *De minimis* conditions are not recognized environmental conditions.

It is incumbent upon the user to read this Phase I ESA report in its entirety. If not otherwise defined within the text of this report, please refer to the Glossary of Terms Section following the References Section for definitions of terms and acronyms utilized within this Phase I ESA report.

Previous Environmental Assessments

No previous environmental assessments were provided to Krazan by Wilson Homes for review as part of this Phase I ESA.

2.0 PURPOSE AND SCOPE OF ASSESSMENT

2.1 Purpose

According to ASTM E 1527-13, the purpose of this practice is to define good commercial and customary practice in the United States of America for conducting an *environmental site assessment* of a parcel of *commercial real estate* with respect to the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) and *petroleum products.* As such, this practice is intended to permit a *user* to satisfy one of the requirements to qualify for the *innocent landowner, contiguous property owner,* or *bona fide prospective purchaser* limitation on CERCLA liability (hereinafter, the *landowner liability protections,* or *LLPs*): that is, the practice that constitutes *all appropriate inquiries* into the previous ownership and uses of the *property* consistent with good commercial and customary practice as defined at 42 U.S.C. §9601(35)(B).

2.2 Scope of Work

The scope of work for this Phase I ESA conforms to ASTM E 1527-13. The Phase I ESA includes the following scope of work: a) a site reconnaissance of existing on-site conditions and observations of adjacent property uses, b) a review of user-provided documents c) a review of historical aerial photographs, a review of pertinent building permit records, cross-reference directories, historical Sanborn Fire Insurance Maps (SFIMs), and interview(s) with person(s) knowledgeable of the previous and current ownership and uses of the subject site, d) a review of local regulatory agency records, and e) a review of local, state, and federal regulatory agency lists compiled by Environmental Data Resources, Inc. (EDR).

Krazan was provided written authorization to conduct the Phase I ESA by Ms. Goldie Lewis with Wilson Homes on December 15, 2022 in response to Krazan's October 17, 2022 Proposal No. P22-217.

3.0 SUBJECT SITE SETTING

The subject site is located north of the intersection of East Shepherd and North Temperance Avenues, Fresno County, California. The subject site consists of five parcels with the associated Fresno County Assessor's Parcel Numbers (APNs) of 557-031-05S, 557-031-023, 557-031-35, 557-031-44S, and 558-010-25, and measures approximately 106 acres in area. General property information and property use are summarized in the following table. Refer to Figures No. 1 – 3 for subject site details.

Subject Site Information Summary	
Current Owners:	Ronald Maikovich and Loraine Rodda-Fox (557-031-05S, -35, and -44S) Floyd L Harlan (APNs 557-031-23 and 558-010-25)
Addresses:	6374 and 6376 East Shepherd Avenue
Historical Addresses:	None
General Location:	North of the intersection of East Shepherd and North Temperance Avenues
Acreage:	Approximately 106 acres
Existing Use:	Rural Residential, Agricultural, Commercial (Landscape Connection, Inc.)
Number of Structures:	Fourteen (14)
Original Construction Date:	1922 (APN 557-031-44S) 1950 (APN 557-031-35)
Proposed Use:	Residential Development
Electricity:	Pacific Gas & Electric (PG&E)
Natural Gas:	Pacific Gas & Electric (PG&E)
Potable Water:	Domestic Water Wells
Sanitary Sewer:	Septic Systems
Latitude / Longitude:	39.8706010º / 119.6647820º
Topographic Map:	U.S. Geological Survey, 7.5-minute Clovis, California topographic quadrangle maps
Topographic Map Location:	(557-031-35, and -44S) Southeast quarter of the Southwest quarter of Section 22, Township 12 South, Range 21 East, Mount Diablo Principal Baseline and Meridian. (557-031-05S) Southwest quarter of the Southeast quarter of Section 22, Township 12 South, Range 21 East, Mount Diablo Principal Baseline and Meridian. (557-031-23) Northeast and Northwest quarters of the Southeast quarter of Section 22, Township 12 South, Range 21 East, Mount Diablo Principal Baseline and Meridian. (558-010-25) Northwest quarter of the Southwest quarter of Section 23, Township 12 South, Range 21 East, Mount Diablo Principal Baseline and Meridian.

Subject Site Information Summary (continued)	
Topography:	Approximately 408 feet above mean sea level
Approximate Depth to Groundwater:	95 feet below ground surface (bgs), State of California Department of Water Resources (DWR)*
Regional Groundwater Flow Direction:	West/Northwest, DWR*

Note: * State of California, Department of Water Resources, *Sustainable Groundwater Management Act (SGMA) Data Viewer, Spring 2022*

3.1 Geology and Hydrogeology

The subject site is located within the San Joaquin Valley, a broad structural trough bound by the Sierra Nevada and Coast Ranges of California. The San Joaquin Valley, which comprises the southern portion of the Great Valley of California, has been filled with several thousand feet of sedimentary deposits. Sediments in the eastern valley, derived from the erosion of the Sierra Nevada, have been deposited by major to minor west-flowing drainages and their tributaries. Near-surface sediments are dominated by sands and silty sands with lesser silts, minor clays, and gravel. The sedimentary deposits in the region form large coalescing alluvial fans with gentle slopes. According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service, the two types of soils at the subject site are described as Atwater sandy loam and Atwater loamy sand. Groundwater in the subject site vicinity was reported to be first encountered at a depth of approximately 95 feet bgs in Spring 2022. The groundwater flow direction in the area of the subject site was reported to be toward the west/northwest.

4.0 SITE BACKGROUND

A review of historical Sanborn Fire Insurance Maps (SFIMs), historic USGS topographic maps, reasonably ascertainable city cross-reference directories, historical aerial photographs, local agency records and previous environmental reports, as made available to Krazan, were utilized to assess the history of the subject site.

4.1 Sanborn Fire Insurance Maps

Krazan reviews Sanborn Fire Insurance Maps (SFIMs) to evaluate prior land use of the subject site and the adjacent properties. SFIMs typically exist for cities with populations of 2,000 or more, the coverage dependent on the location of the subject site within the city limits. Krazan contracted with Environmental Data Resources, Inc. (EDR) to provide copies of available SFIMs for the subject site and the adjacent properties. EDR's search of Sanborn Insurance maps revealed no coverage for the subject site and the adjacent properties. Refer to Appendix A – *EDR – Certified Sanborn® Map Report* for details.

4.2 USGS Topographic Quadrangle Map

Krazan reviewed the 7.5-minute Clovis (1922, 1923, 1946, 1947,1964, 1972, 1981, 2000, 2012, 2015, and 2018), and the 7.5-minute Friant (1922, 1946, 1947, 1964, 2000, 2012, 2015, and 2018), California, topographic quadrangle maps. Subject site and vicinity property usage is summarized in the following table. Refer to Figure 4 and Appendix A – *EDR - Historical Topo Map Report* for copies of the maps.

Topographic Maps Summary		
Year	***Site Usage***	***Adjacent Property Usage***
1922, 1923	The subject site appears to be mostly undeveloped; however, a single structure is depicted in the south portion of the subject site. An unimproved road (Temperance Avenue) extends north into the central portion of the subject site and Dry Creek extends across the northern portion of the subject site.	East Shepherd Avenue bounds the subject site to the south. A creek wash identified as "Dry Creek," extends to the west and east of the subject site. The remaining adjacent properties are primarily vacant with single structures depicted to the northwest, southwest, and southeast of the subject site.
1946, 1947	The subject site is unchanged from the 1923 topographic map.	Surrounding properties are relatively unchanged from the 1923 topographic map. Additional unimproved roads were depicted in the site vicinity.

Topographic Maps Summary (continued)		
Year	***Site Usage***	***Adjacent Property Usage***
1964	Numerous structures are depicted in the south portion of the subject site, including several elongated structures. The elongate structures were identified as poultry sheds/canopies during the site reconnaissance.	The adjacent properties to the north, west, and south are relatively unchanged, however additional single structures have been constructed. To the northeast of the subject site, an unimproved road was built parallel to a constructed intermittent man-made lake identified as Dry Creek.
1972, 1981	Relatively unchanged from the 1964 topographic map, except for three additional elongated poultry structures.	The depicted adjacent properties are unchanged from the 1964 topographic map in all directions.
2000	Subject site is unmapped.	The surrounding adjacent properties are unmapped; however, the site vicinity to the north is depicted and is unchanged from the 1981 map.
2012	The 2012 map does not depict the subject site and surrounding property development features, except for a stream wash that meanders through the subject site. No other changes are noted.	Property development features, except for vegetative covered areas are not depicted. Streets typical of residential housing developments are depicted south of the subject site and Shepherd Avenue.
2015, 2018	Unchanged from the 2012 topographic map except the stream wash in the subject site is depicted more clearly.	Unchanged from the 2012 topographic map except that the intermittent lake now features submerged and wooded marsh land.

The subject site remained mostly undeveloped with few single structures, until the addition of multiple large poultry sheds by 1964 and 1972. The adjacent properties consisted of rural residential and agriculture. An engineered levee was constructed to the northeast of the subject site by 1964 creating an intermittent lake (Dry Creek).

4.3 City Cross-Reference Directories

Krazan contracted with EDR to provide a review of available cross-reference directories dated between 1922 and 2017 for the subject site address and adjoining properties. A summary of cross-reference directory information is presented in the following table. Refer to Appendix A – *EDR - City Directory Image Report* for details.

Cross-Reference Directories Summary		
Address	***Owner / Occupant***	***Years***
Subject Site		
6374 East Shepherd Avenue	No Listings	
6376 East Shepherd Avenue	No Listings	
Adjacent/Vicinity Properties		
Adjacent to the North		
9255 North Temperance Avenue	Maria Vasquez	1999
	Tami L Abraugh	2002
	Steve Arbaugh	2004
	Maria Vasquez	2009
	Nereida Leyva	2014-2017
Adjacent to the East		
6658 East Shepherd Avenue	Adbul Tahir	1999
	Terri Briar	2004
	Adbul Tahir	2009
	C Lagunas	2014-2017
7250 East Shepherd Avenue	Little River Enterprises	1994
	Little River Enterprises Plastering	1999
	Little River Enterprises Inc., John McConnell	2004
	Little River Enterprises Inc.	2009
Adjacent to the West		
6298 East Shepherd Avenue	Robert Fuller	1994
	David Swan	1999
	June Fuller	2004
	David Swan	2009-2014
	Shannon Williquette	2017
6120 East Shepherd Avenue	Bob Campbell	1994
	Eric Campbell	2004 - 2009
	Cameron Campbell	2014 - 2017

Review of the cross-reference directories indicated the site vicinity is primarily rural residential. Information obtained from the review of cross-reference directories is consistent with that obtained from other historical sources during the course of this assessment.

4.4 Aerial Photograph Interpretation

Historical aerial photographs were obtained from EDR and reviewed to assess the history of the subject site. The subject site was in different stages of agricultural use and fallow land from at least 1937 to the present and has been developed with the existing residential dwellings from at least the late 1930s. Poultry

sheds were depicted from at least 1957 to the present. The adjacent properties consist primarily of undeveloped land and minor agricultural use and remained relatively unchanged until 2005 when residential developments were constructed south of East Shepherd Avenue. The aerial photograph summary is provided in the following table. Refer to Appendix A – *Aerial Photo Decade Package* for details.

Aerial Photograph Review Summary		
Year	***Site Use***	***Adjacent Properties***
1937, 1946	The southern portion of the subject site is occupied by a rural residence and utilized for agricultural purposes including row crops. A barn and two smaller structures are depicted near the residence. The northern portion of the subject site is undeveloped herbaceous grassland. A stream wash meanders in an easterly to westerly direction.	Surrounding properties are a mix of agriculture, rural residential and a stream channel and wash bed.
1946	Relatively unchanged from the 1937 aerial photograph except the barn is no longer visible and one elongated shed, likely a poultry shed is visible between the residence and the two smaller structures.	Relatively unchanged from the 1937 aerial photograph.
1950	Relatively unchanged from the 1946 aerial photograph except at least three new structures are visible north of the residence.	A road and the Dry Creek canal and levee were constructed to the northeast of the subject site.
1957	Relatively unchanged from the 1950 aerial photograph except that several elongated structures have been constructed in the southwestern portion of the subject site. The structures were identified as poultry sheds during the site reconnaissance.	Relatively unchanged from the 1950 aerial photograph, except that there is more visible vegetation in the marsh, wetland area to the northeast of the subject site and additional agricultural crops on the property to the northwest of the subject site.
1962	Relatively unchanged from the 1957 aerial photograph except that additional elongated structures have been constructed on the subject site.	Relatively unchanged from the 1957 aerial photograph.
1967	Relatively unchanged from the 1957 aerial photograph except that an additional elongated poultry shed was added to the northwest corner of the lower southwestern portion of the subject site as well as the addition of visible poultry barriers/corrals around the sheds.	Relatively unchanged from the 1962 aerial photograph.

Aerial Photograph Review Summary (continued)		
Year	***Site Use***	***Adjacent Properties***
1973, 1979, 1984, 1987	Relatively unchanged from the 1967 aerial photograph except that a second additional large, elongated poultry shed was constructed adjacent to the previously mentioned shed addition in 1967.	Relatively unchanged from the 1967 aerial photograph.
1998	Relatively unchanged from the 1987 aerial photograph except that there appears to be additional rowed crops cultivated on the southwestern portion of the subject site. The north portion of the subject site (APN 557-031-23 and APN 558-010-25) is relatively unchanged.	Relatively unchanged from the 1987 aerial photograph.
2005, 2009,	Relatively unchanged from the 1998 aerial photograph except that there to be an additional structure and landscaping on APN 557-031-44S in the eastern area of the south portion of the subject site. This structure was identified as the office building to a landscaping business—Landscape Connections, Inc.—occupying the property during the site reconnaissance. What appears to be landscape debris is visible in the central portion of the subject site.	The adjacent properties are relatively unchanged from the 1998 aerial photograph except that dense, suburban, residential neighborhoods have been constructed south of East Shepherd Avenue.
2012	Relatively unchanged from the 2009 aerial photograph except for the destruction, removal, or decomposition of two elongated poultry sheds.	Relatively unchanged from the 2009 aerial photograph.
2016, 2020	Relatively unchanged from the 2012 aerial photograph except that two of the larger, elongated poultry sheds in the northwest corner of the south portion of the subject site appear to have been decommissioned, and structurally decomposing.	Relatively unchanged from the 1979 aerial photograph.

4.5 Municipal Records

Fresno County Public Works and Planning Department

On January 3, 2023, a request for building permit records for the subject site, using the corresponding address, 6374 East Shepherd Avenue, was submitted via the County of Fresno Public Works and Planning Department online portal. On January 24, 2023, the County of Fresno Public Works and Planning

Department responded to the building permit records request and provided Krazan with records containing permits dated between 1963 and 2010. According to the documents received, the property was permitted a turkey shed rewire in 1963, several agricultural electric services in the late 1960s and 1970s, additional turkey sheds and agricultural services in 1988 and 2010. Additionally, in 2010, the landscaping business tenant, Landscaping Connection, Inc., was permitted to construct their mobile office, as well as the associated septic and leach field systems. Refer to Appendix A – *Municipal Records* for details.

4.6 Previous Environmental Assessments

No previous environmental assessments were provided to Krazan by Wilson Homes for review as part of this Phase I ESA**.**

4.7 Agricultural Chemicals

Review of historical aerial photographs indicates that the northern portion of the subject site has been undeveloped since 1937 while the southern portion was utilized for agricultural production from at least 1937, a poultry farm since at least the 1960s and a commercial landscaping facility from the 2000s to the present. It is not known if environmentally persistent pesticides/herbicides were historically applied to the agricultural areas of the southern portion of the subject site; however, according to the environmental questionnaire completed by Mr. Ron Maikovich, property owner for 70 years, no agricultural chemicals (pesticides/herbicides) have been stored, applied, mixed or formulated on the subject site, and persistent pesticides/herbicides, such as DDT, have not been used at the property, to his knowledge.

Numerous empty 55-gallon drums of Gluphosphate (herbicide) and RoundUp Pro Max were observed on Landscape Connection, Inc.'s exterior storage yard. It is unknown whether these were used on-site or whether they were used off-site as part of Landscape Connection, Inc.'s services at customer's locations. No other evidence of the storage or on-site usage of pesticides/herbicides was observed during the site assessment. Based on the former usage of a portion of the subject site as a poultry farm, and the relatively small acreage allotted to agriculture, the potential for elevated concentrations of environmentally persistent pesticides/herbicides to currently exist in the near surface soils of the subject site appears to be low.

5.0 USER-PROVIDED INFORMATION

A review of user-provided information was conducted in order to help identify pertinent information regarding potential environmental impacts associated with the subject site.

5.1 Environmental Lien Search

An Environmental Lien/Activity and Use Limitations (EL/AUL) Report provides results from a search of available land title records for environmental cleanup liens institutional controls (ICs), environmental land use controls (LUCs), environmental activity and use limitations (AULs), or declaration of environmental use restrictions (DEULs) which may have been filed against the subject site or exist in connection with the subject site as indicated by the subject site EL/AUL Reports.

On December 20, 2022, an Environmental Lien Search was ordered from AFX, LLC by Krazan during the course of this assessment. On January 10, 2023, environmental lien search documents, sourced from the Fresno County Recorder's Office, and the state and federal Environmental Protection Agencies, were received from AFX, LLC. The documents for all five parcels at the subject site indicate that there are no environmental liens, AULs, leases, or miscellaneous instruments associated with any of the parcels at the subject site. Refer to Appendix B – *Environmental Liens Report* for details.

5.2 Title Report

A title report is reviewed to identify potential environmental deed restrictions, environmental liens, or environmental activity and use limitations (AULs) which may have occurred on or exist in connection with the subject site. A Title Report was not prepared by, or provided to, Krazan during the course of this assessment.

5.3 Interviews

Krazan conducts interviews with the owner of the subject site, a key site manager, subject site occupant(s), and/or the previous owner/occupant(s) of the subject site. The interview(s) is/are designed to provide pertinent information regarding potential environmental impacts associated with the subject site.

<u>Subject Site Owners</u>

Harlan Properties

On January 8, 2023, Krazan received a completed Owner environmental questionnaire from Mr. Shawn Stevenson, owner of the two northern parcels (APNs 557-031-23 and 558-010-25). According to the questionnaire responses, Mr. Stevenson indicated that he is the current property owner, the property has been in his family since the late 1940s, and he has knowledge of the property since 1976. He responded that his property is currently being used for grazing and has a single windmill structure on it. Mr. Stevenson, to the best of his knowledge, is unaware of any other historical uses, previous structures, or any maintenance, repair or manufacturing activities on the subject site nor does he have any knowledge that any agricultural chemicals or hazardous materials being used stored or discharged on the site. He is not aware of any obvious indications pointing to the likely presence of contamination of the subject site. Mr. Stevenson did indicate that there is a water well and storage tank near the windmill, but that there are no municipal connections for water, utilities, or sewage and, historically, there are no septic systems, water wells, dry wells, monitoring wells, or any drainage or disposal ponds located on the subject site. Mr. Stevenson answered the reason for the Phase I was to determine environmental issues but did not indicate whether or not the buyers purchase price was fair market value.

Maikovich Properties

On January 5, 2023, Krazan received a completed Owner environmental questionnaire from Mr. Ron Maikovich, the owner of the three southern parcels (APNs 557-031-05S, 557-031-35 and 557-031-44S). According to the questionnaire responses, Mr. Maikovich indicated he is the owner of the properties and has been associated with those properties for 70 years. Mr. Maikovich, to the best of his knowledge as the owner of this Phase I ESA, does not have any commonly known, reasonably ascertainable, or specialized knowledge or experience related to the subject site or nearby properties except that a portion of the site is currently being rented to a landscaping company, there is a single residential structure on the site, the subject site was historically used as a poultry ranch and that there were turkey disposal pits prior to 1990. Mr. Maikovich stated that there is one septic system associated with the residence and four water wells on these parcels of subject site. Mr. Maikovich stated that he has no knowledge of any maintenance, repair, and manufacturing activities, nor does he know of any chemical or hazardous materials being used, stored, or discharged at the subject site. He answered that there are no drainage or disposal ponds and that he has no knowledge of agricultural chemicals or persistence pesticides/herbicides being stored, applied, or mixed on the subject site, nor that there was any hazardous waste generated on the site. There is no knowledge of subsurface automotive repair related features, any environmental cleanups, or hazardous material releases or spills and no institutional controls or engineering controls have been filed against the subject site,

according to Mr. Maikovich's responses. Mr. Maikovich indicated that the reason for preparation of this Phase I ESA is related to a future property sale, and the purchase price reasonably reflects fair market value. Refer to Appendix B – *Phase I ESA Questionnaires* for details.

Subject Site Occupants

The commercial landscaping operation, Landscape Connection, Inc. is the occupant on parcel 557-031-44S. Ms. Mayra Brown, Landscape Connection, Inc. employee, escorted Krazan through the company's operation; however, Ms. Brown had only been with Landscape Connection, Inc. for a very short period of time and was uncertain of many of their operations and daily business practices.

Previous Subject Site Owner Interview

A Phase I ESA interview with a previous owner of the subject site was not conducted as contact information was not reasonably available. Consequently, information regarding the history and historical uses of the subject site obtained from an interview of a previous owner and/or occupant constitutes a data gap.

5.4 Phase I Environmental Site Assessment User Questionnaire

In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the *Brownfields Amendments*), the *user* must provide the following information (if available) to the *environmental professional*. Failure to provide this information could result in a determination that *all appropriate inquiry* is not complete. The user is asked to provide information or knowledge of the following:

1. Environmental cleanup liens that are filed or recorded against the site.
2. Activity and land use limitations that are in place on the site or that have been filed or recorded in a registry.
3. Specialized knowledge or experience of the person seeking to qualify for the LLPs.
4. Relationship of the purchase price to the fair market value of the *property* if it were not contaminated.
5. Commonly known or *reasonably ascertainable* information about the *property*.
6. The degree of obviousness of the presence or likely presence of contamination at the *property*, and the ability to detect the contamination by appropriate investigation.
7. The reason for preparation of this Phase I ESA.

On January 6, 2023, two completed Phase I ESA user questionnaires were received from Mr. Todd Wilson, with Wilson Homes, the Phase I ESA user. Mr. Wilson completed one questionnaire for the Harlan Properties (APNs 557-031-23 and 558-010-25) and a separate questionnaire for the Maikovich Properties (APNs 557-031-05S, 557-031-35 and 557-031-44S).

The questionnaire responses were the same for both the Harlan Properties and Maikovich Properties. Mr. Wilson, to the best of his knowledge as the user of this Phase I ESA, was not aware of any environmental cleanup liens and activity or land use limitations which have been filed or recorded against the subject site under federal, tribal, state, and local law. Mr. Wilson has no specialized knowledge or experience of the prior nature of the business or chemical utilization on the subject site. Mr. Wilson indicated that he did not have knowledge of the past or current presence of specific chemicals or hazardous materials, unauthorized spills or chemical releases in connection with the subject site. Mr. Wilson indicated that the reason for preparation of this Phase I ESA is related to a proposed residential development on the subject site; and the purchase price reasonably reflects fair market value. Refer to Appendix B – *Phase I ESA Questionnaires* for details.

6.0 SITE RECONNAISSANCE

An initial site reconnaissance, which included a visual observation of the subject site and surrounding properties, was conducted by Mr. David Nava and Ms. Dulcinea De Leon, Krazan's Environmental Assessors, on December 20, 2022. Due to access limitations, only APN 557-031-35 was accessed during this site visit. Krazan's Environmental Assessors were not accompanied by a property owner or site manager at this time. Two subsequent site reconnaissance visits were conducted by Mr. Nava. On December 22, 2022, Mr. Nava visited parcels 557-031-44S and 557-031-05S and was escorted by Ms. Mayra Brown, Landscaping Connection, Inc. On January 13, 2023, Mr. Nava completed a site reconnaissance of the two remaining parcels, APNs 557-031-23 and 558-010-25, and was unaccompanied. The objective of the site reconnaissance is to obtain information indicating the likelihood of identifying recognized environmental conditions, including hazardous substances and petroleum products, in connection with the property (including soils, surface waters, and groundwater).

6.1 Observations

The following tables summarize the subject site features encountered during the site reconnaissance. Observed features are noted in the tables below and described in detail below each table. Refer to Figure No. 3 - *Site Map* and *Photographs* for locations and details pertaining to site-specific features discussed in this section of the report.

Summary of Site Reconnaissance **Northern Portion** **APNs 557-031-23 and 558-010-25**		
Feature	***Observed***	***Not Observed***
Structures (existing)		X
Evidence of Past Uses (foundations, debris)		X
Hazardous Substances and/or Petroleum Products (including containers)		X
Aboveground Storage Tanks (ASTs)		X
Underground Storage Tanks (USTs) or Evidence of USTs		X
Evidence of Underground Pipelines		X
Strong, Pungent, or Noxious Odors		X
Pools of Liquid Likely to be Hazardous Materials or Petroleum Products		X
Drums		X
Unidentified Substance Containers		X
Potential Polychlorinated Biphenyl (PCB)-Containing Equipment		X
Subsurface Hydraulic Equipment		X
Heating/Ventilation/Air conditioning (HVAC)		X
Stains or Corrosion on Floors, Walls, or Ceilings		X
Floor Drains, Sumps, or Oil/Water Clarifiers		X

Summary of Site Reconnaissance (continued) Northern Portion APNs 557-031-23 and 558-010-25		
Feature	***Observed***	***Not Observed***
Storm Drains		X
Pits, Ponds, or Lagoons		X
Stained Soil and/or Pavement		X
Soil Piles		X
Stressed Vegetation		X
Waste or Wastewater (including stormwater) Discharges to Surface/ Surface Waters		X
Wells (irrigation, domestic, dry, injection, abandoned, monitoring wells)		X
Septic Systems		X

The northern portion of the subject site was observed to be a fenced grassy pasture. A herd of cattle was observed grazing the pasture at the time of the site reconnaissance. The pasture had one metallic windmill present near the western subject site boundary. An approximately 300-gallon water storage tank was located adjacent to the windmill; however, the piping between the windmill and the storage tank was not connected. An ephemeral tributary was observed extending east to west across the northern portion of the subject site. The tributary, known as Big Dry Creek, was observed as holding water. No evidence of waste or wastewater were observed as discharging into the tributary. No other features were observed in this area.

Summary of the Site Reconnaissance Southern Portion APNs 557-031-35, 557-031-44S and 557-031-05S		
Feature	***Observed***	***Not Observed***
Structures (existing)	X	
Evidence of Past Uses (foundations, debris)	X	
Hazardous Substances and/or Petroleum Products (including containers)	X	
Aboveground Storage Tanks (ASTs)	X	
Underground Storage Tanks (USTs) or Evidence of USTs	X	
Evidence of Underground Pipelines	X	
Strong, Pungent, or Noxious Odors		X
Pools of Liquid Likely to be Hazardous Materials or Petroleum Products	X	
Drums	X	
Unidentified Substance Containers	X	
Potential Polychlorinated Biphenyl (PCB)-Containing Equipment	X	
Subsurface Hydraulic Equipment		X
Heating/Ventilation/Air conditioning (HVAC)	X	
Stains or Corrosion on Floors, Walls, or Ceilings	X	
Floor Drains, Sumps, or Oil/Water Clarifiers		X
Storm Drains		X
Pits, Ponds, or Lagoons	X	

Summary of the Site Reconnaissance (continued) Southern Portion APNs 557-031-35, 557-031-44S and 557-031-05S		
Feature	***Observed***	***Not Observed***
Stained Soil and/or Pavement	X	
Soil Piles	X	
Stressed Vegetation	X	
Waste or Wastewater (including stormwater) Discharges to Surface/ Surface Waters		X
Wells (irrigation, domestic, dry, injection, abandoned, monitoring wells)	X	
Septic Systems	X	

APN 557-031-35

This portion of the subject site was formerly utilized for poultry (turkey) raising operations. Three approximately 550-foot elongated poultry sheds were observed in the northwestern portion of the parcel. All three sheds were in very poor condition; the southernmost shed had metal roofing and siding; however, the northern two sheds were more severely dilapidated as there were no rooftops or siding—only the deteriorating wooden skeleton of the structures remained. The interiors were observed to be mostly vacant with some abandoned poultry feeding equipment. Regulators, wall-mounted meters, and into-the-ground piping was observed at the eastern end of the poultry sheds. This infrastructure was most likely associated with heating and/or feeding systems used in all poultry sheds.

Several debris piles were observed southwest of the southern poultry shed. The piles in this area were observed to contain waste tires, glass bottles, scrap wood, metal piping, empty rusted drums, empty buckets, concrete irrigation pipes, and wooden pallets among other general refuse. No hazardous materials containers were observed in this area. No areas of soil staining or noxious odors were encountered in this area.

A makeshift pole-barn was observed south of the southern poultry shed. It appeared that this shed had been used by transient persons as a shelter. A concrete pad was observed to the east of the southernmost poultry shed; no staining was present. The past usage of the concrete pad is unknown. No evidence of hazardous materials storage/waste was observed in association with the pole-barn or sheds.

An agricultural well was observed in the northwest corner of the parcel between two of the poultry sheds. The well consisted of a submersible well pump adjacent to a pump box and pressurized water storage tank. An adjacent transformer provided electricity to the system.

Two electricity poles were observed on the eastern border of the parcel, one of which was a pole-mounted transformer. Based on Krazan's observations, the Pacific Gas & Electric (PG&E) Company is the owner of the transformer. The transformer was not labeled as to its non-polychlorinated biphenyl (non-PCB) status. Based on the visual absence of apparent unauthorized releases of insulating fluids from the on-site transformer at the time of Krazan's site reconnaissance, the on-site transformer is not currently anticipated to pose an adverse impact to the subject site. The transformer casing displayed no visual evidence of leakage and the ground surface below the transformer displayed no evidence of discoloration.

Plastic waste, irrigation tubing, and decomposed plastic sheeting was observed in large piles along the western parcel border. The southern half of the parcel was observed to be unharvested rowed crops and neglected tractor equipment attachments scattered in the field area.

During the visual observations of the parcel, no obvious evidence (vent pipes, fill pipes, dispensers, etc.) of USTs were noted within the areas observed.

APN 557-031-44S

The parcel is described in three areas. The northern portion is primarily undeveloped and former agricultural land, the central portion consists of abandoned sheds, and the southern portion consists of a single-family residence and Landscape Connection, Inc., a landscape supply company.

The northern portion was formerly utilized as agricultural land. The central portion of the parcel is primarily vacant; however, three abandoned sheds/structures and abandoned agricultural equipment was observed in this area. The sheds/structures were mostly vacant; however, piles of empty agricultural chemical containers, and miscellaneous debris and general refuse was observed inside. An approximately 50-foot long by 30-foot wide concrete pad was observed adjacent to the sheds. A pole mounted transformer was observed adjacent to the east of the sheds along North Temperance Avenue. No evidence was observed that indicated environmental concerns in this area of the parcel.

The southern portion of the parcel is developed with a single-family residence and several sheds on the western half, and is occupied by Landscape Connection, Inc. on the eastern half. One single-family residence with a detached garage, propane tanks, and an HVAC system was observed adjacent to the north of East Shepherd Avenue. The resident's septic tank was not observed during the reconnaissance; however, it was indicated by the property owner in the environmental questionnaire. North of the residence are two sheds and two additional poultry sheds. Krazan was not provided access to the interior of the two sheds.

An above ground storage tank (AST) was observed in this area near the northern of the two sheds. No evidence of a release was observed on or beneath the AST and no secondary containment was observed beneath the stand-mounted AST. Adjacent to the AST, a vent pipe and what appeared to be a hand pump attached to a dispenser pipe, common indicators of an underground storage tank, were observed. The area's housekeeping was observed to be poor. Miscellaneous objects and debris, including a canoe, refrigerator, desktop computer, and a pile of scrap metal were observed surrounding the northern shed. The potential presence of an UST represents a recognized environmental concern (REC) to this assessment.

Landscaping Connection, Inc. occupies an approximately 5.25 square-acre area of the southeastern portion of the parcel. At the center of the business yard, a mobile structure for the landscaping company's business office was observed. There were no issues or environmental concerns within the office building. Approximately 120 feet east of the office building was a vehicle maintenance and workshop shed. Several drums of used motor oil and buckets of tractor fluid were observed in this area. The drums were not observed to be placed on secondary containment. *De minimus* staining was observed beneath the drums and buckets; however, other areas of heavier staining were observed within the repair shop. At the time of the reconnaissance, heavy staining was observed beneath a truck within the maintenance shop. The heavy staining appeared to be covered with an absorbent material. In addition, housekeeping in this area was poor. A second AST was observed adjacent to the exterior of the vehicle maintenance and workshop shed. The AST was approximately 150-gallon capacity and observed to be stored within a secondary containment unit and on wooden slats above the ground surface. *De minimus* staining was observed on the AST and containment unit on the ground surface beneath the containment.

The remainder and perimeter of the landscaping yard was observed to consist mostly of large piles of green waste, wood chips, gravel, boulders, landscaping blocks, irrigation piping, and miscellaneous landscaping equipment. A stormwater retention basin was observed in the southwestern corner of the landscaping yard. No evidence of staining and no odors were noted in the area of the basin. Ms. Brown was unaware of any drainage to the basin from any of the operations.

APN 557-031-05S

The easternmost parcel in the southern portion of the subject site was observed to be undeveloped in the northern portion and agricultural in the southern portion. A large debris pile of broken concrete, plastic potting containers, and wooden posts was observed in the northern portion. An approximately four-acre sago palm farm was observed in the southern portion of the parcel. Two seatrain storage containers, a mobile office building, and four semi-truck trailers were observed along the eastern side of North

Temperance Avenue. A water pump and pole-mounted transformer were observed adjacent to the seatrains. There were minor housekeeping issues adjacent to the trailer area, including numerous black plastic buckets and wooden pallets observed to be discarded in piles across the area.

6.2 Adjacent Streets and Property Usage

The following tables summarize the current adjacent streets and adjacent property uses observed during the site reconnaissance:

Adjacent Streets and Property Use **Northern Portion** **APN 557-031-23, 558-010-25**		
Direction	***Adjacent Street***	***Adjacent Property Use***
North	None	Agricultural, Rural Residential, Undeveloped
South	None	Urban Residential, Single Family Residences
Northeast	North Carson Avenue	Intermittent lake (Dry Creek)
West	North Temperance Avenue	Agricultural, Rural Residential

Adjacent Streets and Property Use **Southern Portion** **APN 557-031-35, -44S, -05S**		
Direction	***Adjacent Street***	***Adjacent Property Use***
North	None	Agricultural, Rural Residential
South	East Shepherd Avenue	Urban Residential
East	None	Agricultural, Rural Residential, Commercial
West	None	Agricultural, Rural Residential

Based on the observed uses of the properties located immediately adjacent to the subject site, it is unlikely that significant quantities of hazardous materials are stored at the adjacent properties.

6.3 ASTM Non-Scope Considerations

According to ASTM E 1527-13, there may be environmental issues or conditions at assessed properties that are outside the scope of the Phase I ESA practice (non-scope considerations). Some substances may be present in quantities and under conditions that may lead to contamination of assessed or of nearby properties but are not included in CERCLA's definition of hazardous substances (42 U.S.C. §9601[14]). ASTM Non-scope considerations appropriate for the subject site are discussed below.

Asbestos-Containing Materials

Asbestos is a group of naturally occurring mineral fibers that have been used commonly in a variety of building construction materials for insulation and as a fire-retardant. Because of its fiber strength and heat resistant properties, asbestos has been used for a wide range of manufactured goods, mostly in building materials, vehicle brakes, and heat-resistant fabrics, packaging, gaskets, and coatings. When asbestos-containing materials (ACMs) are damaged or disturbed by repair, remodeling, or demolition activities, microscopic asbestos fibers may become airborne and can be inhaled into the lungs, where they can cause significant health problems.

The residential dwellings located on the subject site were constructed prior to 1978. It is unknown if the on-site dwellings contain ACMs. An asbestos survey and sampling of the on-site dwellings was not included within the scope of this assessment; however, based on the date of construction, ACMs may be present at the subject site. Prior to the disturbance of any of the suspect ACMs at the subject site via renovation or demolition, a comprehensive asbestos survey is recommended.

Lead-Based Paint

Although lead-based paint (LBP) was banned in 1978, many buildings constructed prior to 1978 have paint that contains lead. Lead from paint, chips, and dust can pose serious health hazards if not addressed properly.

The structures located on the subject site appear to have been constructed prior to 1978. It is unknown if the on-site structures contain LBP. An LBP survey and sampling of the on-site dwelling and structures was not included within the scope of this assessment; however, based on the date of construction, LBP may be present at the subject site. Prior to the disturbance of any of the suspect LBP at the subject site via renovation or demolition, a comprehensive LBP survey is recommended.

Mold and Moisture Intrusion

A class of fungi, molds have been found to cause a variety of health problems in humans, including allergic, toxicological, and infectious responses. Molds are decomposers of organic materials, and thrive in humid environments, and produce spores to reproduce, just as plants produce seeds. When mold spores land on a damp spot indoors, they may begin growing and digesting whatever they are growing on in order to survive. When excessive moisture or water accumulates indoors, mold growth will often occur, particularly if the moisture problem remains undiscovered or unaddressed. As such, interior areas of buildings characterized by poor ventilation and high humidity are the most common locations of mold growth. Building materials

including drywall, wallpaper, baseboards, wood framing, insulation and carpeting often play host to such growth. Moisture control is the key to mold control. Molds need both food and water to survive; since molds can digest most things, water is the factor that limits mold growth. Krazan was not provided with access to the interior of the residence. Due to the inaccessibility of the residence, it is unknown whether significant interior mold or on-going water intrusion is present within the residence.

Radon

Radon is a radioactive gas that is found in certain geologic environments and is formed by the natural breakdown of radium, which is found in the earth's crust. A radon survey was not included within the scope of this investigation; however, the State of California Department of Public Health (CDPH) maintains a statewide database of radon results in designated geographic areas. Radon detection devices are placed in homes throughout the study region to determine geographic regions with elevated radon concentrations. The U.S. EPA has set the safety standard for radon gas in homes to be 4.0 pico Curies per liter (pCi/L).

The US EPA has prepared a map to assist National, State and local organizations to target their resources and to implement radon-resistant building codes. The map divides the country into three Radon Zones, Zone 1 being those areas with the average predicted indoor radon concentration in residential dwellings exceeding the EPA Action Limit of 4.0 pCi/L. It is important to note that the EPA has found homes with elevated levels of radon in all three zones, and the EPA recommends site-specific testing in order to determine radon levels at a specific location. However, the map does give a valuable indication of the propensity of radon gas accumulation in structures. Review of the EPA Map of Radon Zones places the Property in Zone 2, where average predicted radon levels are between 2.0 and 4.0 pCi/L. Therefore, the available data suggests that the potential for radon to adversely impact the subject site appears to be low.

Wetlands

As defined by the U.S. EPA and the Department of Army, Corps of Engineers, wetlands are "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Jurisdictional wetlands are regulated under Section 404 of the Clean Water Act (1972, 1977, and 1987, and also the 1985 and 1990 Farm Bills), and are important for protection of aquatic waterfowl and species, water purification, and flood control. According to current Corps of Engineers information, three basic criteria are currently used to define wetlands:

- Wetland hydrology - areas exhibiting surface or near-surface saturation or inundation at some point in time (greater than 12.5 percent of growing season defined on basis of frost-free days) during an average rainfall year.

- Hydrophilic vegetation - frequency of occurrence of wetland indicator plants (plant life growing in water, soil, or substrate that is periodically deficient in oxygen as a result of excessive water content).

- Hydric soil - landscape patterns identified by saturation, flooding, or ponding long enough during the growing season (generally seven days) which develop characteristic color changes in the upper part of the soil as a result of anaerobic conditions.

Based on review of the 7.5-minute Clovis, California, topographic quadrangle map, Big Dry Creek stream wash meanders through the subject site from the eastern border to the western border. According to U. S. Fish & Wildlife Service (USFWS) National Wetlands Inventory available via the USFWS Internet website, the stream wash is classified by the USFWS as a temporary flooded, intermittent, riverine, streambed (R4SBA). Big Dry Creek is part of a riverine subsystem that contains flowing water only part of the year, is completely dewatered at low tide, has surface water that is present only for brief periods during the growing season, and a water table that usually lies well below the ground surface for most of the season. Furthermore, according to the USFWS National Wetlands Inventory, this riverine portion of wetlands in the subject site is part of a greater Palustrine, freshwater wetland system to the northeast of the subject site. Therefore, regulations pertaining to development of wetlands may impact the subject site.

Based on Krazan's reconnaissance, there was evidence to suggest that the site may contain a wetland. An ephemeral tributary was observed extending east to west across the northern portion of the subject site. The tributary, known as Big Dry Creek, was observed as holding water at the time of the site reconnaissance. Therefore, regulations pertaining to wetlands may impact future development at the subject site**.** Refer to Figure 4 – *Wetlands Map* for details.

Endangered Species

According to the USFWS, the subject site is in a known range extent for the California tiger salamander (Ambystoma californiense); a large, stocky salamander with yellow dots or stripes against a black body. The USFWS has classified the California tiger salamander (CTS) into three Distinct Population Segments (DPS). CTSs near the subject site are of the central California DPS and are listed as a "threatened species" for both state and federal statuses. The wetlands to the northeast of the subject site are a typical habitat of the CTS. Krazan recommends a qualified biologist survey the area potential for CTSs near the subject site.

Environmental Non-Compliance Issues

No material non-compliance issues were identified in connection with the subject site in the process of preparing this report.

Activity and Use Limitations

No activity and use limitations were identified in connection with the subject site in the process of preparing this report.

6.4 Regulatory Agency Records Review

A review of Federal and State regulatory databases was conducted to help determine if hazardous materials have been handled, stored, or generated on the subject site and/or the adjacent properties and businesses. The Federal and State environmental databases consulted in the course of this assessment were compiled by Environmental Data Resources, Inc. (EDR) and identified facilities within the search distances specified in ASTM 1527-13. Krazan verified the location and distances of the properties Krazan deemed as having the potential to adversely impact the subject site. The actual location of the listed properties may differ from the EDR listing. No EDR-listed unmapped (non-geocoded) sites identified were determined to be located on or adjacent to the subject site. Krazan did not verify the locations and distances of every property listed by EDR. Refer to Appendix C - *EDR Radius Map Report* for the Map Findings Summary and complete details of the complete report.

Regulatory records are reviewed based on the following criteria: 1) properties with known soils and/or groundwater releases considered to represent the potential for impact to the subject site that are located within 1,760 feet of the subject site for constituents of concern impacts or 528 feet of the subject site for petroleum hydrocarbon impacts; 2) properties that are adjacent or in proximity to the subject site included within the EDR regulatory database report or noted during the site reconnaissance to possibly handle, store, or generate hazardous materials. Applicable property records are discussed below.

No Federal Superfund – National Priorities List (NPL) sites were determined to be located within a one-mile radius of the subject site.

State of California Environmental Protection Agency

Krazan's January 11, 2023 review of the State of California Environmental Protection Agency (CalEPA) – Department of Toxic Substances Control (DTSC) Envirostor database available via the DTSC's Internet Website indicated that no records of cleanup sites including State response sites, voluntary cleanup sites,

military sites or corrective action sites are listed for the subject site, the adjacent properties, or properties located within a 500-foot radius of the subject site.

State of California Regional Water Quality Control Board - Geotracker

Krazan's January 11, 2023 review of the State of California Regional Water Quality Control Board (RWQCB) Geotracker database available via the RWQCB Internet Website did not identify any cleanup sites including LUST sites, cleanup program sites, land disposal sites, or military sites at the subject site.

California Department of Conservation, California Geologic Energy Management Division

Krazan's January 11, 2023 review of the State of California Department of Conservation, California Geologic Energy Management Division (CalGEM) GIS Online Mapping System indicated that no plugged and abandoned or producing oil wells are located on or adjacent to the subject site.

Fresno County Department of Public Health, Environmental Health System

The Fresno County Department of Public Health, Environmental Health System (FCEHS) is the lead regulatory agency or Certified Unified Program Agency (CUPA) for hazardous materials handling facilities in Fresno County. Krazan's January 11, 2023 review of the FCEHS CUPA and Solid Waste Programs Resource List (CUPA List) indicated that no hazardous materials record are on file for the subject site or adjacent properties.

Fresno County Fire Protection District

The Fresno County Fire Protection District (FCFPD) has jurisdiction for the fire protection for the subject site and the immediate vicinity. According to representatives of the FCFPD, records of hazardous materials incidents are kept by the FCEHS. Additionally, hazardous/flammable incidents are filed according to the date of occurrence and not by the location of occurrence with the FCFPD. Therefore, records of hazardous/flammable releases or incidents were not reasonably ascertainable from the FCFPD.

Regulatory Database Review

Several agencies have published documents that list businesses or properties which have handled hazardous materials or waste or may have experienced site contamination. The lists consulted in the course of our assessment were compiled by EDR and Krazan and represent reasonably ascertainable current listings. Krazan verified the location and distances of the properties Krazan deemed as having the potential to adversely impact the subject site. Krazan did not verify the locations and distances of every property listed by EDR. The actual location of the listed properties may differ from the EDR listing. No EDR-listed

unmapped (non-geocoded) sites identified were determined to be located on or adjacent to the subject site. However, the following database listings were identified for the subject site:

Gasoline Tank
(HIST UST, SWEEPS UST, CA FID UST)
6374 E Shepherd
Subject Site

According to the SWEEPS UST and documents reviewed via the link to the SWRCB GeoTracker database (HIST UST), one 500-gallon unleaded gasoline UST was utilized at the subject site in association with the former turkey farm. Both the SWEEPS UST and CA FID UST indicate the status as "active". According to Mr. Richard Smith, property owner, the UST was removed approximately 40 years ago. No records of the UST removal, soil sample analysis, or a Closure Letter are on file with the FCEHS, and no additional information is included on the SWRCB database. Based on the presence of the former UST, the potential exists for petroleum hydrocarbon constituents to have impacted the subsurface in the event a past release occurred. The subsurface conditions in the area of the reported former UST are unknown; therefore, the lack of documentation pertaining to the removal of the gasoline UST represent a recognized environmental concern (REC) at the subject site.

Review of the two remaining facilities proximate to the subject site did not identify either to be listed on a database indicating a release to the subsurface has occurred; therefore, neither facility represents a concern in connection with the subject site.

Hazardous Materials Migration in Vapor

Hazardous materials or petroleum product vapors which may have the potential to migrate into the subsurface of the subject site may be caused by the release of vapors from contaminated soil or groundwater either on or in the vicinity of the subject site from current or historical uses of the subject site and/or adjacent or vicinity properties. Current or past land uses such as gasoline stations (using petroleum hydrocarbons), dry cleaning establishments (using chlorinated volatile organic compounds), former manufactured gas plant sites (using volatile and semi-volatile organic compounds), and former industrial sites such as those that had vapor degreasing or other parts-cleaning operations (using chlorinated volatile organic compounds) are of particular concern. Constituent of concern vapors are capable of migrating great distances omni-directionally along subsurface conduits such as pipelines, utility lines, sewer and stormwater lines, and building foundations.

Based on Krazan's observations and review of State and local regulatory agency records and the EDR regulatory database report, no listings of concern related to potential vapor migration were determined to be associated with the subject site, adjacent properties, or properties located within the subject site vicinity.

Review of vicinity properties listed by EDR as release sites within the applicable search radii suggests that these properties do not represent a significant potential for vapor migration in connection to the subject site. No engineering control sites, sites with institutional controls, or sites with deed restrictions were listed for the subject site, adjacent sites or vicinity properties in the EDR Report.

7.0 DISCUSSION OF FINDINGS

Summary of Conclusions		
Apparent Evidence of RECs or PAOCs	***Not Noted***	***Noted***
Historical Uses		X
Current Uses	X	
Adjacent of Vicinity Property Uses	X	

Historical Uses

Based on Krazan's review of historical aerial photographs, historical topographic maps, and historical cross-reference directories, a site reconnaissance, contacts with the local regulatory agencies, and an interview with a representative of the owner of the subject site, there is evidence that RECs exist in connection with the historical uses of the subject site and are discussed in detail in Section 8.0 of this report.

Current Uses

Based on Krazan's site reconnaissance, contacts with local regulatory agencies, and an interview with a representative of the owner of the subject site, there is no material evidence that RECs exist in connection with the current uses of the subject site. ASTM non-scope issues were identified in connection with the subject site and are discussed in detail in Section 8.0 of this report.

Adjacent or Vicinity Property Uses

Based on Krazan's field observations, review of the EDR government database report, and consultation with local regulatory agencies, there is no material evidence that recognized environmental conditions exist in connection with the subject site from adjacent or vicinity property uses.

7.1 Evaluation of Data Gaps/Data Failure

In accordance with ASTM E 1527-13 guidance, data gaps represent a lack of or inability to obtain information required by this practice despite good faith efforts by the environmental professional to gather such information. Data gaps may result from incompleteness in any of the activities required by this practice. Data failure represents the failure to achieve the historical research objectives of this practice even after reviewing the standard historical sources that are reasonably ascertainable and likely to be useful. Data failure is one type of data gap. The following is a summary of data gaps encountered in the process of preparing this report including an observation as to the presumed significance of that data gap to the conclusions of this assessment.

8.0 CONCLUSIONS

We have conducted a Phase I ESA of the subject site in conformance with the scope and limitations of the ASTM E 1527-13 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* guidance documents. Any deviations from this practice were previously described in this report.

During the course of this assessment, Krazan identified no evidence of controlled CRECs or HRECs in connection with the subject site as defined by ASTM E 1527-13. However, the following REC, ASTM Non-Scope Issues, and Site Development Issues were identified:

REC

Evidence of a UST was observed adjacent to the southeastern corner of a storage shed to the adjacent west of the Landscape Connection, Inc. commercial operation. One metal vent pipe was observed adjacent to a metallic pipe protruding from the ground with a hand pump fixed to the top. According to Mr. Richard Smith, owner, the UST was removed approximately 40 years ago. According to the SWEEPS UST and documents reviewed via the link to the SWRCB GeoTracker database (HIST UST), one 500-gallon unleaded gasoline UST was utilized at the subject site in association with the former poultry/turkey ranch. Both the SWEEPS UST and CA FID UST databases identify the UST's status as "active". No records of the UST removal, soil sample analysis, or a Closure Letter are on file with the FCEHS, and no additional information is included on the SWRCB database. Based on the presence of the former UST, the potential exists for petroleum hydrocarbon constituents to have impacted the subsurface in the event a past release occurred. The subsurface conditions in the area of the reported former UST are unknown; therefore, the lack of documentation pertaining to the removal of the gasoline UST represent a recognized environmental concern (REC) at the subject site.

Krazan recommends conducting a limited subsurface survey to assess the presence of a potential UST.

ASTM Non-scope Issues

- The structures located on the subject site were constructed prior to 1978; therefore, based on the date of construction, ACMs or LBP may be present at the subject site. An asbestos and/or LBP survey and sampling of the on-site structures was not included within the scope of this assessment; therefore, it is unknown whether the on-site structures contain ACMs or LBP.

  Prior to the disturbance of any of the suspect ACMs or LBP at the subject site via renovation or demolition, a comprehensive asbestos and LBP survey is recommended.

- Big Dry Creek stream wash extends east to west across the northern portion of the subject site and is classified by the USFWS National Wetlands Inventory as a temporary flooded, intermittent, riverine, streambed (R4SBA). Big Dry Creek is part of a riverine subsystem that contains flowing water only part of the year, is completely dewatered at low tide, has surface water that is present only for brief periods during the growing season, and a water table that usually lies well below the ground surface for most of the season. This riverine portion of wetlands is part of a greater Palustrine, freshwater wetland system to the northeast of the subject site. The ephemeral tributary, known as Big Dry Creek, was observed as holding water at the time of the site reconnaissance. Therefore, regulations pertaining to wetlands may impact future development at the subject site.

  Krazan recommends a qualified wetlands biologist survey the subject site.

- According to the USFWS, the subject site is in a known range extent for the California tiger salamander (Ambystoma californiense); a large, stocky salamander with yellow dots or stripes against a black body. The USFWS has classified the California tiger salamander (CTS) into three Distinct Population Segments (DPS). CTSs near the subject site are of the central California DPS and are listed as a "threatened species" for both state and federal statuses. The wetlands to the northeast of the subject site are a typical habitat of the CTS.

  Krazan recommends a qualified biologist survey the area potential for California tiger salamander habitat at or near the subject site.

Site Development Issues

- The subject site has been developed with a domestic water well, septic and leach field system, propane fuel tanks, and an irrigation well and pump.

  Prior to redevelopment activities, these systems should be properly removed in accordance with State and local guidelines.

- Numerous trash piles and various types of debris piles, including waste tires, glass bottles, scrap wood, metal piping, empty rusted drums, empty buckets, concrete irrigation pipes, wooden pallets, appliances, various pieces of farm equipment, and green waste/vegetation were observed in numerous areas of the subject site, specifically in the southern portion near the former poultry operations and across Landscape Connection, Inc.'s yard and vehicle maintenance/repair shed. Not all areas were able to be observed due to the excessive quantity of materials in the debris piles and/or access limitations during the site reconnaissance.

  During the removal of debris from across the subject site in preparation for grading and construction activities associated with the proposed residential development planned by Wilson Homes, should indications of potential hazardous materials or evidence of soil impacts be observed, or if screening for constituents of potential concern (COCPs) is required per landfill requirements, Krazan should be contacted to determine whether surficial soils have been potentially impacted and whether sampling would be recommended. In addition, debris should be removed and transported off-site for proper disposal.

9.0 RELIANCE

This report was prepared solely for use by Client and should not be provided to any other person or entity without Krazan & Associates' prior written consent. No party other than Client may rely on this report without Krazan & Associates' express prior written consent. Reliance rights for third parties will only be in effect once requested by Client and authorized by Krazan & Associates with authorization granted by way of a Reliance Letter. The Reliance Letter will require that the relying party(ies) agree to be bound to the terms and conditions of the agreement between Client and Krazan & Associates as if originally issued to the relying party(ies), or as so stipulated in the Reliance Letter.

10.0 LIMITATIONS

The site reconnaissance and research of the subject site has been limited in scope. This type of assessment is undertaken with the calculated risk that the presence, full nature, and extent of contamination would not be revealed by visual observation alone. Although a thorough site reconnaissance was conducted in accordance with ASTM Guidelines and employing a professional standard of care, no warranty is given, either expressed or implied, that hazardous material contamination or buried structures, which would not have been disclosed through this investigation, do not exist at the subject site. Therefore, the data obtained are clear and accurate only to the degree implied by the sources and methods used.

The findings presented in this report were based upon field observations during a single property visit, review of available data, and discussions with local regulatory and advisory agencies. Observations describe only the conditions present at the time of this investigation. The data reviewed and observations made are limited to accessible areas and currently available records searched. Krazan cannot guarantee the completeness or accuracy of the regulatory agency records reviewed. Additionally, in evaluating the property, Krazan has relied in good faith upon representations and information provided by individuals noted in the report with respect to present operations and existing property conditions, and the historical uses of the property. It must also be understood that changing circumstances in the property usage, proposed property usage, subject site zoning, and changes in the environmental status of the other nearby properties can alter the validity of conclusions and information contained in this report. Therefore, the data obtained are clear and accurate only to the degree implied by the sources and methods used.

This report is provided for the exclusive use of the client noted on the cover page and shall be subject to the terms and conditions in the applicable contract between the client and Krazan. Any third-party use of this report, including use by Client's lender, shall also be subject to the terms and conditions governing the work in the contract between the client and Krazan. The unauthorized use of, reliance on, or release of the information contained in this report without the express written consent of Krazan is strictly prohibited and will be without risk or liability to Krazan.

Conclusions and recommendations contained in this report are based on the evaluation of information made available during the course of this assessment. It is not warranted that such data cannot be superseded by future environmental, legal, geotechnical or technical developments. Consequently, given the possibility for unanticipated hazardous conditions to exist on a subject site which may not have been discovered, this Phase I ESA is not intended as the basis for a buyer or developer of real property to waive their rights of recovery based upon environmental unknowns. Parties that choose to waive rights of recovery prior to site development do so at their own risk.

Parties who seek to rely upon Phase I Environmental Site Assessment reports dated more than 180 days prior to the date of reliance do so at their own risk. This limitation in reliance is based on the potential for physical changes at the site, changes in circumstances, technological and professional advances, and guidance related to the continued viability of Environmental Site Assessment reports, user's responsibilities, and requirements for updating of components of the inquiry as stated in the ASTM Standard E 1527-13.

11.0 QUALIFICATIONS

This Phase I ESA was conducted under the supervision or responsible charge of Krazan's undersigned environmental assessor with oversight from the undersigned environmental professional. The work was conducted in accordance with ASTM E 1527-13 guidance, generally accepted industry standards for environmental due diligence in place at the time of the preparation of this report, and Krazan's quality-control policies.

We declare that, to the best of our professional knowledge and belief, we meet the definition of environmental professional as defined in §312.10 of 40 CFR 312 and we have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property.

We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

Laurie K. Blakeman
Sr. Environmental Project Manager

Mark D. Edwards, PG 7714, HG 1072
Sr. Project Manager

LKB/MDE /mlt

REFERENCES

American Society for Testing and Materials (ASTM), *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment (ESA) Process*, ASTM Designation: E 1527-13.

ASTM, *Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions*, ASTM Designation E 2600-10.

Environmental Data Resources, Inc. (EDR), Aerial photographs, Microsoft® Research Maps.

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Environmental Data Resources, Inc. (EDR), City Directory Abstract.

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Fresno County Department of Community Health, Environmental Health System, Master Hazardous Materials Handling Facilities List, January 2023.

Fresno County Fire Protection District (FCFPD).

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Maikovich, Mr. Ron, owner of subject site APN 557-031-35, -44S, and -05S.

State of California Department of Toxic Substances Control, Envirostor Website.

State of California Geologic Energy Management Division (CalGEM) Maps Website:

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State of California, Department of Water Resources, *Sustainable Groundwater Management Act (SGMA) Data Viewer, Spring 2022*, https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer#gwlevels

Stevenson, Mr. Shawn, owner of subject site APNs: 557-031-23 and 558-010-25.

U.S. Environmental Protection Agency (EPA) *Map of Radon Zones*.

U.S. Fish & Wildlife Service National Wetland Inventory *Wetlands Mapper:* http://www.fws.gov/wetlands/Data/Mapper.html

U.S. Geological Survey, 7.5-minute Clovis, California topographic quadrangle map, and Round Mountain.

GLOSSARY OF TERMS

Subject Site: The real property being investigated under this Phase I ESA.

Adjacent Properties: Properties which are contiguous with the subject site, or would be contiguous except for a street, road, or other public thoroughfare.

Subject Site Vicinity: Properties located within a 500-foot radius of the subject site.

Environmental Professional: A person meeting the education, training, and experience requirements as set forth in 40 CFR §312.10(b). The EP may be an independent contractor or an employee of the user.

User: The party seeking to use Practice E 1527 to complete an environmental site assessment of the subject site. A user may include, without limitation, a potential purchaser of the subject site, a potential tenant of the subject site, an owner of the subject site, a lender, or a property manager.

Recognized Environmental Condition (REC): In defining a standard of good commercial and customary practice for conducting an environmental site assessment of a parcel of property, the goal of the processes established by this practice is to identify recognized environmental conditions. The term recognized environmental conditions means the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. *De minimis* conditions are not recognized environmental conditions.

Controlled Recognized Environmental Condition (CREC): A recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls). For example, if a leaking underground storage tank has been cleaned up to a commercial use standard, but does not meet unrestricted residential cleanup criteria, this would be considered a CREC. The "control" is represented by the restriction that the property use remain commercial. A condition considered by the environmental professional to be a CREC shall be listed in the findings section of the Phase I ESA report and as an REC in the conclusions section. A condition identified as a CREC does not imply that the environmental professional has evaluated or confirmed the adequacy, implementation, or continued effectiveness of the required control that has been, or is intended to be, implemented.

Historical Recognized Environmental Condition (HREC): A past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls). Before calling the past release an HREC, the environmental professional must determine whether the past release is an REC at the time the Phase I ESA is conducted (for example, if there has been change in the regulatory criteria). If the EP considers the past release to be an REC at the time the Phase I ESA is conducted, the condition shall be included in the conclusions section of the report as an REC.

GLOSSARY OF TERMS (continued)

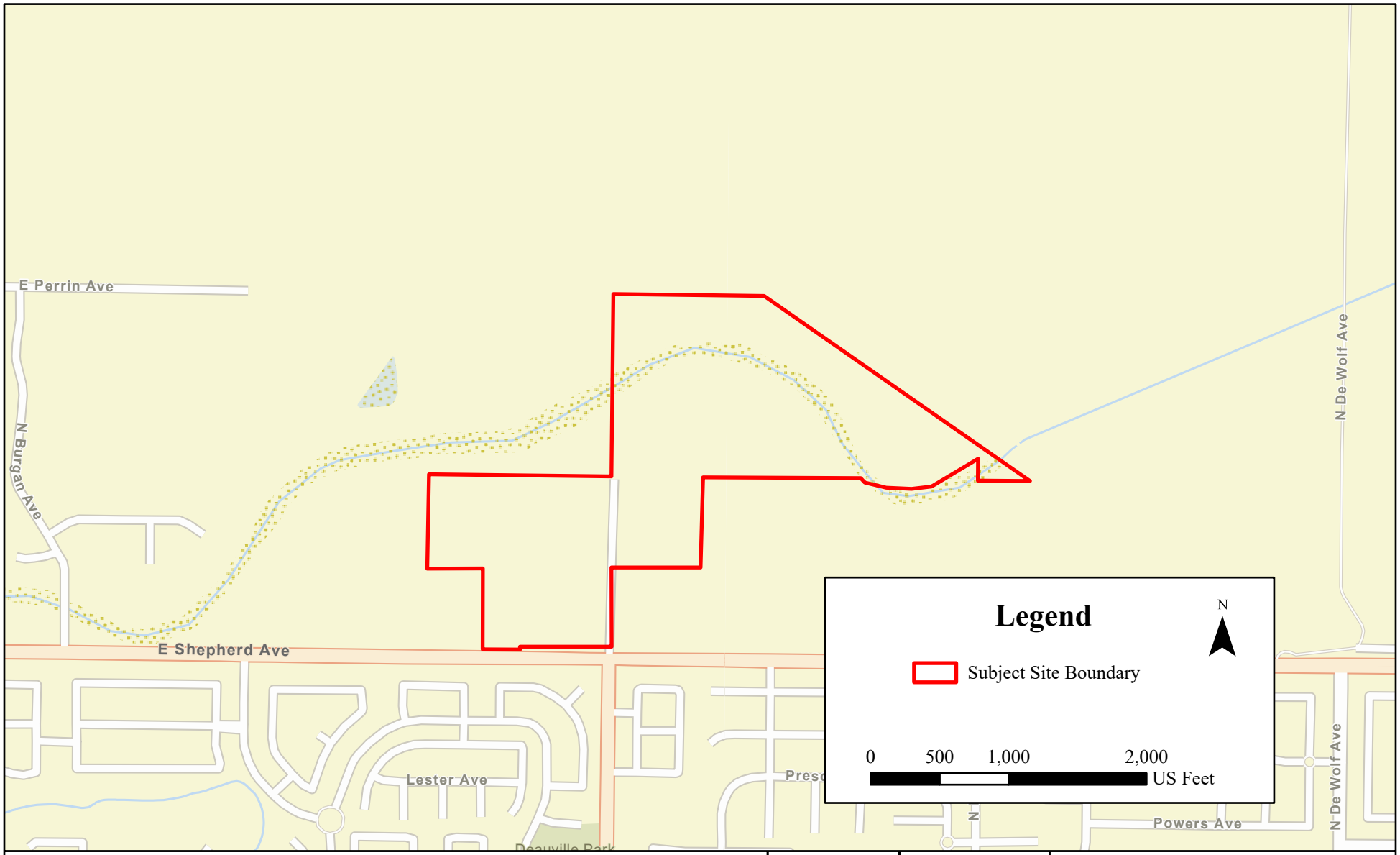
Potential Area of Concern (PAOC): A term adopted to provide an alternative designation to the REC and HREC for a range of environmental issues related to current subject site uses, historical subject site uses, or from adjacent and/or vicinity property uses. The PAOC is utilized to emphasize full disclosure and provide the User with conclusions and recommendations related to potential environmental issues in connection with the subject site based on Krazan's professional experience in cases where official documentation or other evidence may be absent in order to identify an REC or HREC, thereby aiding the User's considerations of environmental due diligence risk tolerance.

Migrate/migration: For the purposes of this practice, "migrate" and "migration" refer to the movement of hazardous substances or petroleum products in any form, including, for example, solid and liquid at the surface or subsurface, and vapor in the subsurface. Vapor migration in the subsurface is described in ASTM E 2600-10 guidance; however, nothing in the E 1527-13 practice should be construed to require application of the E 2600-10 standard to achieve compliance with AAI.

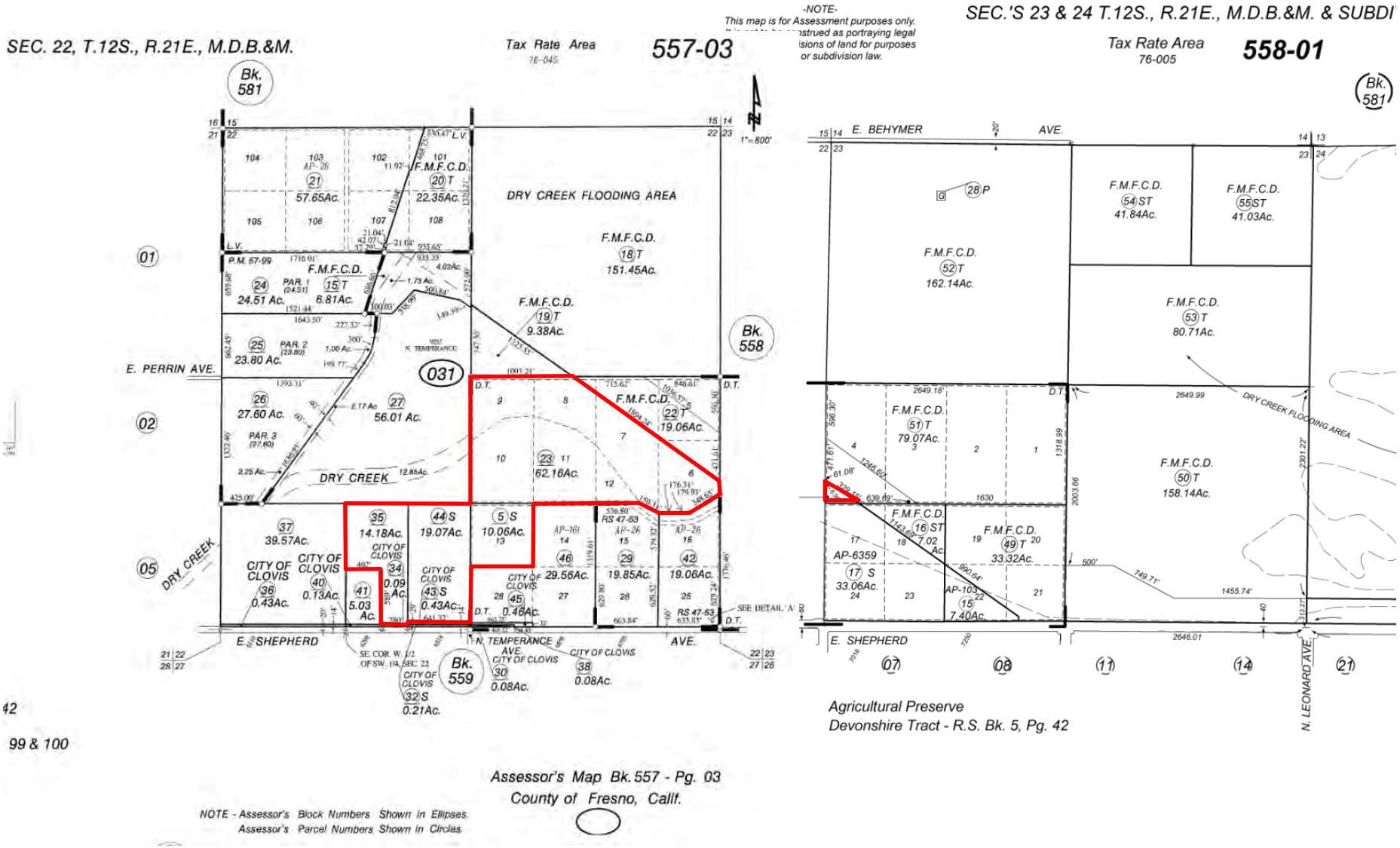
De minimis condition: A condition that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Condition determined to be *de minimis conditions* are not RECS or CRECs.

Data Gap: A lack of or inability to obtain information required by this practice despite good faith efforts by the Environmental Professional to gather such information. Data gaps may result from incompleteness in any of the activities required by this practice, including, but not limited to the site reconnaissance and interviews.

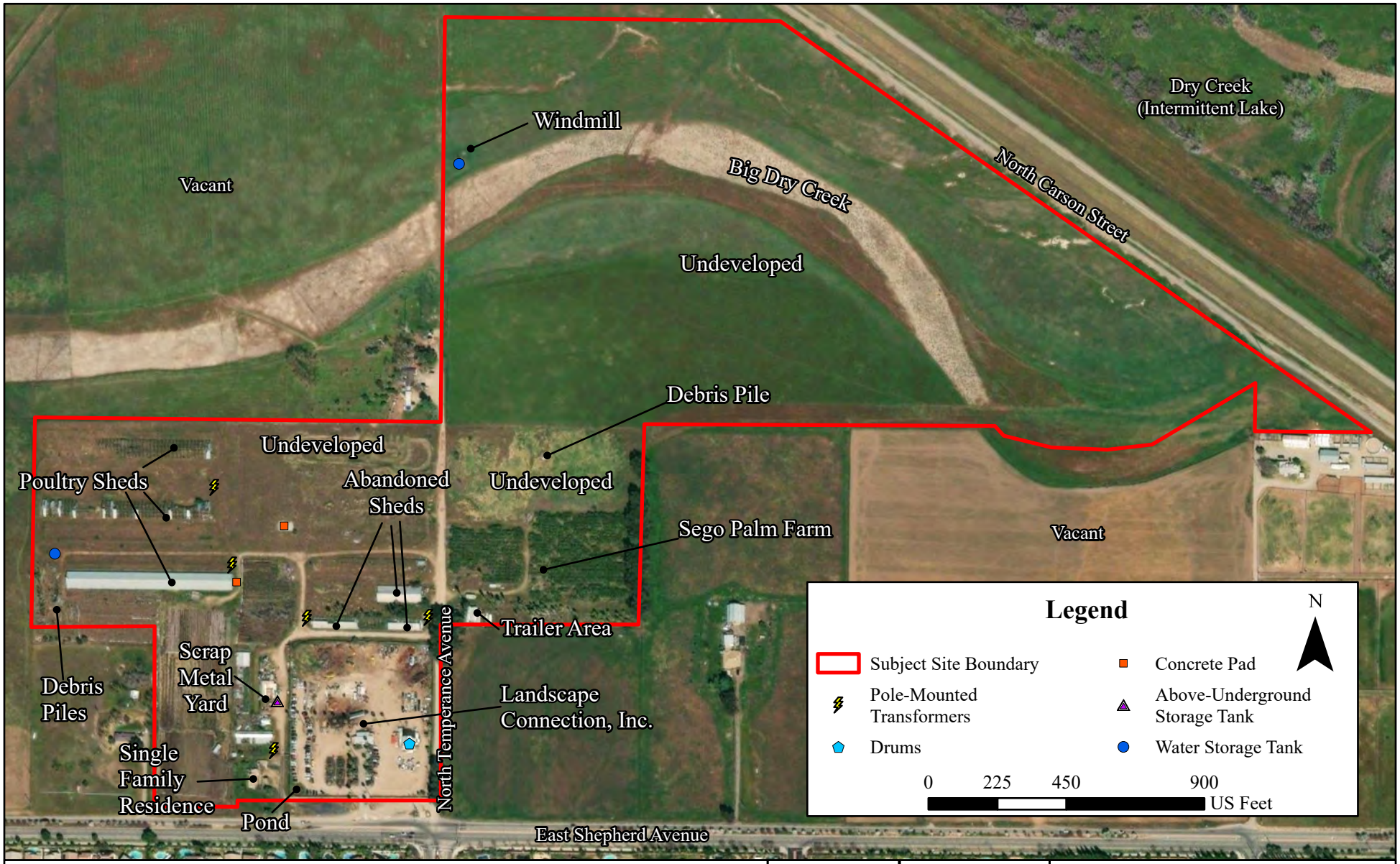
Data Failure: A failure to achieve the historical research objectives even after reviewing the standard historical sources that are reasonably ascertainable and likely to be useful. Data failure is one type of data gap.



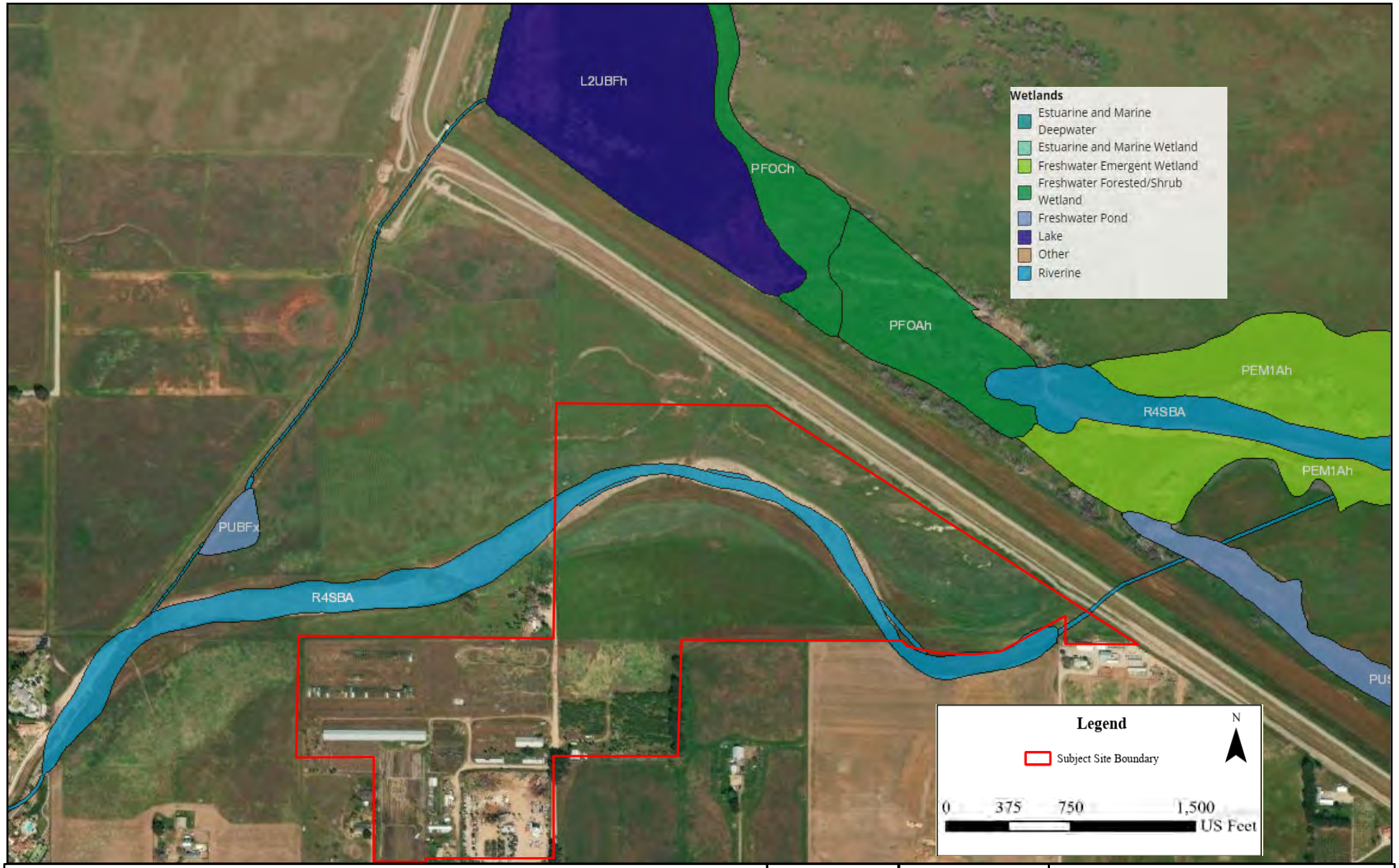
Vicinity Map	**Scale:** 1"=1000'	**Date:** January 2023	Krazan SITE DEVELOPMENT ENGINEERS *With Offices Serving the Western United States*
Triangle Project East Shepherd and North Temperance Avenues APNs: 557-031-35, 557-031-44S, 557-031-05S, 557-031-23, 558-010-25 Fresno County ,CA	**Drawn By:** DD	**Approved By:** LB	
	Project No: 014-22171	**Figure No:** 1	



Parcel Map	Scale: NTS	Date: January 2023	Krazan SITE DEVELOPMENT ENGINEERS *With Offices Serving the Western United States*
Triangle Property East Shepherd and North Temperance Avenues APNs: 557-031-35, 557-031-44S, 557-031-05S, 557-031-23, 558-010-25 Fresno County ,CA	**Drawn By:** DD	**Approved By:** LB	
	Project No: 014-22171	**Figure No:** 2	



Site Map	**Scale:** 1"=450'	**Date:** January 2023	Krazan SITE DEVELOPMENT ENGINEERS *With Offices Serving the Western United States*
Triangle Property East Shepherd and North Temperance Avenues APNs: 557-031-35, 557-031-44S, 557-031-05S, 557-031-23, 558-010-25 Fresno County ,CA	**Drawn By:** DD	**Approved By:** LB	
	Project No: 014-22171	**Figure No:** 3	



Wetlands Map	**Scale:** 1" = 752'	**Date:** January 2023	Krazan **SITE DEVELOPMENT ENGINEERS** *With Offices Serving the Western United States*
Triangle Property East Shepherd and North Temperance Avenues APNs: 557-031-35, 557-031-44S, 557-031-05S, 557-031-23, 558-010-25 Fresno County ,CA	**Drawn By:** DD	**Approved By:** LB	
	Project No: 014-22171	**Figure No:** 4	

Photo 1: Northeast-facing view of the Northern portion of the subject site from the northern end of Temperance Avenue.

Photo 2: View south of the windmill located in the Northern portion of the subject site.

Photo 3: East-facing view of Dry Creek and the flood control levee (background) in the Northern portion of the subject site.

Photo 4: View westerly of the Dry Creek tributary across the Northern portion of the subject site.

Photo 5: Southeast-facing view of the southernmost poultry shed with water storage tank and pump at the north end of parcel 557-031-35.

Photo 6: East-facing view of the mostly vacant interior of the southernmost poultry shed.

Photo 7: East-facing view of the two dilapidated poultry sheds in the northern portion of the parcel.

Photo 8: East-facing view of the interior of one of the dilapidated poultry sheds with abandoned poultry feeding equipment.

Photo 9: West-facing view of the occupied laborer dwelling with minor interior housekeeping issues located south of the eastern end of the southernmost poultry shed.

Photo 10: Northwest-facing view of water storage tank and pump situated between the roofed poultry shed and the two dilapidated poultry sheds at the northern end of the parcel.

Photo 11: North facing view of the western portion of parcel, littered with empty drums, pipes, scrap metal, etc., with the poultry runs in the distance.

Photo 12: East-facing view of empty plastic and metallic drums of an unknown substance littering the western parcel border.

Photo 13: West-facing view of the east side of the northernmost dilapidated poultry shed with a regulator and piping that leads underground.

Photo 14: North-facing view of the pole-mounted transformer at the eastern end of the poultry sheds.

Photo 15: Northwest-facing view of irrigation and agricultural waste south of the parcel at the western border.

Photo 16: East-facing view of abandoned row crops and farming equipment nearest East Shepherd Avenue.

Photo 17: Northwest-facing view of the single-family residence and detached garage on parcel 557-031-44S nearest to East Shepherd Avenue.

Photo 18: South-facing view of an additional residence and sheds located north and adjacent to the residence.

Photo 19: Northwest-facing view of additional structure surrounded by a scrap metal yard. Stand-mounted AST is depicted.

Photo 20: West-facing view of the south side of the scrap yard shed. The AST is depicted and potential underground storage tank (UST) apparatus was observed at the base of the AST.

Photo 21: Open/uncovered containers of petroleum products within scrap yard area.

Photo 22: North-facing view of northern portion of the parcel showing undeveloped land and the 50-foot by 30-foot concrete pad.

Photo 23: North-view of northern portion of the parcel with a pole mounted transformer, and abandoned shed taken from northwest corner of the landscaping yard. Concrete pad can be seen in the distance.

Photo 24: North-facing view of northern portion of the parcel showing a pole-mounted transformer and abandoned sheds.

Photo 25: Interior view of the abandoned sheds showing miscellaneous waste, and empty unknown chemical containers.

Photo 26: West-facing view of the east side of the abandoned, elongated sheds.

Photo 27: Interior view of the southernmost abandoned shed that is mostly vacant with miscellaneous agriculture waste and equipment scattered inside

Photo 28: North-facing view of eastern parcel border, North Temperance Avenue, and the sago palm farm on the adjacent parcel to the east.

Photo 29: East-facing view of Landscape Connection, Inc.'s main office at the center of the landscaping yard in the southeast portion of parcel 557-031-44S.

Photo 30: South-facing view of Landscape Connection, Inc.'s work shed where automotive repair work is performed.

Photo 31: Containers and drums of waste petroleum product with in the work shed area.

Photo 32: South-facing view of landscaping greenery in the yard.

Photo 33: Interior view of the maintenance and workshop shed depicting heavy staining and absorbent material beneath a vehicle.

Photo 34: View of the AST within secondary containment adjacent to the maintenance workshop and shed.

Photo 35: East-facing view of the landscaping yard showing typical landscaping equipment.

Photo 36: South-facing view of water retention pond at the southwest corner of the landscaping yard.

Photo 37: East facing view of the northern portion of the parcel showing undeveloped land and the sago palm farm (parcel 557-031-05S).

Photo 38: Northeast facing view of the sago palm farm.

Photo 39: North-facing view of a debris pile in the northern portion of the parcel.

Photo 40: East-facing view of the debris area consisting of black plastic potting containers and wooden pallets.

Photo 41: View of the water pump and pole-mounted transformer adjacent to the seatrain storage area.

Photo 42: East-facing view of the trailer and vehicle storage area.

Appendix A

Triangle Property

East Shepherd Avenue/North Temperance Avenue

Clovis, CA 93619

Inquiry Number: 7208868.3

December 20, 2022

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

12/20/22

Site Name:	Client Name:
Triangle Property	Krazan & Associates, Inc.
East Shepherd Avenue/North T	215 West Dakota
Clovis, CA 93619	Clovis, CA 93612
EDR Inquiry # 7208868.3	Contact: Dulcinea Deleon

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Krazan & Associates, Inc. were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

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Certified Sanborn Results:

Certification # 0D58-40C4-87A8

PO # 014-22171

Project Triangle Property

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 0D58-40C4-87A8

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✔ Library of Congress
- ✔ University Publications of America
- ✔ EDR Private Collection

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Triangle Property

East Shepherd Avenue/North Temperance Avenue

Clovis, CA 93619

Inquiry Number: 7208868.4

December 20, 2022

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

12/20/22

Site Name:	Client Name:
Triangle Property	Krazan & Associates, Inc.
East Shepherd Avenue/North T	215 West Dakota
Clovis, CA 93619	Clovis, CA 93612
EDR Inquiry # 7208868.4	Contact: Dulcinea Deleon

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Krazan & Associates, Inc. were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# 014-22171

Project: Triangle Property

Coordinates:

Latitude:	36.870601 36° 52' 14" North
Longitude:	-119.664782 -119° 39' 53" West
UTM Zone:	Zone 11 North
UTM X Meters:	262472.81
UTM Y Meters:	4083833.47
Elevation:	408.00' above sea level

Maps Provided:

2018	1946
2015	1922, 1923
2012	
2000	
1981	
1972	
1964	
1947	

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2018 Source Sheets

Clovis
2018
7.5-minute, 24000

Friant
2018
7.5-minute, 24000

2015 Source Sheets

Clovis
2015
7.5-minute, 24000

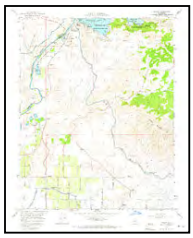
Friant
2015
7.5-minute, 24000

2012 Source Sheets

Clovis
2012
7.5-minute, 24000

Friant
2012
7.5-minute, 24000

2000 Source Sheets



Friant
2000
7.5-minute, 24000
Aerial Photo Revised 2000

Topo Sheet Key

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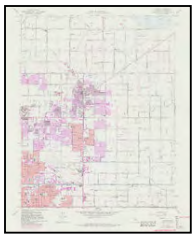

Clovis
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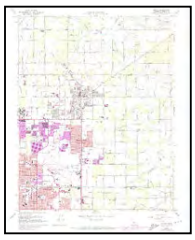
Aerial Photo Revised 1978

1972 Source Sheets



Clovis
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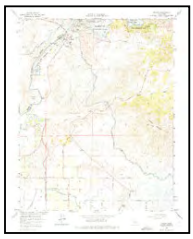

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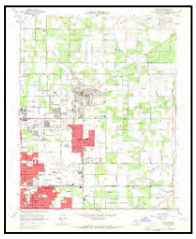

Clovis
1964
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Aerial Photo Revised 1962

1947 Source Sheets

Clovis
1947
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Friant
1947
7.5-minute, 24000

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

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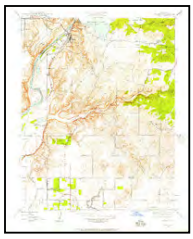

Friant
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Clovis
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1922, 1923 Source Sheets

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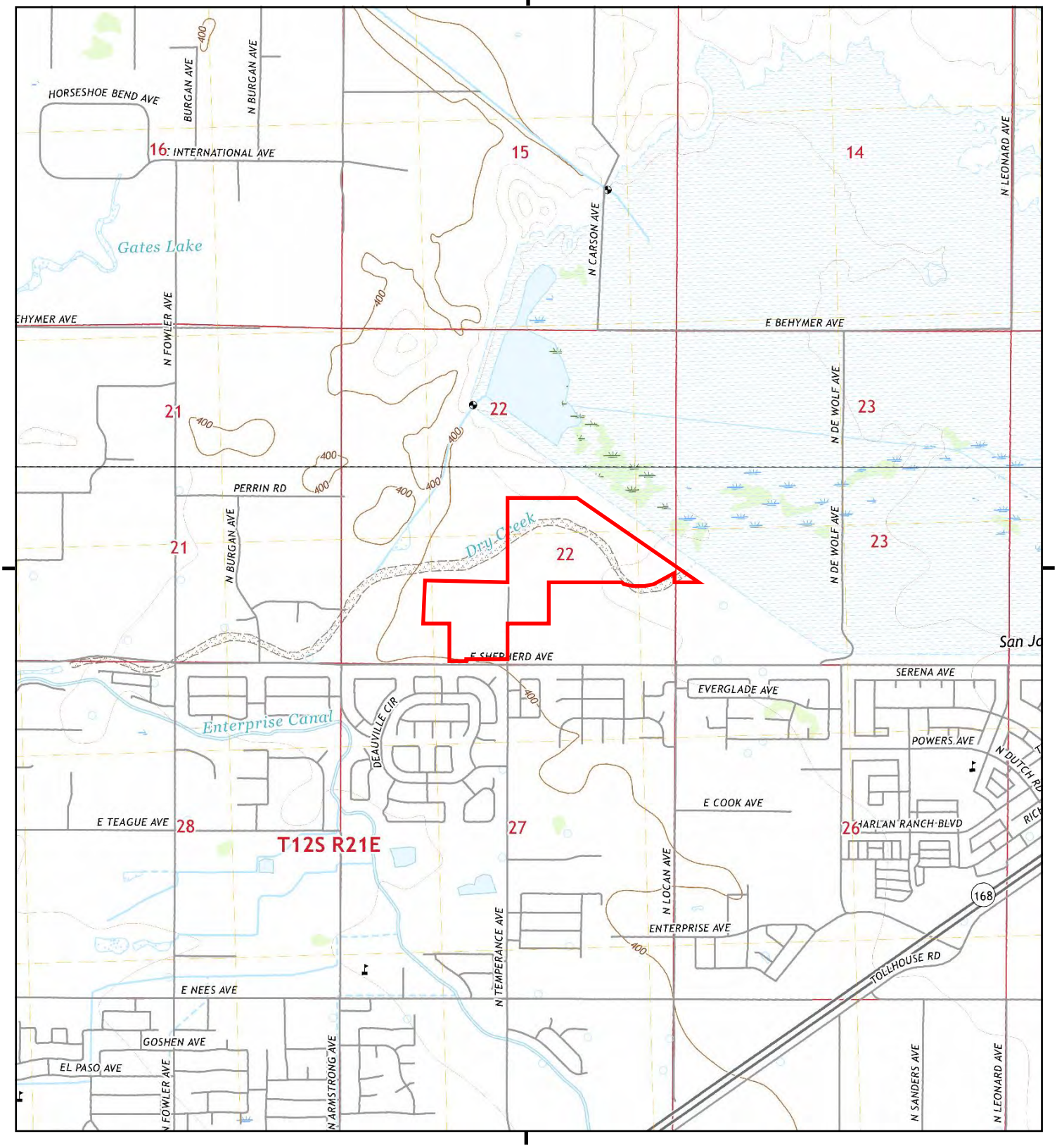
Historical Topo Map

2018



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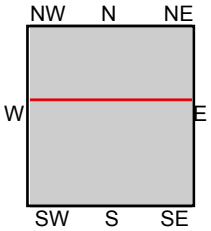


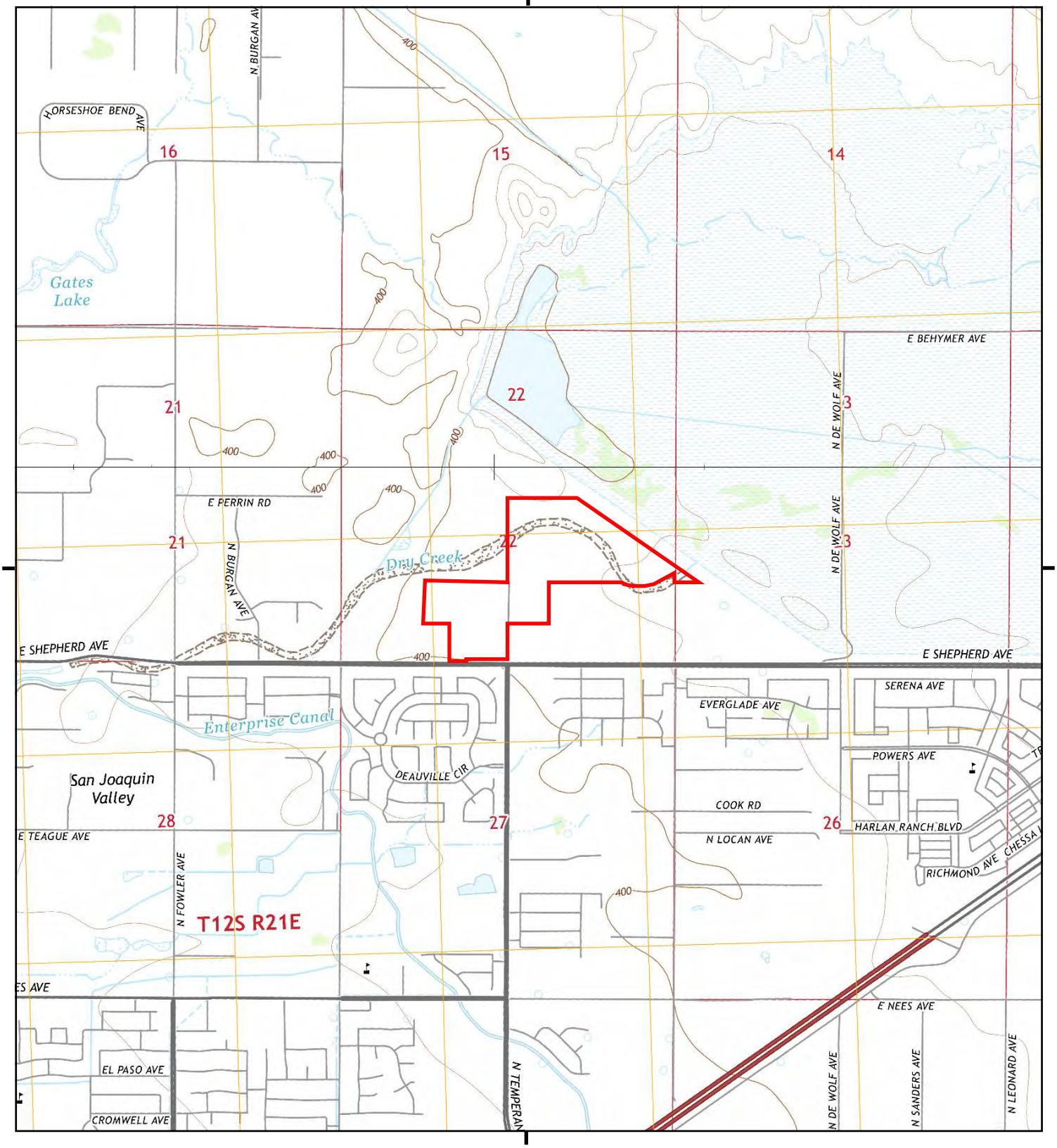
TP, Clovis, 2018, 7.5-minute
N, Friant, 2018, 7.5-minute

SITE NAME: Triangle Property
ADDRESS: East Shepherd Avenue/North Temperanc
Clovis, CA 93619
CLIENT: Krazan & Associates, Inc.

N

Historical Topo Map

2015



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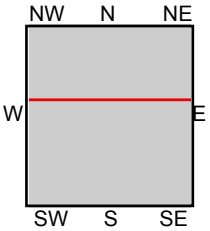

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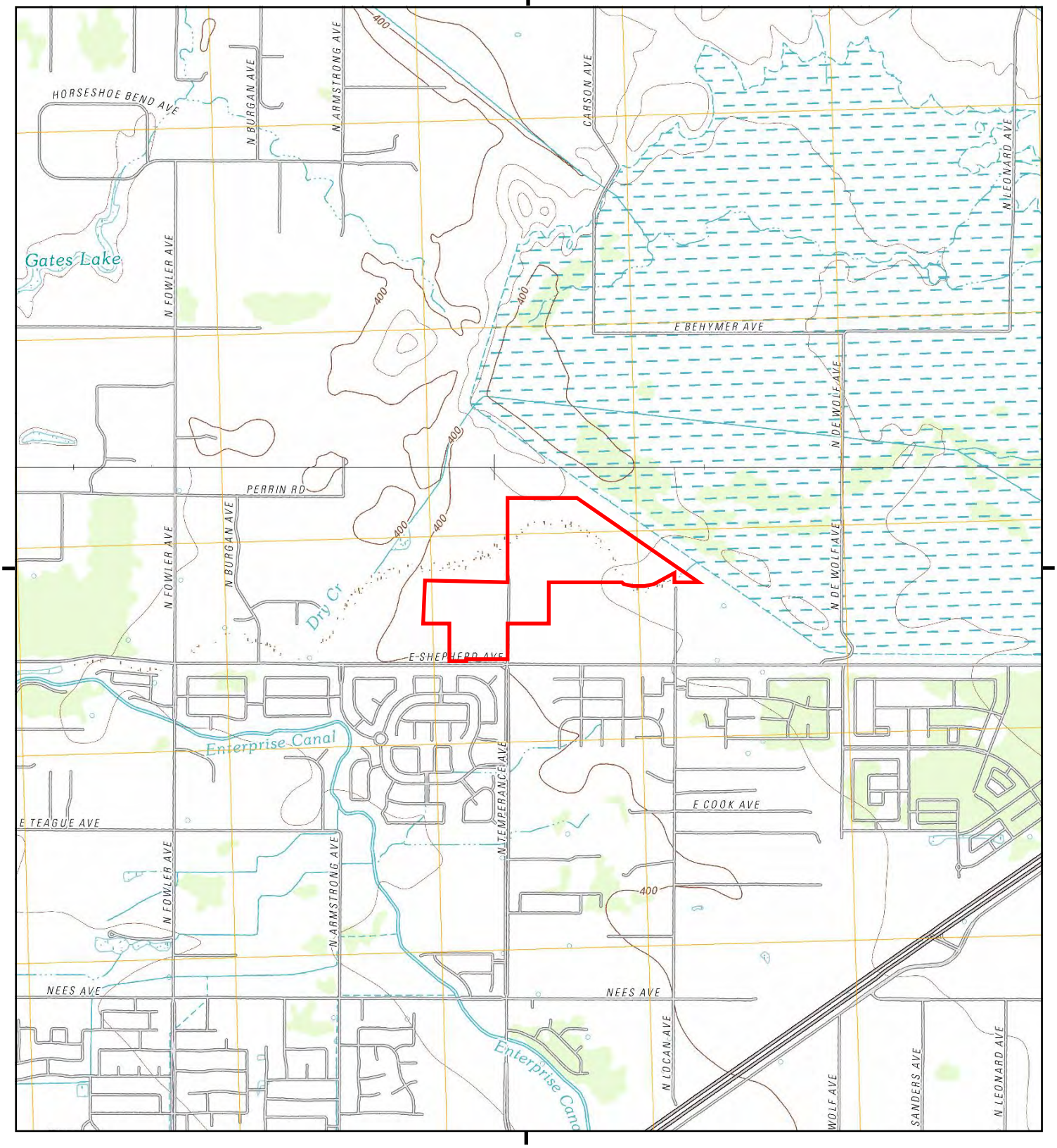
N, Friant, 2015, 7.5-minute

SITE NAME: Triangle Property
ADDRESS: East Shepherd Avenue/North Temperanc
Clovis, CA 93619
CLIENT: Krazan & Associates, Inc.

N

Historical Topo Map

2012



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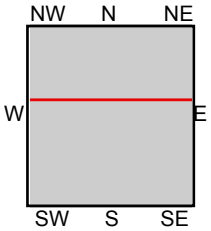

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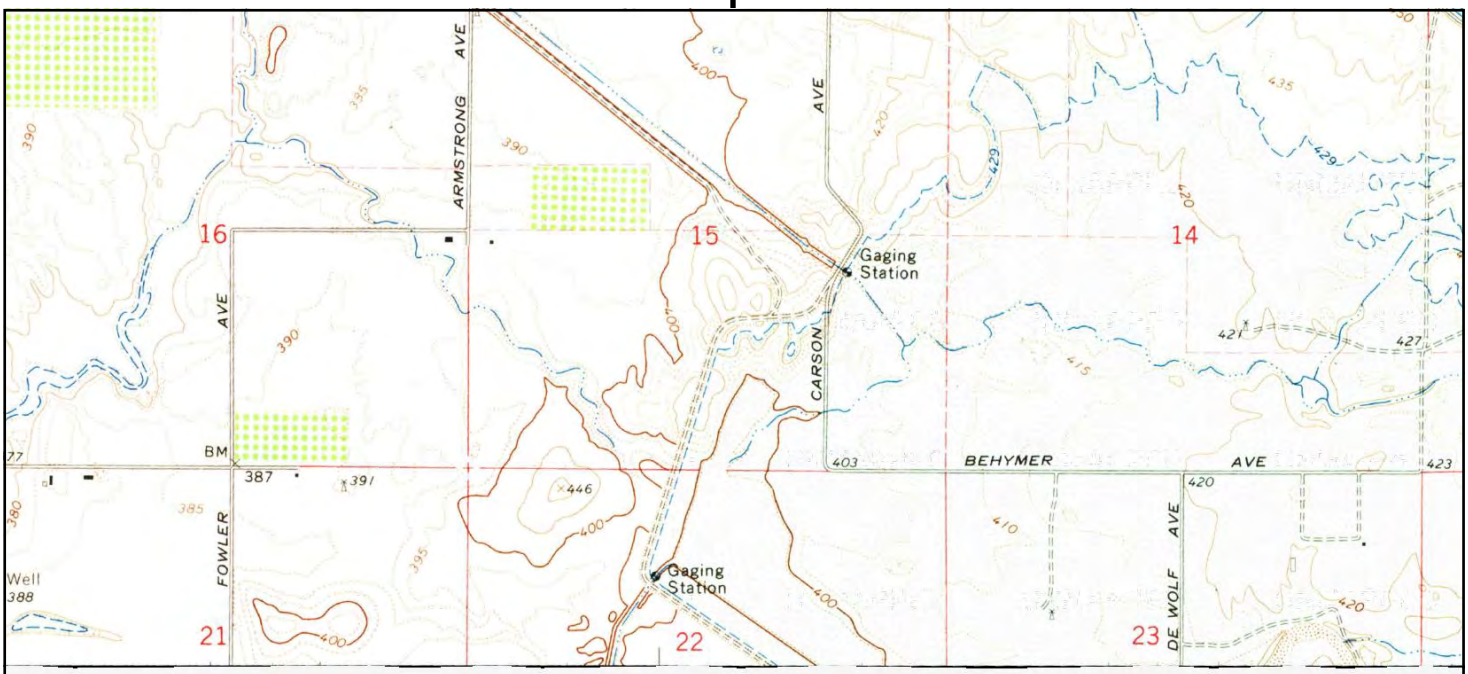
N, Friant, 2012, 7.5-minute

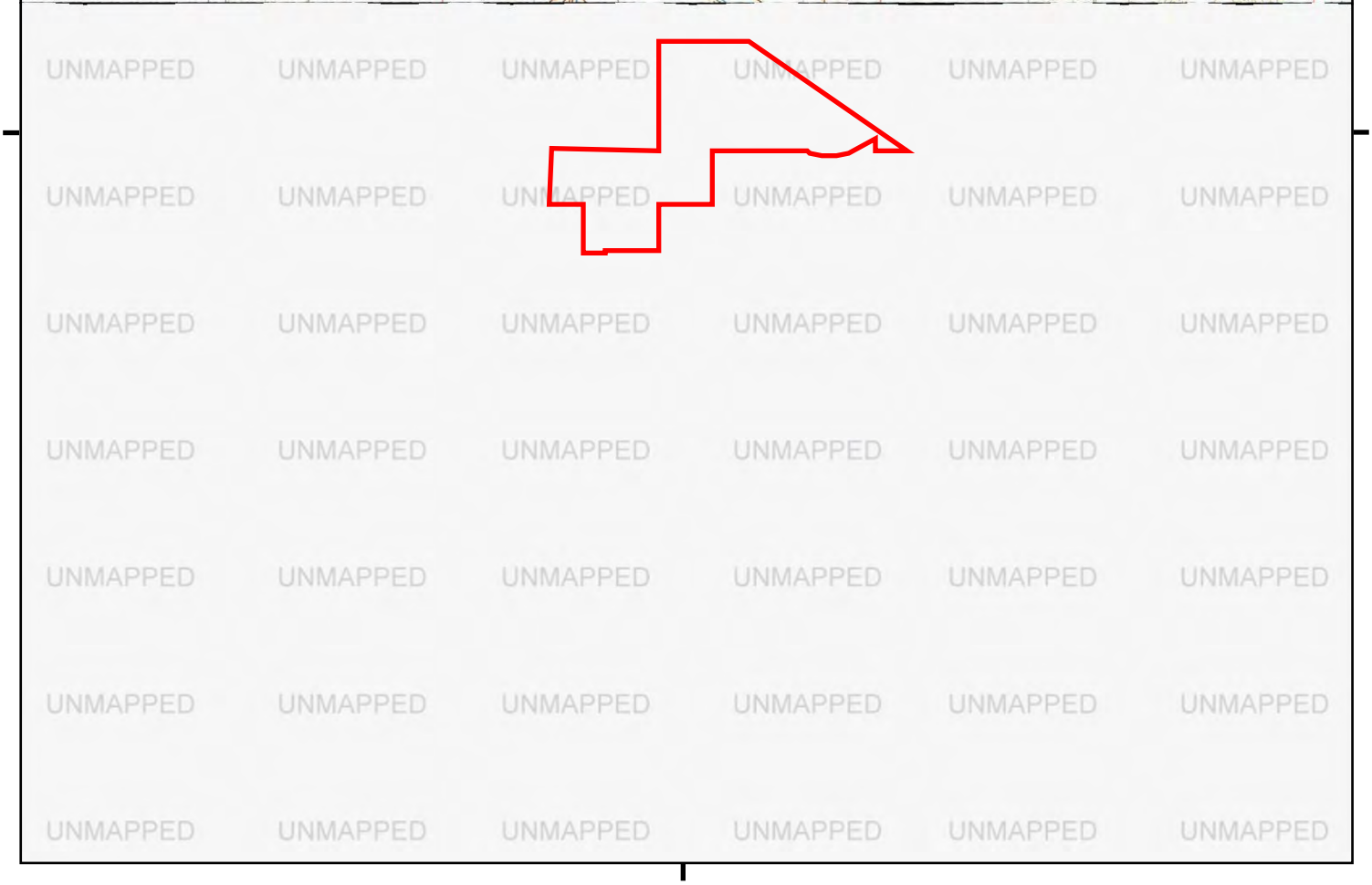
SITE NAME: Triangle Property
ADDRESS: East Shepherd Avenue/North Temperanc
Clovis, CA 93619
CLIENT: Krazan & Associates, Inc.

N

Historical Topo Map

2000





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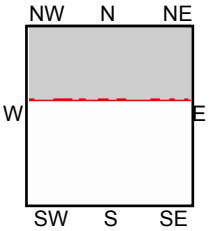


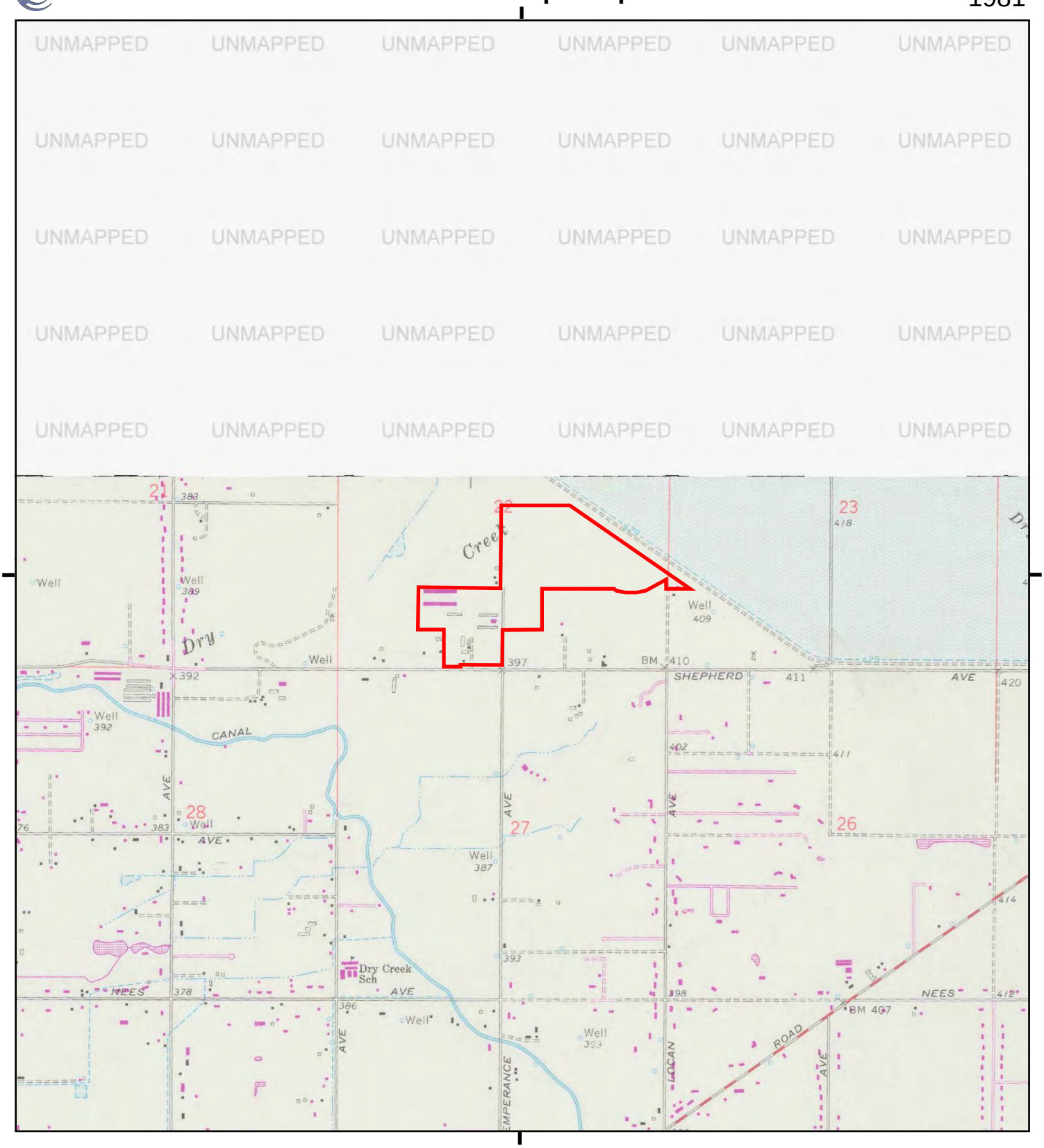
N, Friant, 2000, 7.5-minute

SITE NAME: Triangle Property
ADDRESS: East Shepherd Avenue/North Temperanc
Clovis, CA 93619
CLIENT: Krazan & Associates, Inc.

N

Historical Topo Map

1981



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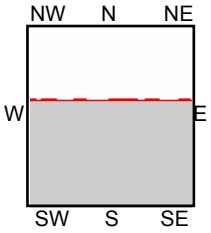


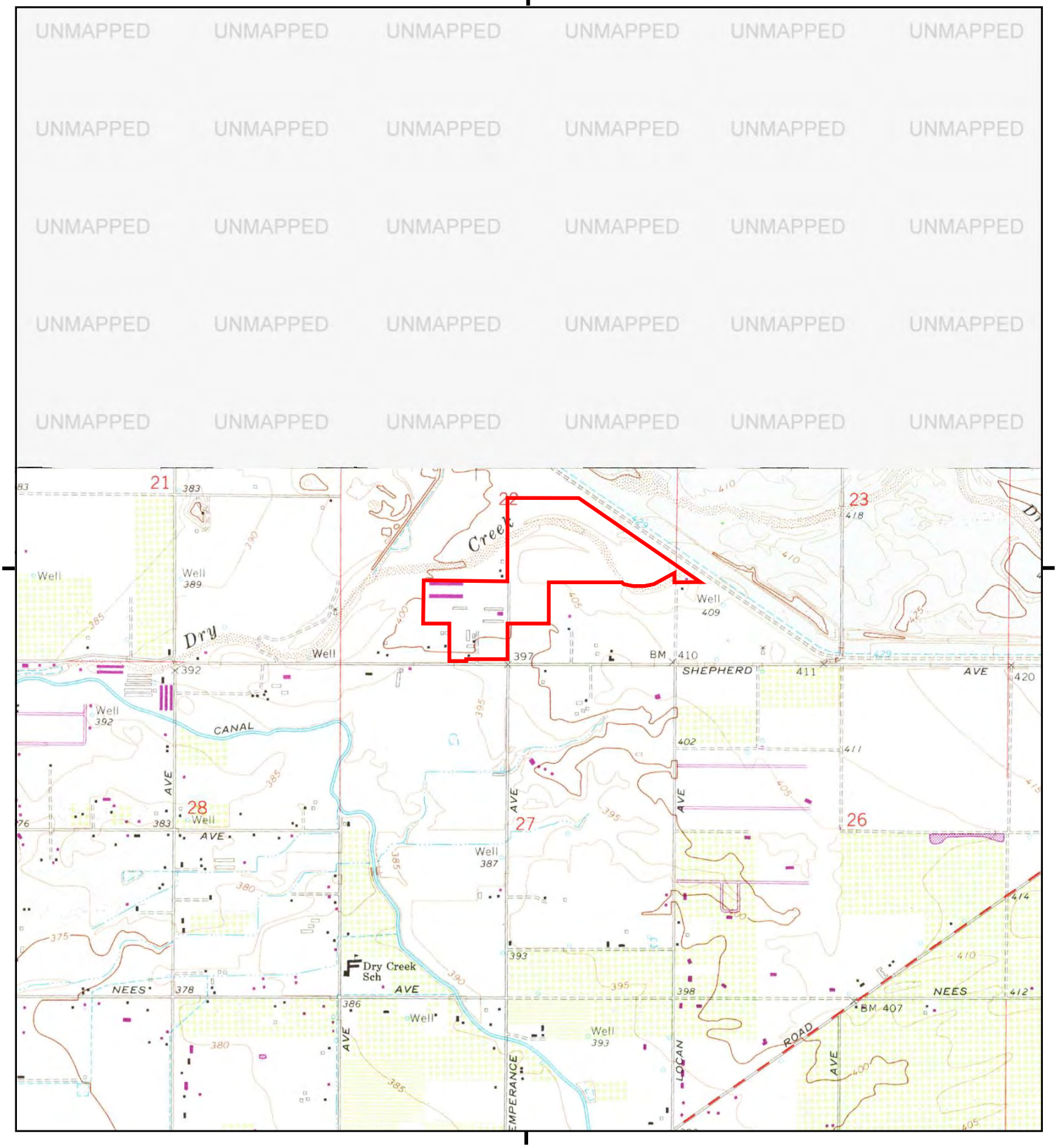
TP, Clovis, 1981, 7.5-minute

SITE NAME: Triangle Property
ADDRESS: East Shepherd Avenue/North Temperanc
Clovis, CA 93619
CLIENT: Krazan & Associates, Inc.

N

Historical Topo Map

1972



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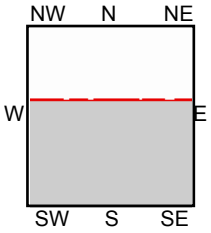

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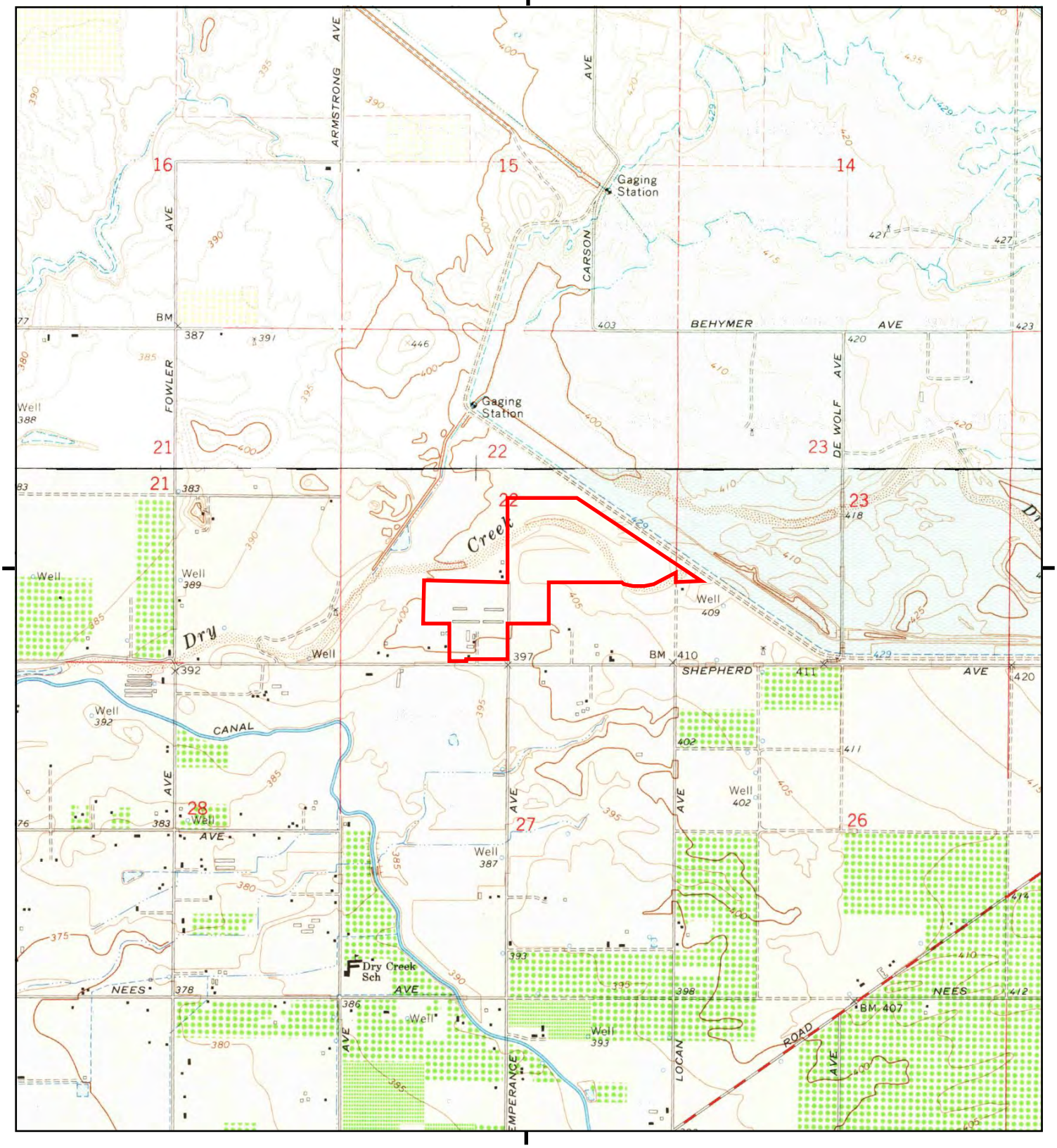
SITE NAME: Triangle Property
ADDRESS: East Shepherd Avenue/North Temperanc
Clovis, CA 93619
CLIENT: Krazan & Associates, Inc.

N

Historical Topo Map

1964



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

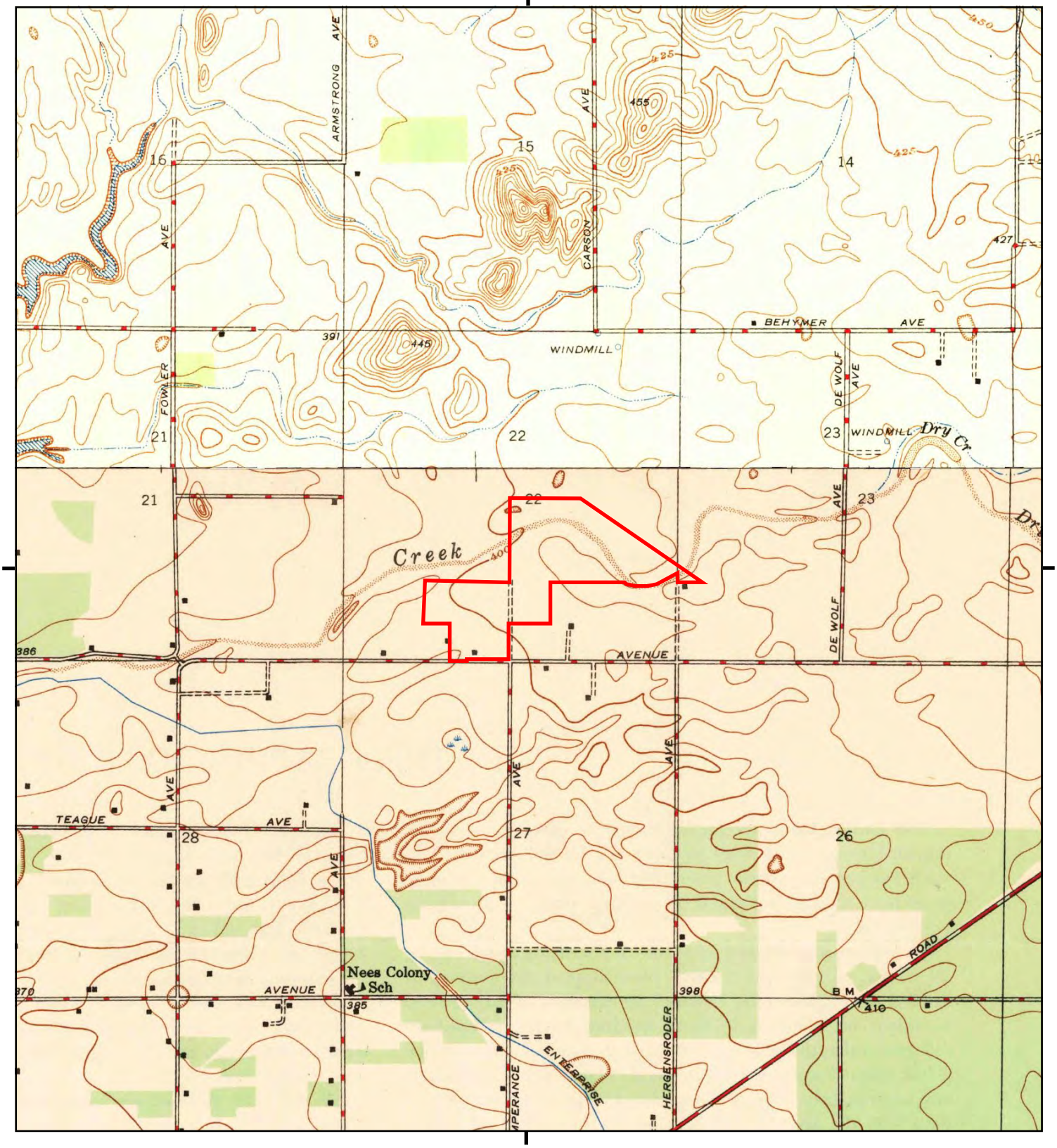
TP, Clovis, 1964, 7.5-minute
N, Friant, 1964, 7.5-minute

SITE NAME: Triangle Property
ADDRESS: East Shepherd Avenue/North Temperanc
Clovis, CA 93619
CLIENT: Krazan & Associates, Inc.

N

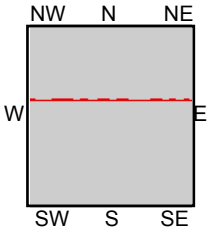
Historical Topo Map

1947



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5



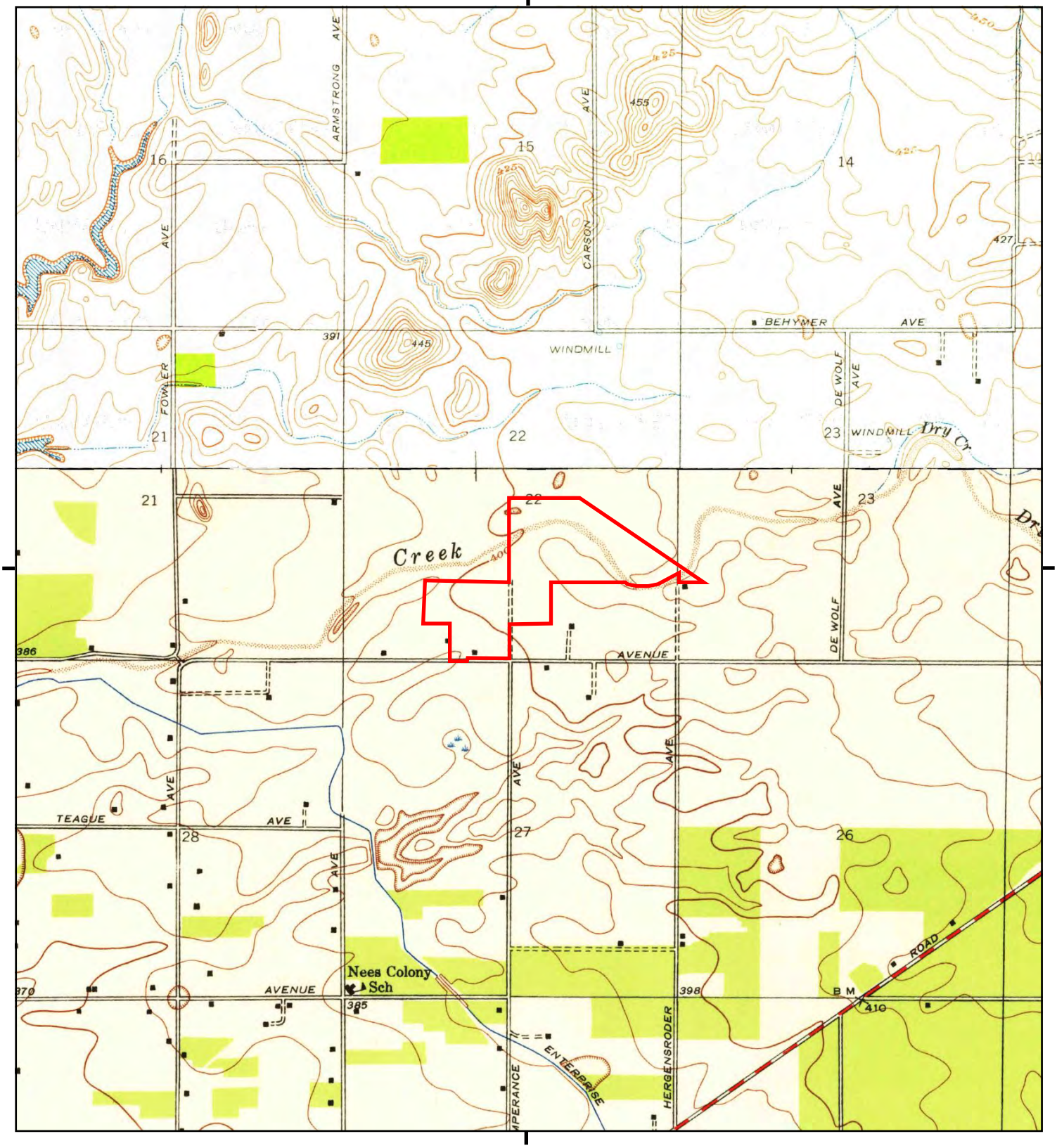
TP, Clovis, 1947, 7.5-minute
N, Friant, 1947, 7.5-minute

SITE NAME: Triangle Property
ADDRESS: East Shepherd Avenue/North Temperanc
Clovis, CA 93619
CLIENT: Krazan & Associates, Inc.

N

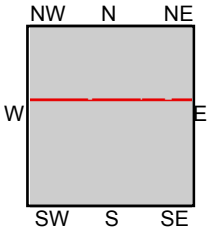
Historical Topo Map

1946



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5



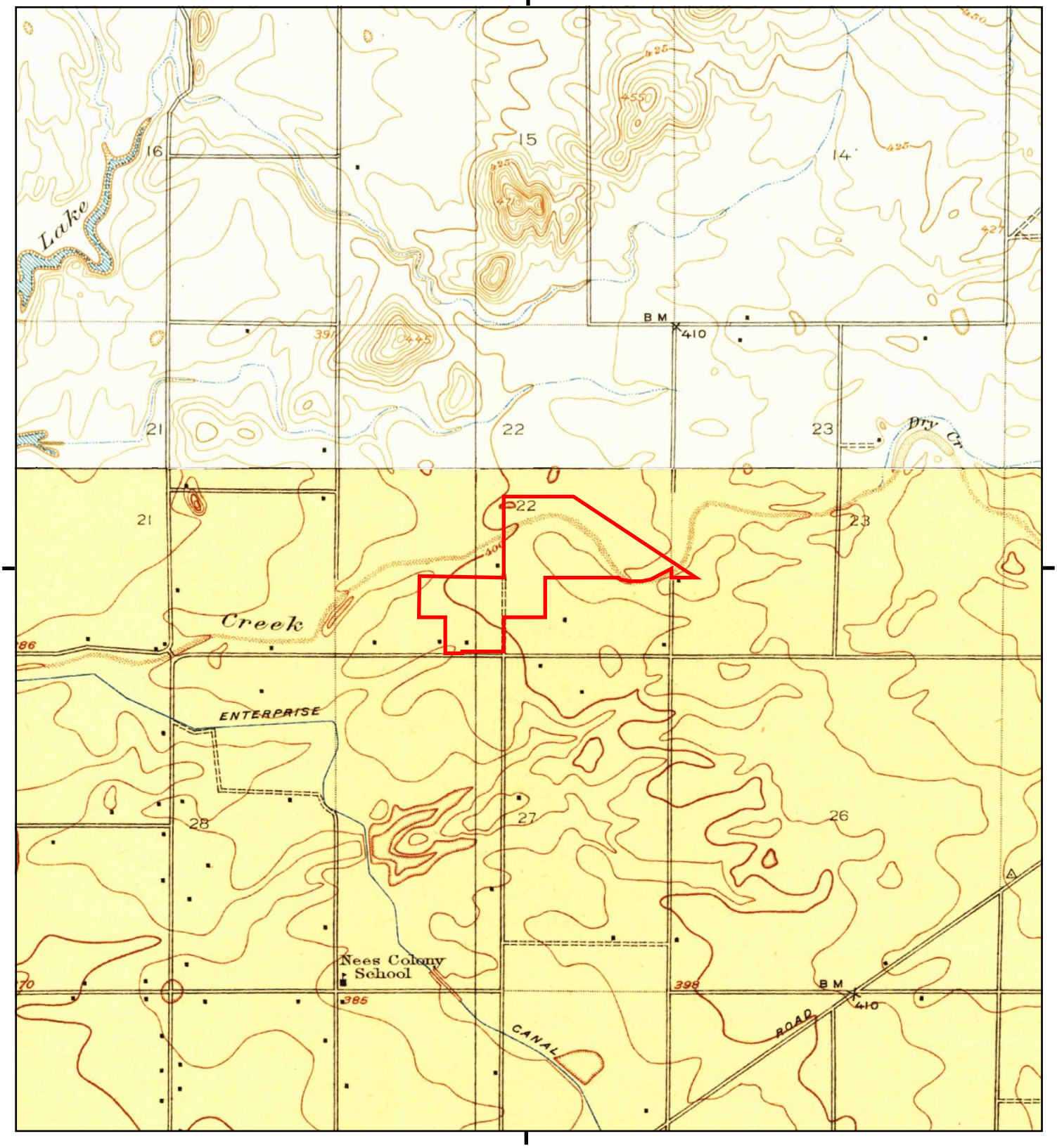
TP, Clovis, 1946, 7.5-minute
N, Friant, 1946, 7.5-minute

SITE NAME: Triangle Property
ADDRESS: East Shepherd Avenue/North Temperanc
Clovis, CA 93619
CLIENT: Krazan & Associates, Inc.

N

Historical Topo Map

1922, 1923



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Clovis, 1923, 7.5-minute
N, Friant, 1922, 7.5-minute

SITE NAME: Triangle Property
ADDRESS: East Shepherd Avenue/North Temperanc
Clovis, CA 93619
CLIENT: Krazan & Associates, Inc.

N

Triangle Property
East Shepherd Avenue/North Temperance Avenue
Clovis, CA 93619

Inquiry Number: 7208868.5
December 20, 2022

The EDR-City Directory Abstract

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Executive Summary

Findings

City Directory Images

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Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Abstract is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Abstract includes a search and abstract of available city directory data. For each address, the directory lists the name of the corresponding occupant at five year intervals.

Business directories including city, cross reference and telephone directories were reviewed, if available, at approximately five year intervals for the years spanning 1922 through 2017. This report compiles information gathered in this review by geocoding the latitude and longitude of properties identified and gathering information about properties within 660 feet of the target property.

A summary of the information obtained is provided in the text of this report.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

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RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Year	Source	TP	Adjoining	Text Abstract	Source Image
2017	Cole Information Services	-	X	X	-
2014	Cole Information Services	-	X	X	-
2009	Cole Information Services	-	X	X	-
2004	Cole Information Services	-	X	X	-
2002	R.L. Polk & Co Publishers	-	X	X	-
1999	Cole Information Services	-	X	X	-
1996	R.L. Polk & Co Publishers	-	X	X	-
1994	Cole Information Services	-	-	-	-
	Cole Information Services	-	X	X	-
1990	R.L. Polk & Co Publishers	-	-	-	-

EXECUTIVE SUMMARY

Year	Source	TP	Adjoining	Text Abstract	Source Image
1986	R.L. Polk & Co Publishers	-	-	-	-
1980	R.L. Polk & Co Publishers	-	-	-	-
1975	R.L. Polk & Co Publishers	-	-	-	-
1970	R.L. Polk & Co Publisher	-	-	-	-
1965	R.L. Polk & Co Publisher	-	-	-	-
1962	Pacific Telephone	-	-	-	-
1958	R.L. Polk & Co Publishers	-	-	-	-
1952	R.L. Polk & Co Publishers	-	-	-	-
1947	R.L. Polk & Co Publishers	-	-	-	-
1942	R.L. Polk & Co Publishers	-	-	-	-
1937	R.L. Polk & Co Publishers	-	-	-	-
1932	R.L. Polk & Co Publishers	-	-	-	-
1927	R.L. Polk & Co Publishers	-	-	-	-
1922	Polk: Husted Directory Co.	-	-	-	-

EXECUTIVE SUMMARY

SELECTED ADDRESSES

The following addresses were selected by the client, for EDR to research. An "X" indicates where information was identified.

Address	*Type*	*Findings*
6120 East Shepherd Avenue	Client Entered	X
7250 East Shepherd Avenue	Client Entered	
6658 East Shepherd Avenue	Client Entered	
6298 East Shepherd Avenue	Client Entered	X
9255 North Temperance Avenue	Client Entered	X
7016 East Shepherd Avenue	Client Entered	

FINDINGS

TARGET PROPERTY INFORMATION

ADDRESS

East Shepherd Avenue/North Temperance Avenue
Clovis, CA 93619

FINDINGS DETAIL

Target Property research detail.

FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

E SHEPHERD AVE

6120 E SHEPHERD AVE

Year	Uses	Source
2017	CAMERON CAMPBELL	Cole Information Services
2014	CAMERON CAMPBELL	Cole Information Services
2009	ERIC CAMPBELL	Cole Information Services
2004	ERIC CAMPBELL	Cole Information Services
1994	CAMPBELL, BOB	Cole Information Services

6298 E SHEPHERD AVE

Year	Uses	Source
2017	SHANNON WILLIQUETTE	Cole Information Services
2014	DAVID SWAN	Cole Information Services
2009	DAVID SWAN	Cole Information Services
2004	JUNE FULLER	Cole Information Services
1999	DAVID SWAN	Cole Information Services
1994	FULLER, ROBERT	Cole Information Services

6658 E SHEPHERD AVE

Year	Uses	Source
2017	C LAGUNAS	Cole Information Services
2014	C LAGUNAS	Cole Information Services
2009	ADBUL TAHIR	Cole Information Services
2004	TERRI BRIAR	Cole Information Services
1999	ADBUL TAHIR	Cole Information Services

7016 E SHEPHERD AVE

Year	Uses	Source
2014	VERDUGO WM LIVSTK	Cole Information Services
2009	VERDUGO WM	Cole Information Services
	PACIFIC AIRLIFT INC	Cole Information Services

FINDINGS

Year	Uses	Source
2009	KLARA METYKO	Cole Information Services
2004	WILLIAM VERDUGO	Cole Information Services
	JOAN VERDUGO	Cole Information Services
1999	KLARA METYKO	Cole Information Services
	VERDUGO WILLIAM LIVSTK	Cole Information Services
1994	VERDUGO, WILLIAM	Cole Information Services
	WILLIAM VERDUGO	Cole Information Services

7250 E SHEPHERD AVE

Year	Uses	Source
2009	LITTLE RIVER ENTERPRISES INC	Cole Information Services
2004	LITTLE RIVER ENTERPRISES INC	Cole Information Services
	JOHN MCCONNELL	Cole Information Services
1999	LITTLE RIVER ENTERPRISES PLASTERING	Cole Information Services
1994	LITTLE RIVER ENTERPRISES	Cole Information Services

East Shepherd Avenue

6120 East Shepherd Avenue

Year	Uses	Source
2002	Campbell Bob G B	R.L. Polk & Co Publishers
1996	Campbell Bob 9524 R	R.L. Polk & Co Publishers

6298 East Shepherd Avenue

Year	Uses	Source
2002	Fuller June C 1 S+ A	R.L. Polk & Co Publishers

N TEMPERANCE AVE

9254 N TEMPERANCE AVE

Year	Uses	Source
2014	MARIA CARRASCO	Cole Information Services

9255 N TEMPERANCE AVE

Year	Uses	Source
2017	NEREIDA LEYVA	Cole Information Services

FINDINGS

Year	Uses	Source
2017	NEREIDA LEYVA	Cole Information Services
2014	NEREIDA LEYVA	Cole Information Services
	NEREIDA LEYVA	Cole Information Services
2009	MARIA VASQUEZ	Cole Information Services
	MARIA VASQUEZ	Cole Information Services
2004	STEVE ABRAUGH	Cole Information Services
	STEVE ABRAUGH	Cole Information Services
2002	BUSINESSES 6 HOUSEHOLDS	R.L. Polk & Co Publishers
	Abraugh Tami L 81 A	R.L. Polk & Co Publishers
1999	MARIA VASQUEZ	Cole Information Services
	MARIA VASQUEZ	Cole Information Services

North Temperance Avenue

9255 North Temperance Avenue

Year	Uses	Source
2002	Abraugh Tami L 81 A	R.L. Polk & Co Publishers
	BUSINESSES 6 HOUSEHOLDS	R.L. Polk & Co Publishers

FINDINGS

ADJOINING PROPERTY: ADDRESSES NOT IDENTIFIED IN RESEARCH SOURCE

The following Adjoining Property addresses were researched for this report, and the addresses were not identified in research source.

Address Researched	Address Not Identified in Research Source
6120 E SHEPHERD AVE	2002, 1999, 1996, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
6120 East Shepherd Avenue	2017, 2014, 2009, 2004, 1999, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
6298 E SHEPHERD AVE	2002, 1996, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
6298 East Shepherd Avenue	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
6658 E SHEPHERD AVE	2002, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
6658 East Shepherd Avenue	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
7016 E SHEPHERD AVE	2017, 2002, 1996, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
7016 East Shepherd Avenue	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
7250 E SHEPHERD AVE	2017, 2014, 2002, 1996, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
7250 East Shepherd Avenue	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
9254 N TEMPERANCE AVE	2017, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
9255 N TEMPERANCE AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
9255 N TEMPERANCE AVE	2002, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
9255 N TEMPERANCE AVE	2002, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
9255 North Temperance Avenue	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922

TARGET PROPERTY: ADDRESS NOT IDENTIFIED IN RESEARCH SOURCE

The following Target Property addresses were researched for this report, and the addresses were not identified in the research source.

Address Researched	Address Not Identified in Research Source
East Shepherd Avenue/North Temperance Avenue	2017, 2014, 2009, 2004, 2002, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922

Triangle Property

East Shepherd Avenue/North Temperance Avenue

Clovis, CA 93619

Inquiry Number: 7208868.8

December 20, 2022

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

12/20/22

Site Name:	Client Name:
Triangle Property	Krazan & Associates, Inc.
East Shepherd Avenue/North T	215 West Dakota
Clovis, CA 93619	Clovis, CA 93612
EDR Inquiry # 7208868.8	Contact: Dulcinea Deleon

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Search Results:

Year	*Scale*	*Details*	*Source*
2020	1"=625'	Flight Year: 2020	USDA/NAIP
2016	1"=625'	Flight Year: 2016	USDA/NAIP
2012	1"=625'	Flight Year: 2012	USDA/NAIP
2009	1"=625'	Flight Year: 2009	USDA/NAIP
2005	1"=625'	Flight Year: 2005	USDA/NAIP
1998	1"=625'	Acquisition Date: January 01, 1998	USGS/DOQQ
1987	1"=625'	Flight Date: June 17, 1987	USDA
1984	1"=625'	Flight Date: June 09, 1984	USDA
1979	1"=625'	Flight Date: September 04, 1979	USDA
1973	1"=625'	Flight Date: May 08, 1973	USDA
1967	1"=625'	Flight Date: May 03, 1967	USDA
1962	1"=625'	Flight Date: August 09, 1962	USGS
1957	1"=625'	Flight Date: August 15, 1957	USDA
1950	1"=625'	Flight Date: January 31, 1950	USDA
1946	1"=625'	Flight Date: April 22, 1946	USGS
1937	1"=625'	Flight Date: October 05, 1937	USDA

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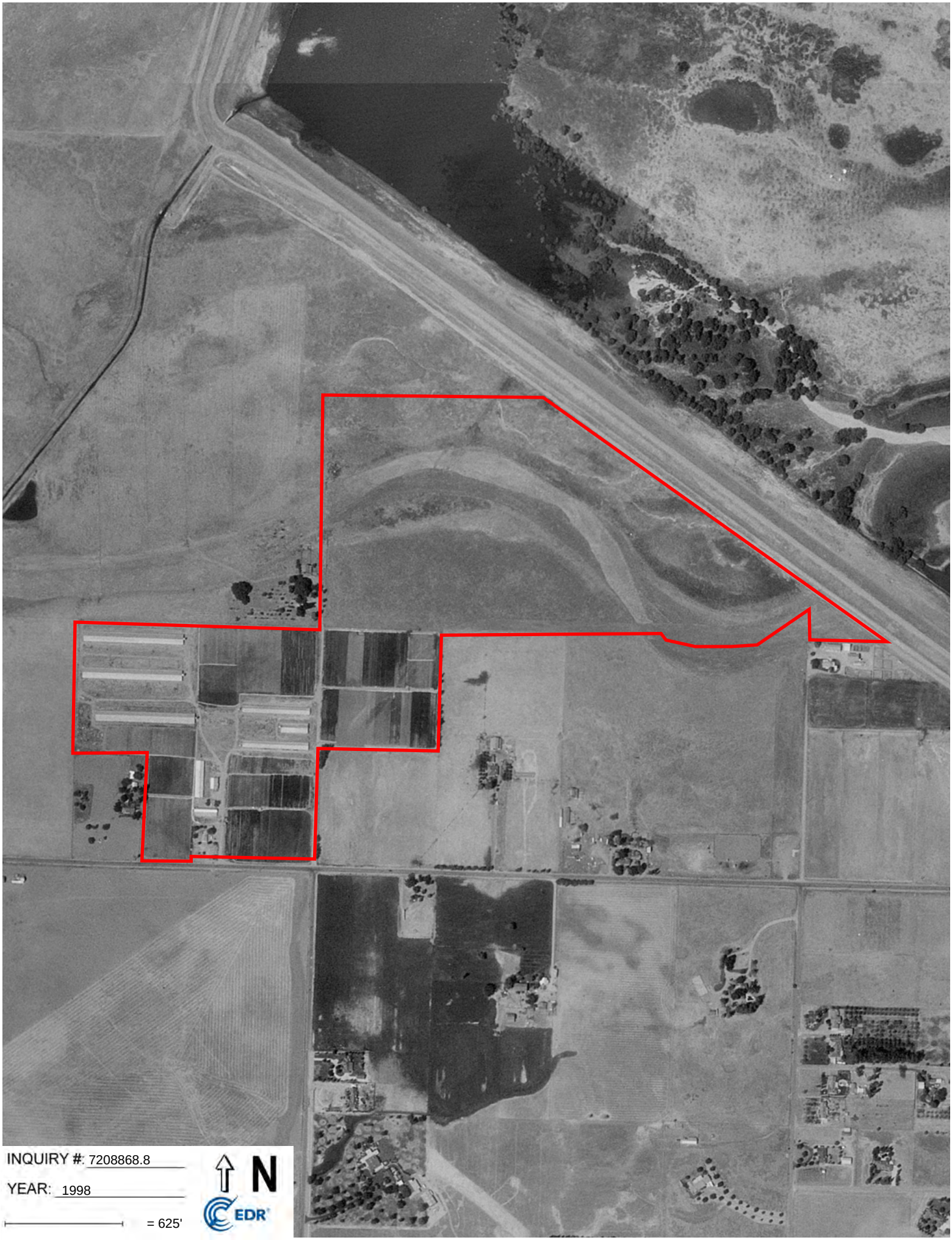
INQUIRY #: 7208868.8
YEAR: 2020
= 625'
N
EDR

INQUIRY #: 7208868.8
YEAR: 2016
= 625'
N
EDR

INQUIRY #: 7208868.8
YEAR: 2012
= 625'
N
EDR

INQUIRY #: 7208868.8
YEAR: 2009
= 625'
N
EDR

INQUIRY #: 7208868.8
YEAR: 2005
= 625'
N
EDR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YEAR: 1998
= 625'
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EDR

INQUIRY #: 7208868.8
YEAR: 1987
= 625'
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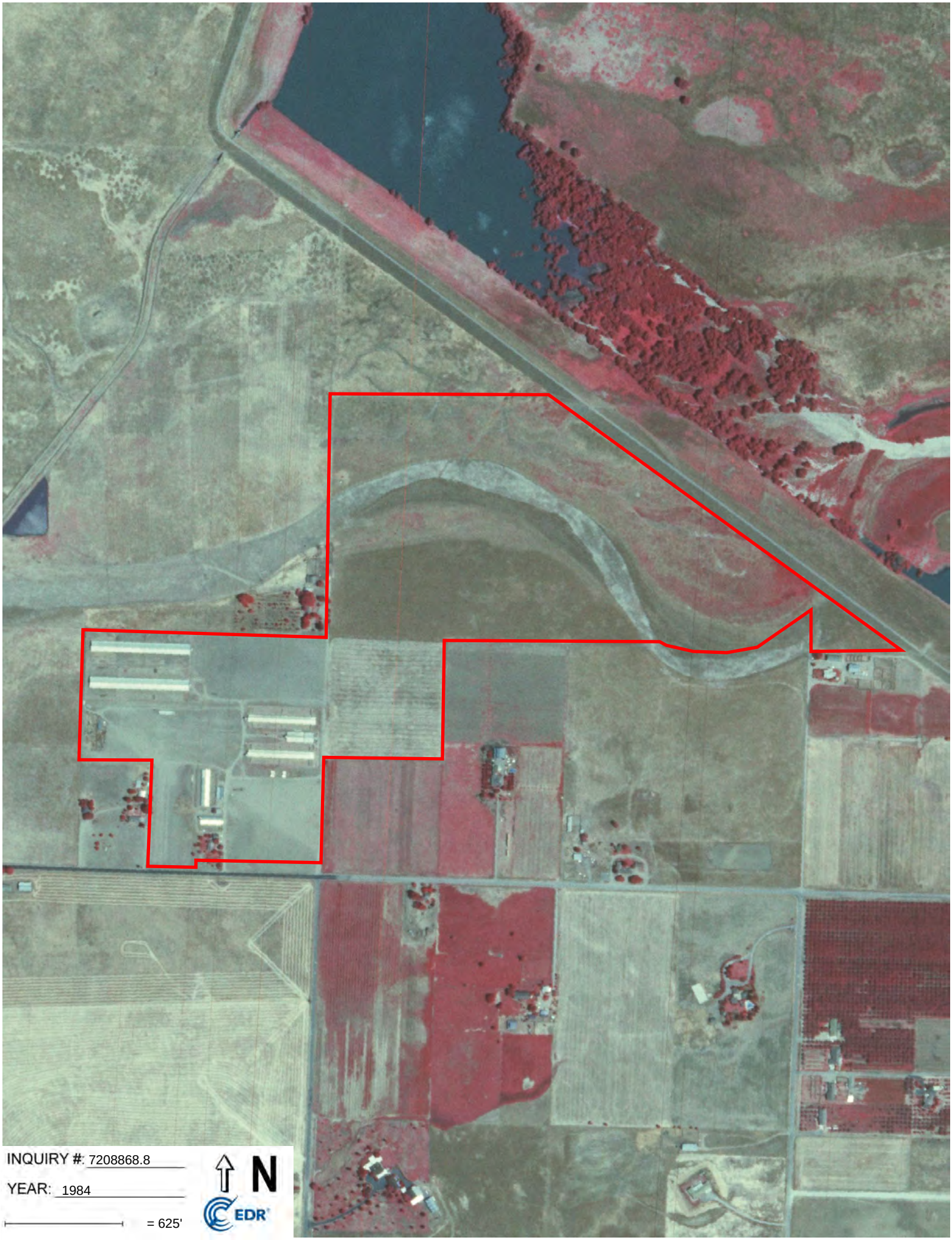
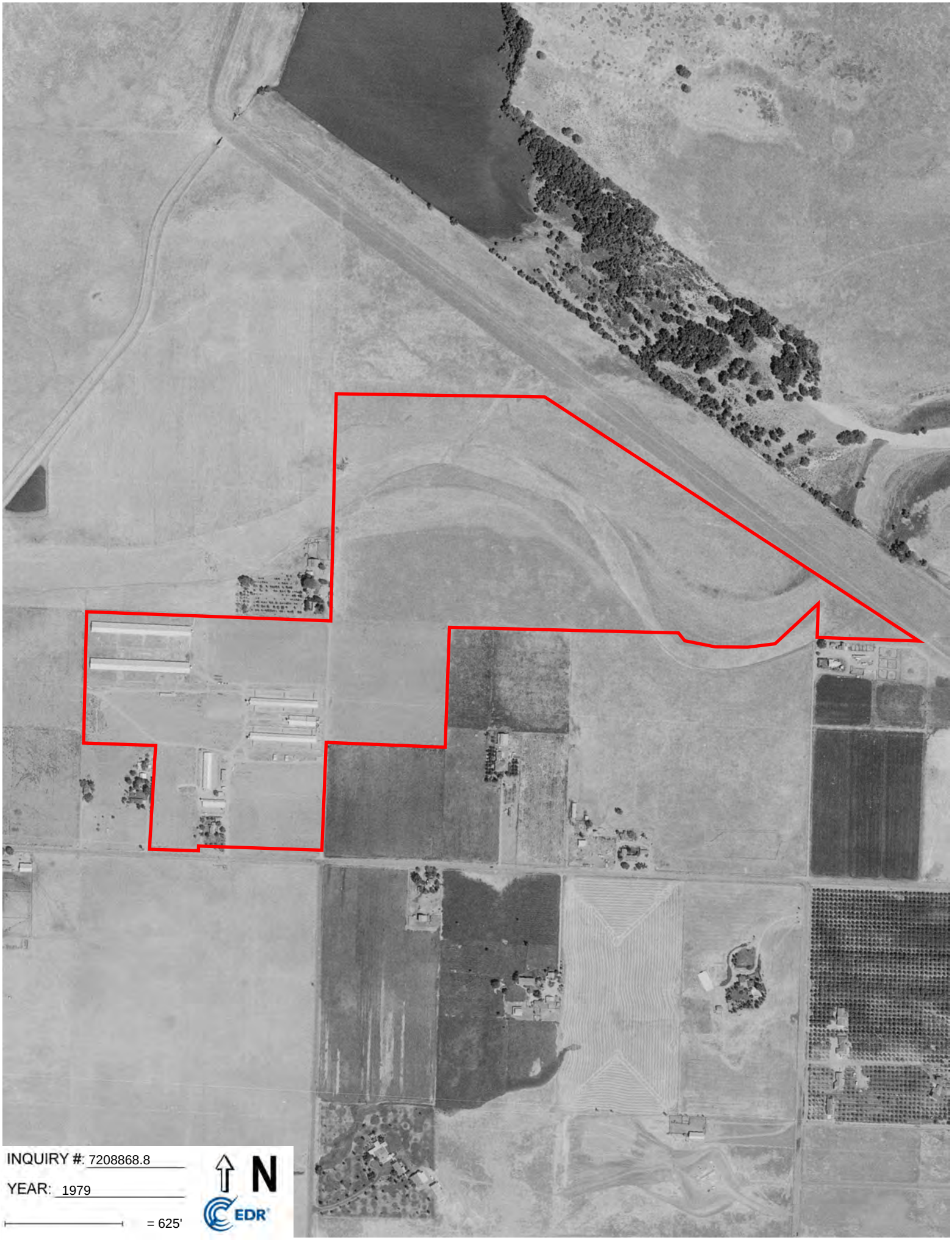
EDR


INQUIRY #: 7208868.8
YEAR: 1984
= 625'
N
EDR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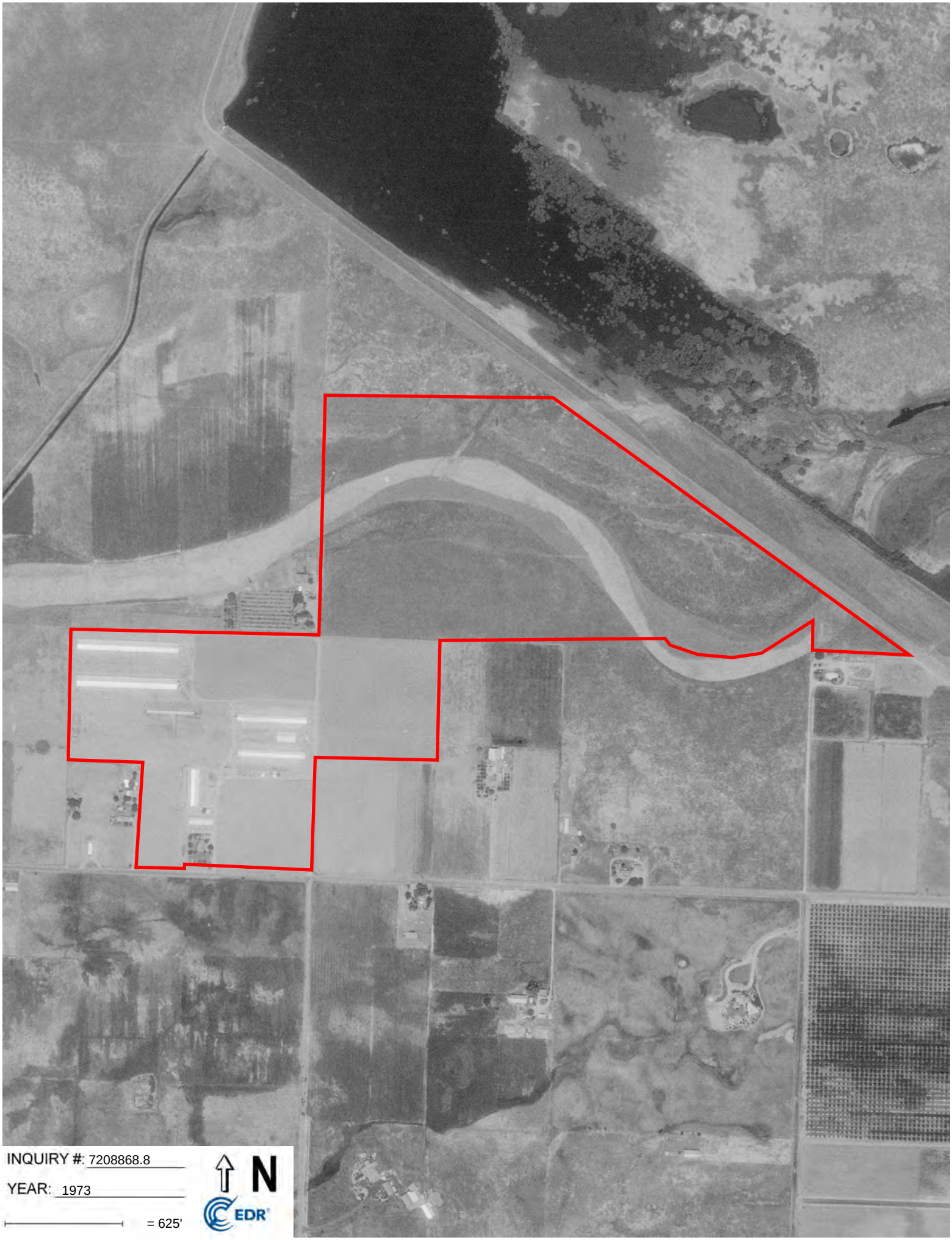
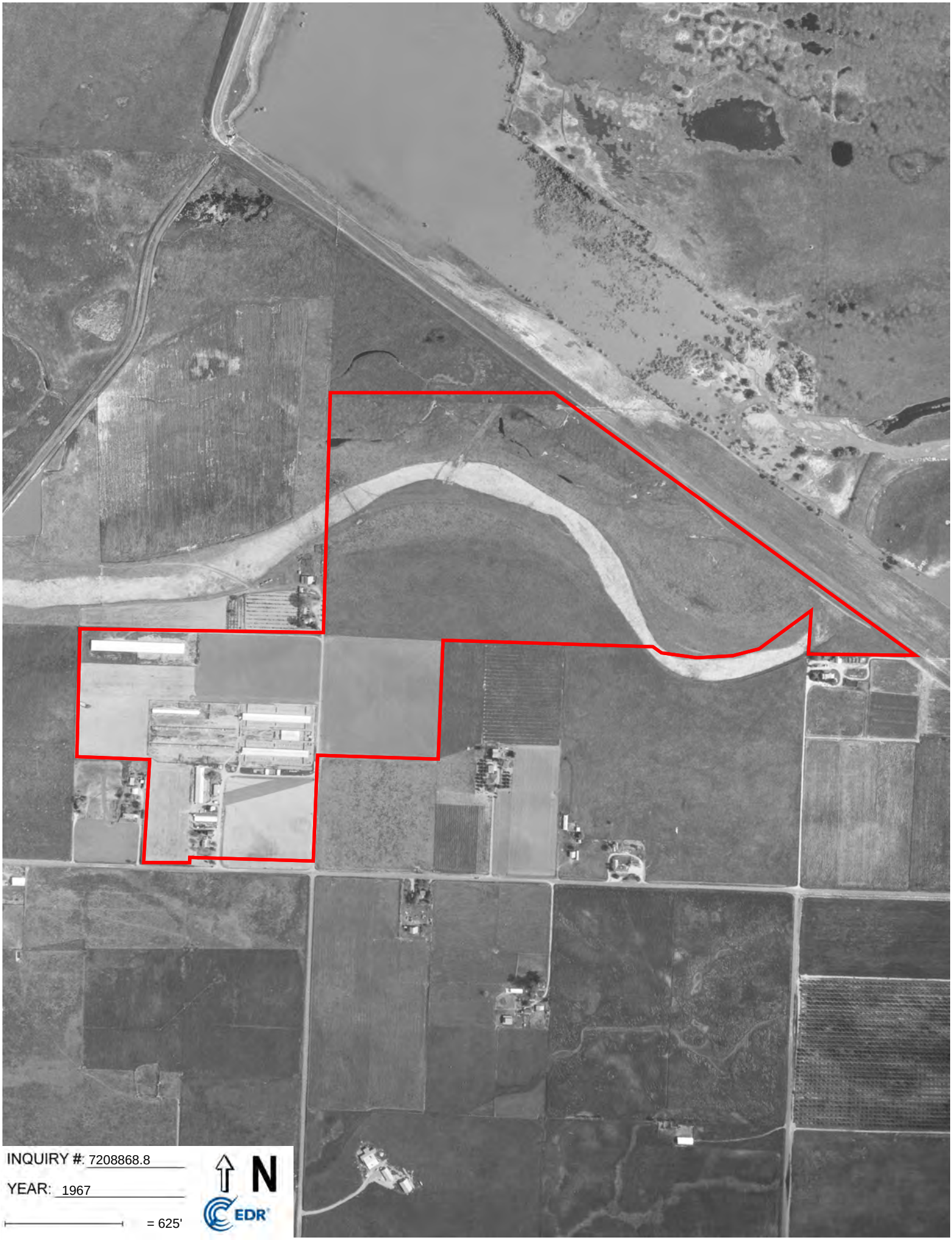
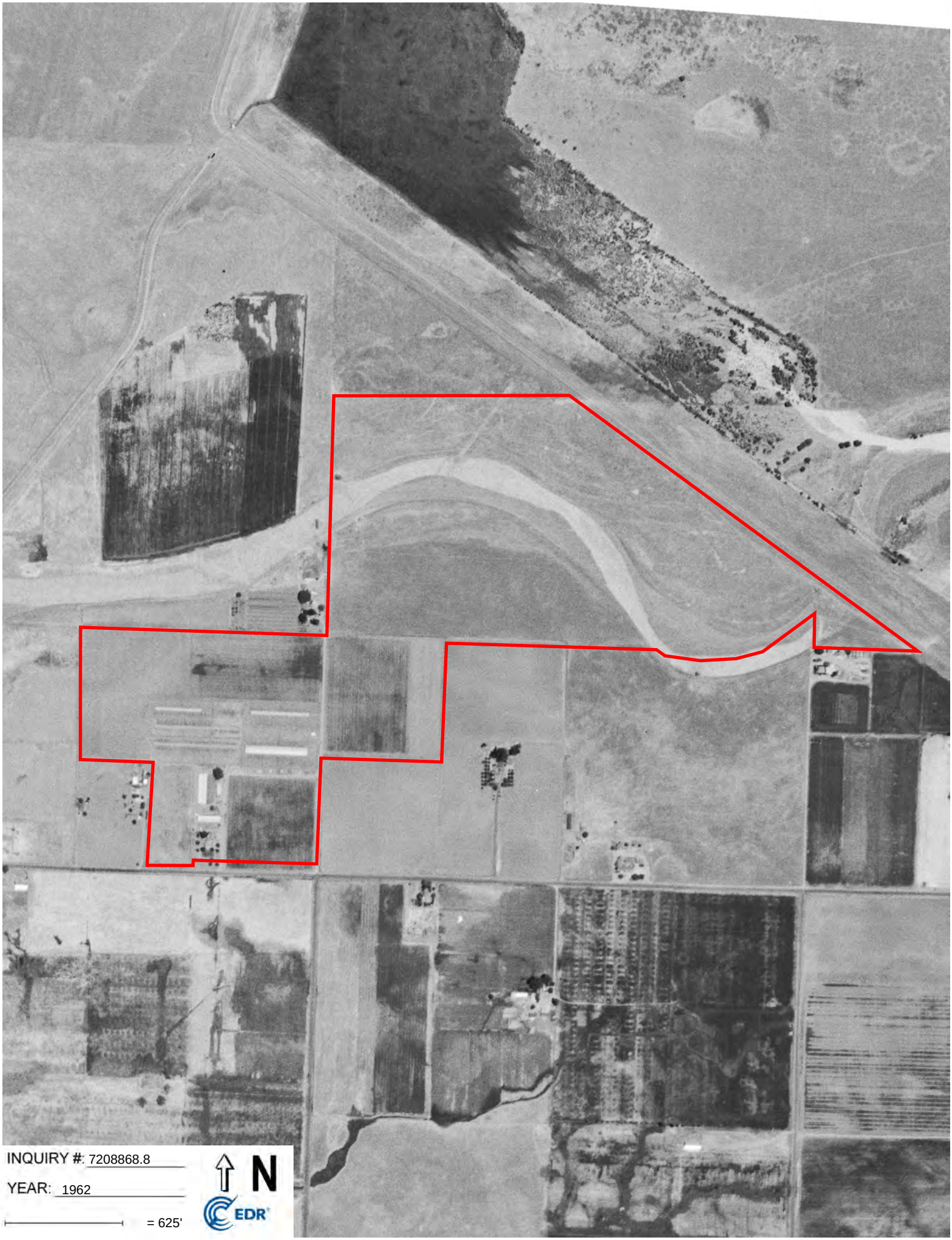
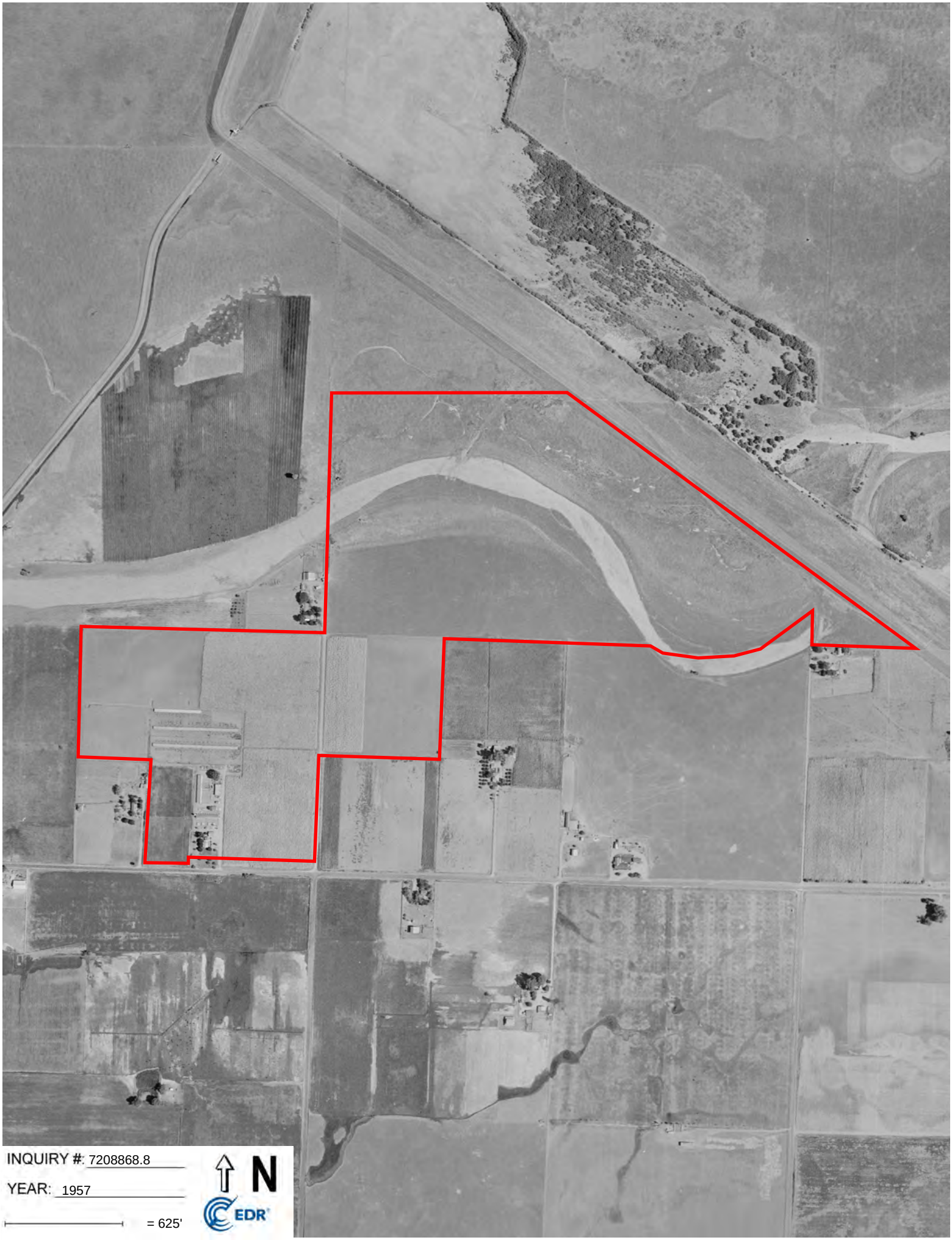
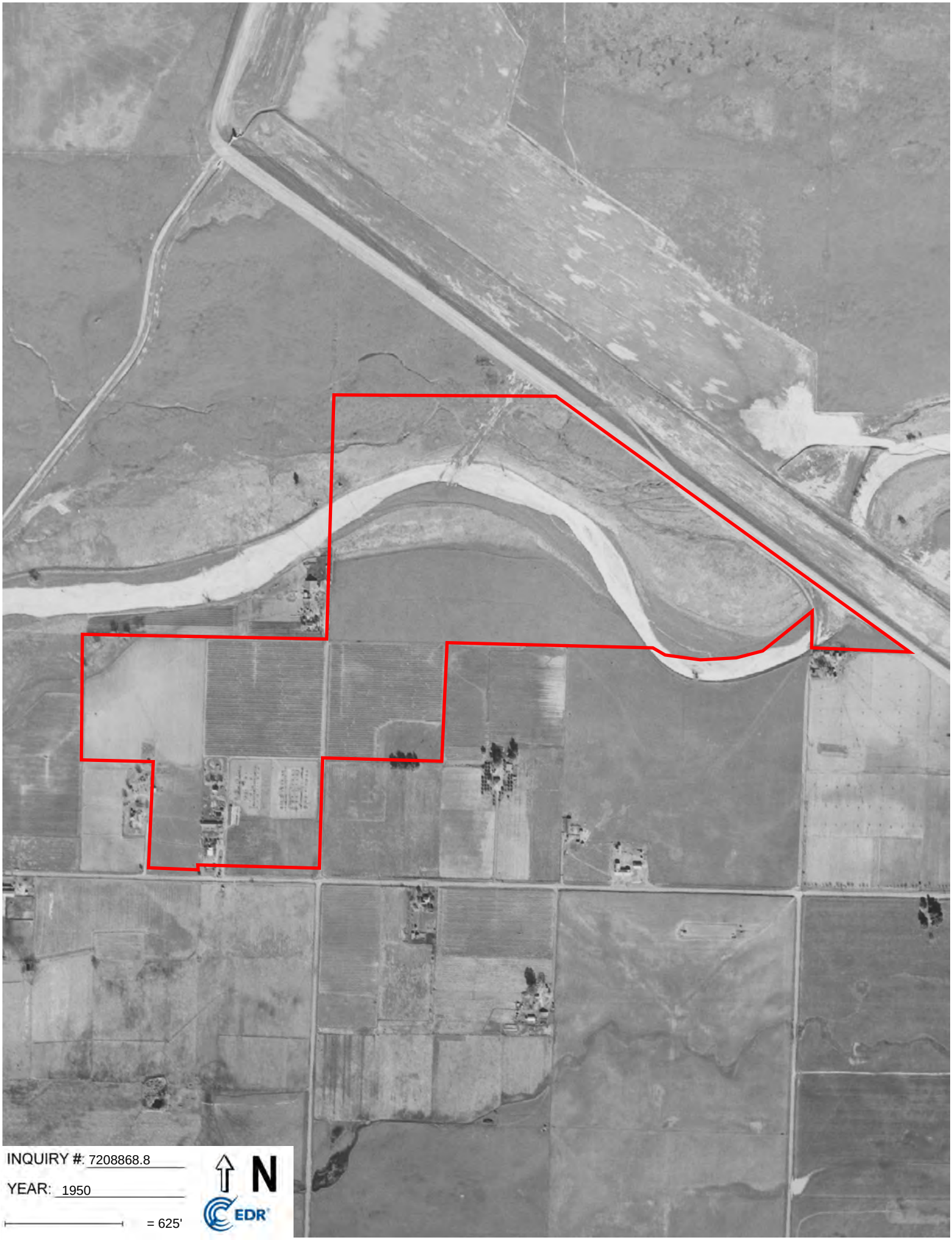
YEAR: 1979
= 625'
N
EDR


INQUIRY #: 7208868.8
YEAR: 1973
= 625'
N
EDR

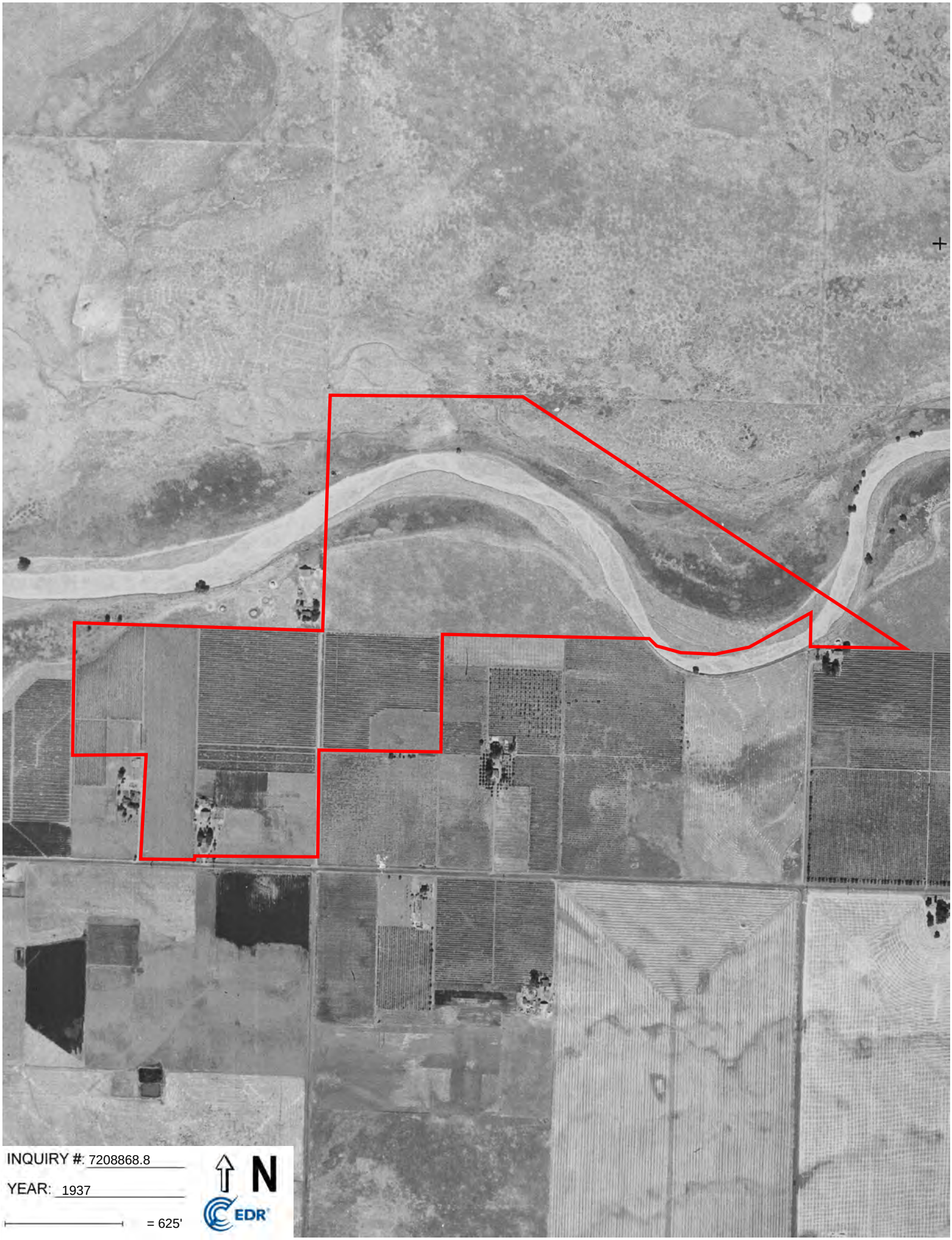

INQUIRY #: 7208868.8
YEAR: 1967
= 625'
N
EDR


INQUIRY #: 7208868.8
YEAR: 1962
= 625'
N
EDR


INQUIRY #: 7208868.8
YEAR: 1957
= 625'
N
EDR


INQUIRY #: 7208868.8
YEAR: 1950
= 625'
N
EDR

INQUIRY #: 7208868.8
YEAR: 1946
= 625'
N
EDR


INQUIRY #: 7208868.8
YEAR: 1937
= 625'
N
EDR

Clovis

Cross St. Temperance
Zone 2

DATE	PERMIT NO.	NAME
	Rewire Turkey Shed	
11/26/63	E-46806 C	Maikovich/Cozby Elec
	New Service	
11/13/68	E-3252 C	Maikovich/Howe
	Electric Permit	
4/28/69	E-7674 C	
	New Electric Service	
4/1/70	E-20445 C	Maikovich/Howe
7/24/74	Ag Exempt #2993	Maikovich
	Electric For Ag Exempt #2993	
2/21/78	E-19176 C	Maikovich/Vincent Elec
	Ag Exempt Turkey Growout	
1/12/88	AGEX-J-2888	M. Maikovich
	Septic Replacement	
2/19/88	SEP-J-3819 C 3-16-88 RS	Maikovich/ Calif. Sewage
	Service for grow out building	
3/25/88	E-J-4772 C 6-10-88	M. Maikovich
	5 H/P Ag Pump	
7/18/88	E-J-8221 C 7-21-88 RS	M. Makovich

304-031-07 557-031-335

6374 E. Shepherd

3/22/10
PG&E ELEC METER SVC CHANGE-OUT FOR TURKEY
GROWOUT BLDG 0-200AMPS
E-7346 10-101252 scanned 7/29/10

4/22/10
INSTALLATION OF A COMMERCIAL COACH
B-8364 10-101924
P-8364 10-101924
M/H PREP-8364 10-101924 scanned 7/29/10

CONSTRUCTION PERMIT

County of Fresno
DEVELOPMENT SERVICES DIVISION

MAILING ADDRESS: 2220 TULARE STREET, 6th FLOOR FRESNO, CA 93721
OFFICE LOCATION: SOUTHWEST CORNER OF TULARE & 'M' STREETS, SUITE A

Will Call

ACTIVE PERMITS YES NO

PHONE NUMBERS
24-HR REQUEST LINE
262-4131
LOCAL: 262-4469
TOLL FREE: 800-742-1011
FAX: 262-4893

6374 E SHEPHERD AVE CLOVIS

Project Address	Cross Street	Project Description:
6374 E SHEPHERD AVE CLOVIS CA 93611	TEMPERANCE AVE	INSTALLATION OF A COMMERCIAL COACH for Landscaping Business

Permit #: 10-101924-FC Issued on APN: 55703133S

Owner	Applicant	Contractor
RODDA-FOX LORAINE GAY TRUSTEE	WILLIAMS SCOTSMAN, INC.	WILLIAMS SCOTSMAN, INC.
Address: 12022 AVONETTE CT SAN DIEGO CA 92131 \	Address: 2829 S CHESTNUT ALY FRESNO CA \	Address: 2829 S CHESTNUT ALY FRESNO CA \
Phone:	Phone: (559) 441-8181 St. Lic.: 606382	Phone: (559) 441-8181 St. Lic.: 606382

APPROVALS	Approved By	Date
Application Requirements	Bruzee, Joe	April 22, 2010
Issuance Review	Bruzee, Joe	April 22, 2010

Zoning District	Required Setbacks:	Front		Side		Rear
		Min	Max	Interior	Street	Min

PROJECT INFORMATION

School Fees Due?	Yes	School District Receipt #	DEFERRED TO OCCUPANCY
Consolidated Permit?	Yes	Facility Fee 1	Office
Area 1 (sf)	1440	Facility Fee 2	Exempt
Occupancy 2	Decks (Residential/Wood)	Area 2 (sf)	220
Construction Type 2	V-N	Valuation of Construction	11280
Number of Stories	1	Mobile Home Lot Preparation?	Yes
Mobile Home Foundation (sq ft)	1440		

MECHANICAL

ELECTRICAL

PLUMBING

1 Septic System Installation

LICENSED CONTRACTOR'S DECLARATION

I hereby affirm that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 8 of the Business and Professions Code, and my license is in full force and effect.Lic. Number 606382 Class B Contractor William Scotsman Inc.

OWNER'S BUILDER DECLARATION

I hereby affirm that I am exempt from the Contractor's License Law for the following reason (Section 7031.5 Business and Professions Code). Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure prior to its issuance also requires the applicant for such permit to file a signed statement that he is licensed pursuant to the provisions of the Contractor's License Law (Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code) or that he is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars ($500.00).

☐ I, as owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044 Business and Professions Code: The Contractor's License law does not apply to an owner of property who builds or improves thereon, and who does such work himself or through his own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he did not build or improve for the purpose of sale).

☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractor's License Law).

☐ I am exempt under Sec._____ B&PC for this reason.

Owner_____ Date _____

WORKER'S COMPENSATION DECLARATION

I hereby affirm under penalty of perjury on of the following declarations:

☐ I have and will maintain a certificate on consent to self-insure for workers' compensation as provided for by Section 3700 of the Labor code, for the performance of the work for which this permit is issued.

☒ I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number :

Carrier On file Policy# EXP. 11-1-10 (This section does not need to be completed if the permit is for one hundred dollars ($100) or less.)

☐ I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the worker's compensation laws of California and agree that if I should become subject to the workers compensation provisions of Section 3700 of the Labor Code. I shall forthwith comply with those provisions.

Applicant [signature]

WARNING: FAILURE TO SECURE WORKERS' COMPENSATION COVERAGE IS UNLAWFUL AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS ($100,000), IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST, AND ATTORNEY'S FEES.

CONSTRUCTION LENDING AGENCY

I hereby affirm that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Div. C).

Lenders Name_____ Address_____

City None State_____

I certify that I have read this application and state that the above information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction, and hereby authorize representatives of this county to enter upon the above-mentioned property for inspection purposes.

Applicant Or Agent [signature]

Date 4-22-10

THIS PERMIT SHALL EXPIRE BY LIMITATION AND BECOME NULL AND VOID IF THE WORK IS NOT COMMENCED OR IF NO INSPECTIONS ARE COMPLETED WITHIN 180 DAYS.

INSPECTION RECORD

JOB ADDRESS 6374 E. Shepherd PERMIT NUMBER 10-101924 101924

(CORRECTION NOTICE DOES NOT NECESSARILY COORDINATE WITH ADJACENT INSPECTION)

BUILDING

TYPE OF INSPECTION	APPROVED BY	DATE	INSPECTOR	DATE
Flood Prone-Elevation			BJM	7-7-10
Foundation: Forms & Setback				
Foundation / Patio Piers				
Floor Girders & Joists				
Shear Panel Nailing				
Pre-Roof				
Roof Sheathing				
Roof Batten/Felt				
Roof Covering				
Exterior Lath/Siding				
Fireplace Damper				
Fireplace: Roof				
Frame				
Insulation				
Shower Wall Over Tub				
Shower Pan & Walls				
Bond Beam & Steel				
Pool Steel, Bonding & Setback				
Pre-Deck				
Pool Fencing and Gates				
Occupancy Requirements				
FINAL INSPECTION				
CERTIFICATE OF OCCUPANCY				

CORRECTION

OCCUPANCY REQUIREMENTS

1) Flood Prone: ☐ Yes ☑ No
   Map No. _____ Zone _____
2) Proposed Building Height By Zoning:
   Stories _____ Height _____
3) School Fees Due: ☑ Yes ☐ No
   District(s) Clovis Unified
   Satisfied By _____
   Receipt No. _____
4) Grading Permit Required? ☐ Yes ☑ No
   Permit # _____ Date _____
   Finaled By _____ Date JB 6/29/10
5) Land Use Permit(s)
   Permit No TMF Fee enclosed
   Permit No School Fee
   Permit No operational statement
   Is Occupancy Pending? ☑ Yes ☐ No
   Site Conditions Satisfied
   By B. Cutler Date 7/14/10 see below
6) Soil Capacity (Surface) 1500 PSF

FIRE PROTECTION: SRA ☐ Yes ☐ No

REQ.	ITEM	INSPECTOR	DATE
	On-Site Water		
	Roof Covering		
	30' Setbacks		
	Driveway		
	Turnouts		
	Address		

ELECTRICAL

TYPE OF INSPECTION	APPROVED BY	DATE	INSPECTOR	DATE
Conduit: PVC/Galv. Interior			BJM	7-7-10
Conduit: PVC/Galv. Exterior				
Rough Wiring				
Elec. Main Panel _____ Amps				
Temporary Meter				
Temporary Power Pole				
Ufer Location/Driven Ground				
Water Pipe Bond Location				
Wiring to Well				
Pool Equipment Bonding				
FINAL INSPECTION				

CORRECTIONS

MOBILE HOME

TYPE OF INSPECTION	APPROVED BY	DATE
Perm Foundation/Tie-down		
Flood Prone-Elevation		
Forms & Setbacks		
Piers/Anchors		4-28-10
Steps/Landings		
Elec. Service 200 Amps	B. Cutler	7/14/10
Grounding Electrode	B. Cutler	7/14/10
Wiring To Well		
Continuity Test		
Conduit/Feeders Conduit		6-8-10
Gas Test – Exterior		
Gas Test Manometer		
Sewer		
Waste Piping		
Septic System Removed		6-7-10
Interior Water Pipe		
Water Service Existing		
Well Seal Pad		
FINAL INSPECTION	B. Cutler	
Certificate of Occupancy	B. Cutler	7/14/10

PLUMBING

TYPE OF INSPECTION	APPROVED BY	DATE	INSPECTOR	DATE
Ground Plumbing: Soil				5-26-10
Water Pipe – Under Floor				
Water Pipe – Above Floor				
Vents & Top Out				
Gas Pipe – Interior				
Gas Test – Interior				
Gas Test – Exterior				
Second Floor Tub Test				
Septic System Part of				
House Sewer				
Water Service PVC/Galv.				
Well Seal Pad				
FINAL INSPECTION				

CORRECTIONS

REMARKS

Submit op. Statement to Joe Bruzee (262-4400) prior to final inspection

SEPTIC LEACHING Area REDUCED by 4%. 6-7-10

Mechanical

TYPE OF INSPECTION	APPROVED BY	DATE	INSPECTOR	DATE
Ducts Underfloor				
Ducts Overhead				
Wood Burning Appliance				
Refrigeration Unit/Furnace				
Evaporative Cooler				
Gas Pipe				
Gas Test				
FINAL INSPECTION				

CORRECTIONS

CASH DEPOSIT Temporary Power Occupancy	AMOUNT
APPROVED TO POST BY:	DATE
APPROVED FOR REFUND BY:	DATE
REFUNDED BY:	DATE

HAZARDOUS MATERIAL STORAGE FOR NON-RESIDENTIAL CONSTRUCTION

I certify that the occupants of this building (will/will not) need to comply with the applicable requirements of Section 25505, 25533, & 25534 of the Health and Safety Code and the requirements for a permit for construction or modification by the Air Pollution District.

Applicant _____

Form 035A Rev 5/05

PLEASE USE BLACK INK

THIS FORM IS TO BE MICROFILMED
COUNTY OF FRESNO
DEVELOPMENT SERVICES

DEVELOPMENT SERVICES DIVISION
2220 TULARE ST., SIXTH FLOOR
FRESNO, CA 93721
LOCATION
SOUTHWEST CORNER OF TULARE &
"M" STREET – STREET LEVEL

PLOT PLAN

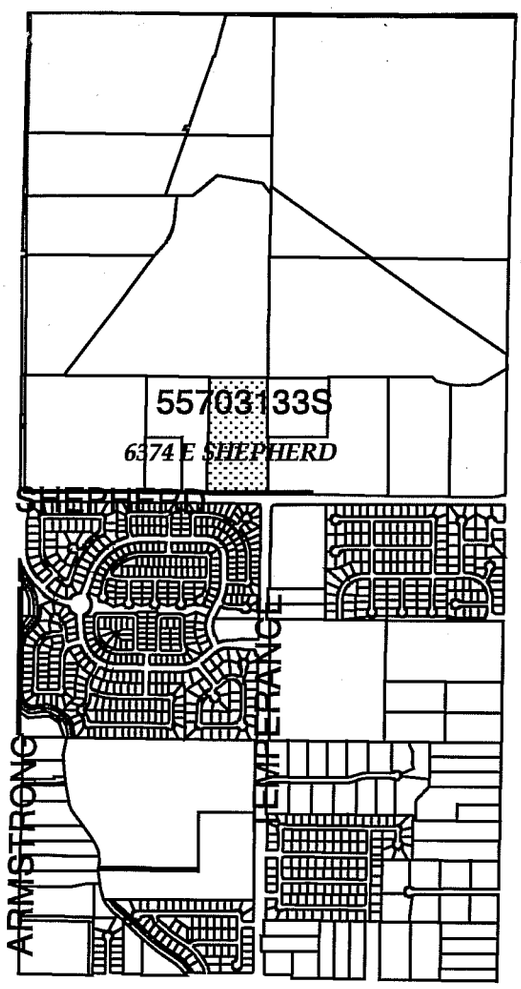
24 HOUR INSPECTION REQUEST
ANSWERING SERVICE
(559) 262-4131

TOLL FREE: 1 (800) 742-1011

NOTE: Please show the entire parcel of land with all existing and proposed structures.

PC #

ADDRESS: 6374 E. Shepherd



NOTE: All setbacks are measured from the property lines unless otherwise indicated.

APN: 557-031-33S

Approved By: JB Date: 4/22/10 Bldg. Permit #10-101924

PROJECT ADDRESS: 6374 E. Shepherd

OWNER: Rodda-Fox Loraine Bay Trust EMAIL ADDRESS: 12622 Avonette Ct.

CITY: San Diego STATE: Ca. ZIP: 92131 TEL NO:

SEWAGE DISPOSAL SPECIFICATIONS: ( ) Community Sewer ( ) Engineered System (✓) Septic

TYPE OF USE TO BE SERVED Com. Coach NO. BEDROOMS ____ OR NO. FIXTURE UNITES 6

MIN. SEPTIC TANK 750 GAL LEACHING FACTOR 120 SQ FT. /100 GAL NO. TEST HOLES INSPECTED ____

WATER WELL SPECIFICATIONS
WELL LOG NO. ____
DATE: ____
GPM: ____

COMMENTS:

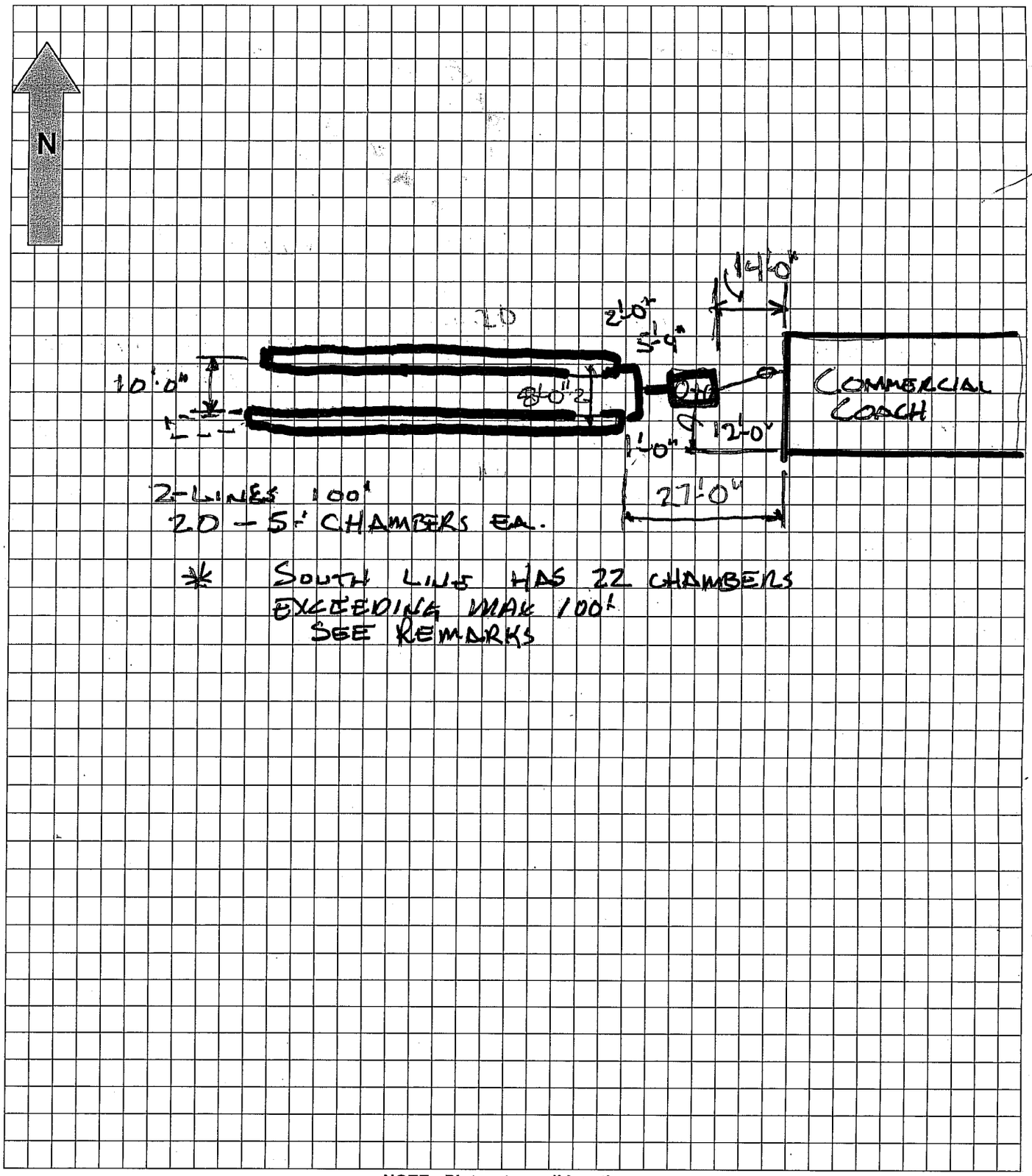
ON SITE INSPECTION BY: ____ DATE: ____

his plot plan accurately shows all existing and proposed structures buildings and mobile units on the property and their relationship to property lines and each ther. I hereby state that the information above is correct. I understand that a permit must be obtained before any construction is started and that an inspection of l work is required, including underground work prior to backfilling.

ignature ____ Date ____

Job Address: 6374 E. Shepherd

WEL



NOTE: Plot water well location

SEWAGE DISPOSAL SYSTEM SPECIFICATIONS

CONTRACTOR: * LEACHING CHAMBERS

TANK TYPE:	TANK SIZE:	SEEPAGE PITS:	LEACHING FIELD
( ) CONCRETE	DIA. 1ST COMP ____	NUMBER ____	TOTAL LENGHTH 200 FT.
( ) METAL	2ND COMP ____	DIAMETER ____ FT.	TOTAL WIDTH * IN.
(✓) OTHER Plastic	3RD COMP ____	DEPTH ____ FT.	NO. OF LINES 2
	LIQUID DEPTH ____	DIST. TO WELL ____ FT.	ROCK UNDER PIPE * IN.
			DIST. TO WELL +200' FT.
	TOTAL LIQUID: CAPACITY 750 GAL.	SQUARE FEET ____	SQUARE FEET 600

MANUFACTURER: NORWESCO

C:\Documents a...d Settings\kolivas\Local Settings\Temporary Internet Files\OLK11\F036-A NEW PLOT PLAN FORM (3).doc

PLOTTED BY: D. Mather / [signature] DATE: 5-26-10 / 6-7-10

==========

County of Fresno
Department of Public Works && Planning
Idress: 2220 Tulare Street, 6th Floor Fresno,
REG-RECEIPT:749 - 8364
CASHIER ID : CAK1234 Apr 22 2010
Date Printed: 4/22/2010 16:06:03

==========

10101924FC $2,073.75

SubTotal $2,073.75
PST
GST
TOTAL DUE

RECEIVED FROM :
RODDA-FOX LORAINE GAY TRUSTEE
CHECK $2,073.75

TOTAL TENDERED $2,073.75

CHANGE DUE $0.00

==========

INVOICE

County of Fresno
Department of Public Works & Planning
Mailing Address: 2220 Tulare Street, 6th Floor Fresno, CA 93721
24-HR REQUEST LINE: 262 4131 LOCAL: 262-4469
TOLL FREE: 800-742-1011 FAX: 262-4893

INVOICE TO: RODDA-FOX LORAINE GAY TRUSTEE

INVOICE NO.: 36463
INVOICE DATE: Apr 22, 2010
PERMIT #: 10 101924 FC
REFERENCE #:
PROJECT LOCATION: 6374 E SHEPHERD AVE
PROJECT DESCRIPTION: INSTALLATION OF A COMMERCIAL COACH

FEE DESCRIPTION	AMOUNT	COMMENT
Violation	$515.40	
Microfilm/Copies	$59.00	9 sheets
Workers Comp.	$7.50	
Building Permit Issuance	$38.00	
CA Bldg Standards Comm. Fee (SB-1473)	$65.00	
Public Facility Fee(Office B)	$740.00	
Building Construction Permit	$267.90	$11280 Valuation
Septic System Installation	$141.08	Qty 1
SMI	$2.37	
MH Lot Preparation Permit	$237.50	
TOTAL	**$2,073.75**	

SUMMARY:

BUILDING PERMIT	$267.90
PLUMBING PERMIT	$141.08
BUILDING PERMIT ISSUANCE	$38.00
MOBILEHOME LOT PREP	$237.50
CA Bldg Standards Comm. Fee (SB-1473)	$65.00
Microfilm/Copies	$59.00
Public Facility Fee(Office B)	$740.00
SMI	$2.37
Violation	$515.40
Workers Comp.	$7.50
TOTAL	**$2,073.75**

TOTAL BILLED:	$2,073.75
PAYMENT RECEIVED:	$0.00
BALANCE DUE:	**$2,073.75**

JOB ADDRESS: 6374 E. Shepherd
PROJECT: Commercial Coach for Landscaping Bussiness
PLAN CHECK NO. _____ PERMIT NO. 10-10/924

1) Is there a jacket for this address?
(✓) Yes ; ( ) No - ( )Notified cashier

2) Are there existing septic records?
( ) No ; (✓) Yes
If yes, do they need to be attached?
(✓) Yes; ( ) No

3) Is a grading permit required?
(✓) No ; ( ) Yes ; ( ) Unknown
Has one been issued? ( ) Yes ; ( )No
No grading / No flood zone GG 4/22/10

4) Does the permit form include:
A. (✓) Address
B. (✓) Nearest town
C. (✓) Cross street
D. (✓) Owner's name/address/phone
E. (✓) Contractor name/address/phone
F. (✓) Designer's name/address/phone
G. (✓) Exact project
H. (✓) Legal Description
I. (✓) APN (Assessor's Parcel Number)
J. (✓) Zone District
K. (✓) Min. & Max. Setbacks
L. (✓) SLUC
M. (✓) Flood Map & Zone
N. (✓) Building Height
(1) Stories: _____
(2) Plate: _____
(3) Ridge: _____
O. (✓) School District
P. (✓) Grading Permit
Q. (✓) Land Use Permit
R. (✓) SRA Requirements & Fee
S. (✓) Valuation Code

5) Must an Owner / Bldr. Verification be mailed?
(✓) No, why? ( ) Completed (✓) Contractor
( ) Yes/Unknown - Date mailed_____

6) Is a Certificate of Insurance required?
( ) No (✓) Yes, Is it on file? (✓) Yes ( ) No
Expiration Date: 11-1-10

7) Does the permit form include:
A. (✓) Owner-Bldr/Cont. declaration
B. (✓) Contractor's license class
C. (✓) Worker's Comp. declaration
D. (✓) Lender's name/address
E. (✓) Certification signature

8) Is this a legal lot?
Mapping: (✓) Yes; ( ) Unknown
Zoning : (✓) Yes; ( ) Unknown
Merger: ( ) Yes; (✓) No

9) Is the proposed use allowed?
(✓) Yes ( ) Need Operational Statement

10) Has a special zoning clearance been submitted to allow this use?
(✓) No ( ) Yes #_____

11) Are development fees due?
A. Drainage
(✓) No - Why? ( ) Outside (✓) Exempt
( ) Possibly - Date sent_____
B. Sewer: ( ) Yes ( ) No
C. Water: ( ) Yes ( ) No
D. School District: ( ) Yes ( ) No
E. Other: _____

12) Is a well log required?
( ) Yes (✓) No

13) Does this require a septic review?
(✓) No ( ) Yes, date logged:_____
Why? ( ) Test hole; ( ) Small lot
( ) Engr. Report ; ( ) Other_____

14) Does the Site Plan include:
A. (✓) All property lines
B. (✓) Adjacent streets & closest cross-street
C. (✓) Parcel Size
D. (✓) Easements
E. (✓) North Arrow
F. (✓) Accurate Property Dimensions
G. (✓) Existing & Proposed Buildings
H. (✓) Well & Septic Location
I. (✓) Driveway Location
J. (✓) Proposed Setbacks
K. (✓) Width of Road
L. (✓) O.P.S.H. (if applicable)
M. (✓) Turn-Around Area
N. (✓) Overhangs into Required Yards
O. (✓) LPG Tank / Water tank
P. (✓) Flood Prone Stamp

15) Does the Plot Plan form include:
A. (✓) A vicinity (location) map
B. (✓) APN (Assessor's Parcel Number)
C. (✓) Address
D. (✓) Owner's Name and Address
E. (✓) Septic Size
F. (✓) Leaching Factor
G. (✓) Dry-well Limitations
H. (✓) Water Well Information
I. (✓) Signature

16) Special Requirements:
A. (✓) Lot Coverage, _____% allowed
B. (✓) Setbacks for Major Streets
C. (✓) Street Sides for Garages
D. (✓) Accessory bldg. in req. yards
E. (✓) Space between buildings
F. (✓) CNEL for FAT
G. (✓) Soil Subsidence Areas
H. (✓) Westland's Water District
I. (✓) Alta Irrigation District
J. (✓) Friant Redevelopment
K. (✓) Water Filtration H.D. Clearance
L. (✓) State Floodway Maps
M. (✓) Flood Prone Certification
N. (✓) Earthquake - Special Study
O. (✓) Pull Land Use/SPR Envelope
P. (✓) WWD/CSA
Q. (✓) Specific Plan Areas

17) (✓) ALCC Clearance

18) Zoning, plot plan & plan check letter signed?
(✓) Yes; ( ) No

19) Other _____

Processed By: [signature] Date: 4/22/10

NOTE: The following items must be cleared before permits are issued:

C:\Documents and Settings\rtani\My Documents\checklist.doc

Description of Operations

6374 E. Shepherd

Clovis, CA 93619

We run our Landscape Company, Landscape Connection, Inc. and our Commercial Maintenance Company, Evergreen Lawn Care & Maintenance, Inc. out of this location. It is where we store our trucks, equipment, and inventory. It is also our office.

Thanks,

Aaron McCauley

The information given below is intended to provide general guidance related to the RTMF and is not intended to be, nor is, legal advice. Applicants for developments that might be subject to the RTMF should submit the details of their project to the RTMF Joint Powers Agency for determination of the amount due, if any.

INFORMATIONAL SUMMARY

REGIONAL TRANSPORTATION MITIGATION FEE

Background: Measure "C" Extension, passed by the voters of Fresno County in November 2006, included a provision for the establishment of a Regional Transportation Mitigation Fee (RTMF). The purpose of the fee is to create a mechanism for new development to pay its fair share of the cost of road improvements based on the expected traffic impacts generated by the development.

Date of Effectiveness: The RTMF is effective for all developments approved on or after January 1, 2010, unless the development is exempt for of one of the reasons described below.

Developments Subject to the Fee: Generally, all new developments occurring in Fresno County are required to pay the RTMF, with amounts varying based on the expected traffic impact of the development, less the development falls into one or more of the following exempt categories:

a) The development is to be used for public or non-profit education

b) The development is for use by a government agency for a governmental function (government-owned commercial developments are not exempt)

c) The development is the subject of an unexpired tentative map, vested tentative map, or subdivision map approved prior to January 1, 2010.

d) Renovations or improvements to existing residential buildings are exempt if the number of dwelling units is not increased. Renovations or improvements to existing non-residential buildings are exempt if the floor space is not increased.

Payment of the Fee: The RTMF must be paid to the RTMF Joint Powers Agency, located at 2035 Tulare Street, Suite 201, Fresno, CA. Please call ahead to (559) 233-4148, extension 200, to ensure that staff will be on hand to process your payment. The amount to be paid is based on the number and type of dwelling unit(s) if any, and the square footage of floorspace and type of non-residential building(s) if any. The rate to be paid is the rate in effect at the time of payment.

Payment may be made at any time prior to issuance of a certificate of occupancy. A Record of Payment will be issued as proof that the RTMF obligations, if any, have been met. Developments exempt under points A, B, or C above require a Record of Payment from the RTMF Joint Powers Agency, even though the amount paid will be zero. A service fee may be charged for issuance of a Record of Payment.

I acknowledge that I have read and understand this information, and am aware that the City or County will not issue a certificate of occupancy until I have fulfilled my obligations, if any, regarding the RTMF.

Representative of the Applicant

4/22/10
Date

RECORD OF PAYMENT OF REGIONAL TRANSPORTATION MITIGATION FEE

REGIONAL TRANSPORTATION MITIGATION FEE JOINT POWERS AGENCY

2035 Tulare Street, Suite 201, Fresno, CA 93721
(559) 233-4148, ext. 200 www.fresnocog.org

APPLICANT
Name: William Scotsman, Inc.
Contact Person: Aaron McCauley
Address: 1530 N. Dewitt
Clovis Ca. 93619
Telephone Number: 323-8139

PROJECT
Job Site Address 6374 E. Shepherd
Tract Number
Lot/Parcel Number

Building Permit Issued 4/22/10 (DATE)
Final Map Recorded Pre 2008 (DATE)
Parcel Map, Tentative Map filed, Deemed Complete by Agency Pre 2008 (DATE)

Single-Family Dwelling		dwelling unit @ $1,200/DU	$
Multi-Family Dwelling		dwelling units @ $834/DU	$
Non-Profit Education		Exempt from RTMF	
Government		Exempt from RTMF	
Commercial/Retail		square feet @ $1.36	$
Commercial/Office/Service		square feet @ $0.85	$
Light Industrial		square feet @ $0.34	$
Heavy Industrial		square feet @ $0.07	$
Other Non-Residential		square feet @ $0.29	$
		Total Fee Due (subtotal)	$
		Handling Fee	$
		Total Amount Due	$

Applicant — Date 4/22/10

Joe Bruzee — Representative of Permit Issuing Agency — Date 4/22/10 — County of Fresno — Issuing Agency

DISPOSITION OF RTMF

_____ RTMF Joint Powers Agency certifies that the above fees have been PAID IN FULL

_____ RTMF Joint Powers Agency certifies that the above project is EXEMPT from the requirement to pay the RTMF because _____

Representative of the RTMF JPA — Date

Note: The fees shown are those in effect as of January 1, 2010. Fees are subject to change. The amounts due will be based on the fees in effect on the day the fee is paid.

This form must be validated by the Fresno County Regional Transportation Mitigation Fee Joint Powers Agency and returned to the Permit Issuing Agency prior to final inspection or certificate of occupancy.

CLOVIS UNIFIED SCHOOL DISTRICT
1450 Herndon Avenue, Clovis, California 93611
(559) 327-9000/FAX (559) 327-9069

DEVELOPER FEE CERTIFICATION

Unless an even shorter time is specified herein, this certificate is valid only if the permit to which it applies is actually issued no more than 180 days after its date. Certificates are non-transferable. Original Certificate must be submitted to city/county agency. Original certificate required for refund. Copies are for informational purposes only.

SUBDIVISION NO. _____ LOT NO. _____

OWNER/DEVELOPER:
Name: Rodda-Fox Loraine Gay Trustee
Address: 12022 Avonette Ct.
San Diego, Ca. 92131
Contact Person: Aaron McCauley
Telephone: 323-8139

TYPE OF DEVELOPMENT: [CIRCLE ONE]
SFR, Duplex, Triplex, PUD
Apartment Complex [number of units _____]
Mobile Home, Addition to SFR
Shopping Center/Retail, Office, Warehouse
Other: RETAIL - NURSERY

RESIDENTIAL FEE APPLICABLE TO THE PROJECT: [check one]

( ) Government Code section 65995(b)(1) of _____ per square foot
( ) Government Code section 65995.5, Level Two Alternative Fee of _____ per square foot

DEVELOPMENT INFORMATION:

Address: 6374 E. Shepherd FR, 93619

Residential Development: _____ square feet @ $ _____ sq. ft. = $ _____

Commercial Development: 1440 square feet @ $ .47 sq. ft. = $ 676.80

4/22/10

NOTICE: Pursuant to Assembly Bill 3081 (CHAP 549, STATS. 1996), this will serve to notify you that the 90-day period in which you may protest the fee or other payment identified above will begin to run from the date the fee is paid to the District, unless the fee was imposed by a City or County as a condition of your project's approval, in which case, the 90 day protest period began at the time your project was approved.

X _____
Owner/Developer

X Clovis Unified School District certifies that the above fees have been PAID IN FULL

_____ Clovis Unified School District certifies that the above project is EXEMPT from the above fees because _____

Clovis Unified School District
Developer Fee Collections
PROCESSED

78415
Receipt Number

District Representative Signature _____ Date 6/29/10

C.U.S.D. Contact Persons: JONI EISNER 559/327-9053 OR PAT KRAFT 559/327-9115

( ) City of Clovis
Steve L. Baker
Building Department
1033 Fifth Street
Clovis, CA 93612
(559) 324-2390

(X) City of Fresno
Nick Yovino
Director
2600 Fresno St., 3rd Floor
Fresno CA 93721
(559) 621-8084

( ) Fresno County
Bernard Jimenez
Manager
2220 Tulare, 6th Floor
Fresno CA 93721
(559) 262-4029

6/11/04

RECORD OF PAYMENT OF REGIONAL TRANSPORTATION MITIGATION FEE

REGIONAL TRANSPORTATION MITIGATION FEE JOINT POWERS AGENCY

2035 Tulare Street, Suite 201, Fresno, CA 93721
(559) 233-4148, ext. 200 www.fresnocog.org

APPLICANT
Name: William Scottman, Inc.
Contact Person: Aaron McCauley
Address: 1530 N. Delwit
Clovis, Ca. 93619
Telephone Number: 323-8139

PROJECT
Job Site Address 6374 E. Shepherd Clovis 93619
Tract Number
Lot/Parcel Number

Building Permit Issued 4/22/10 DATE
Final Map Recorded Pre 2008 DATE
Parcel Map, Tentative Map filed, Deemed Complete by Agency Pre 2008 DATE

Single-Family Dwelling		dwelling unit @ $1,200/DU	$
Multi-Family Dwelling		dwelling units @ $834/DU	$
Non-Profit Education		Exempt from RTMF	
Government		Exempt from RTMF	
Commercial/Retail		square feet @ $1.36	$
Commercial/Office/Service	1460	square feet @ $0.85	$ Ø
Light Industrial		square feet @ $0.34	$
Heavy Industrial		square feet @ $0.07	$
Other Non-Residential		square feet @ $0.29	$
		Total Fee Due (subtotal)	$ Ø
		Handling Fee	$ Ø
		Total Amount Due	$ Ø

Regional Transportation Mitigation Fee

PROCESSED

Applicant — Date 4/22/10

Representative of Permit Issuing Agency — Joe Bruzee — Date 4/22/10 — Issuing Agency County of Fresno

DISPOSITION OF RTMF

____ RTMF Joint Powers Agency certifies that the above fees have been PAID IN FULL

✓ RTMF Joint Powers Agency certifies that the above project is EXEMPT from the requirement to pay the RTMF because temporary structure while permanent office is constructed

Representative of the RTMF JPA — Date 06-29-10

Note: The fees shown are those in effect as of January 1, 2010. Fees are subject to change. The amounts due will be based on the fees in effect on the day the fee is paid.

This form must be validated by the Fresno County Regional Transportation Mitigation Fee Joint Powers Agency and returned to the Permit Issuing Agency prior to final inspection or certificate of occupancy.

6374 E. Shepherd

COUNTY OF FRESNO

DEPARTMENT OF PUBLIC WORKS
DIVISION OF BUILDING AND SAFETY

mber 2993

Date 24 JUL 74

STATEMENT OF FACTS SUPPORTING
AGRICULTURAL EXEMPTION

Valuation $1500.00

6374 E. Shepherd Clovis

Name MARK MAIKOVICH

Location of Property 1/4 mi n of Shepherd on Temperance

Hereby declare(s):

That __he__ plan(s) to construct a ~~building~~ Turkey shade or ~~structure~~, to wit, a _____

For Relocations:

to be moved from: _____ to: _____

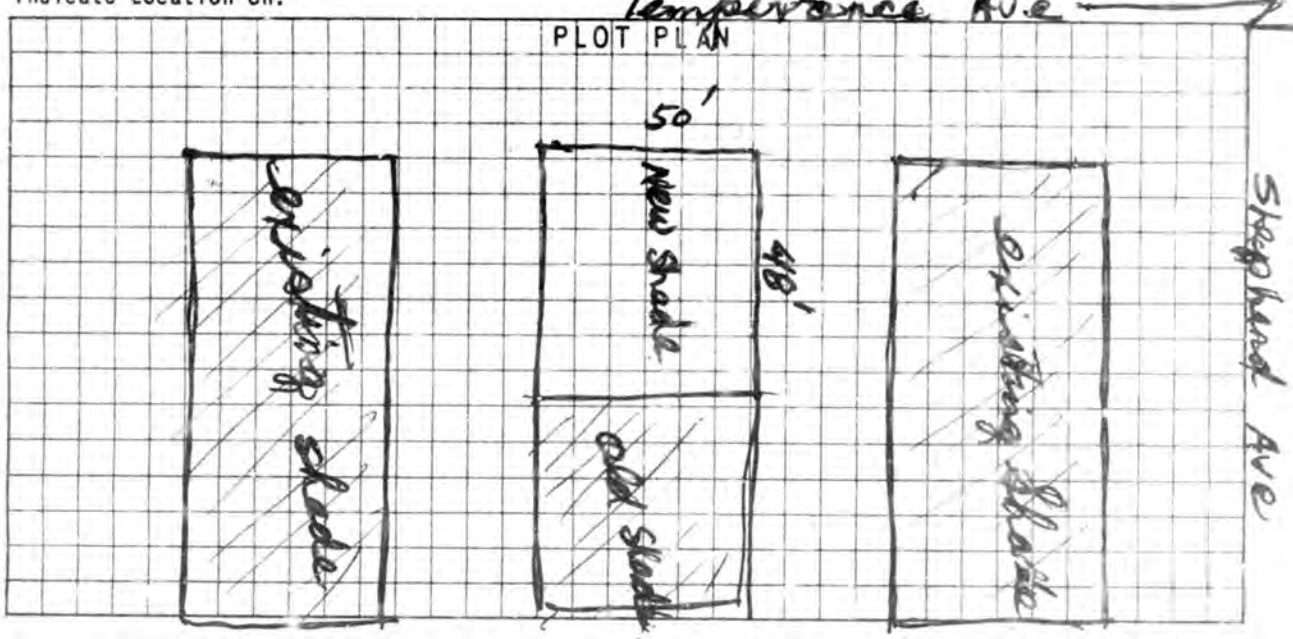
Mover to be: _____ Public Works Notified: _____

on the property situated in Fresno County, State of California (Legal Description):

APN #304-030-13 S E1/2 SE4 SE4 SEC. 22 18 21

Indicate Location on: Temperance Ave

PLOT PLAN



That all of the above-described property is owned by the declarant(s) and contains three acres or more: (state amount of acreage) 45 ACRES

That the above-described property is primarily used for agricultural purposes, to-wit: (describe farming operation): Turkeys & cotton

And the above-described building or structure is accessory to the agricultural development or use of such property, in that (explain use): Turkey shade

That for the reasons stated herein, which declarant under penalty of perjury states are true to the best of his knowledge, declarant requests that the construction herein proposed be exempted from all requirements of Division IV of Fresno County Ordinance Code, pursuant to the provisions of Section 755 of said Code.

PLANNING DEPARTMENT

REQUIRED SETBACK	FRONT MIN.	FRONT MAX.	SIDE INTERIOR	SIDE STREET	REAR
	35		20		20
APPROVED BY					
ZONE	A-1				

Signature: Mark Maikovich

Mailing Address: 2766 W Stuart

Validation by: [illegible] Fresno

Comments: _____

The installation of all electrical and gas equipment requires permits and inspection.

Form #17 Rev. 2/70

LICENSED CONTRACTORS DECLARATION

I hereby affirm that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

Lic. Number 453064 License Class C42

Contractor: Cal-E Sewage

OWNER-BUILDER DECLARATION

I hereby affirm that I am exempt from the Contractor's License Law for the following reason (Sec. 7031.5, Business and Professions Code: Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure prior to its issuance, also requires the applicant for such permit to file a signed statement that he is licensed pursuant to the provisions of the Contractor's License Law (Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code) or that he is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars ($500.):

☐ I, as owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business and Professions Code: The Contractor's License law does not apply to an owner of property who builds or improves thereon, and who does such work himself or through his own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he did not build or improve for the purpose of sale).

☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractor's License Law.).

☐ I am exempt under Sec. _____ B.&P.C. for this reason

Owner _____ Date _____

WORKERS' COMPENSATION DECLARATION

I hereby affirm that I have a certificate of consent to self-insure, or a certificate of Workers' Compensation Insurance, or a certified copy thereof (Sec. 3800, Lab. C.)

Policy No. _____ Company _____

☐ Certified copy is hereby furnished

☐ Certified copy is filed with the County of Fresno Department of Building & Safety

Applicant _____

CERTIFICATE OF EXEMPTION FROM WORKERS' COMPENSATION INSURANCE

(This section need not be completed if work is for one hundred dollars ($100) or less.)

I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Workers' Compensation Laws of California.

Date _____ Applicant _____

NOTICE TO APPLICANT: If, after making this Certificate of Exemption, you should become subject to the Workers' Compensation provisions of the Labor Code, you must forthwith comply with such provisions or this permit shall be deemed revoked.

CONSTRUCTION LENDING AGENCY

I hereby affirm that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Div. C.)

Lender's Name _____

Lender's Address _____

I certify that I have read this application and state that the above information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction, and hereby authorize representatives of this county to enter upon the above mentioned property for inspection purposes.

(Applicant or Agent) _____ Date _____

NO.	ELECTRICAL		EACH	FEE
	PERMIT FEE		13.00	13.00
	EA. CIRCUIT (REMODEL WORK ONLY)		4.00	
	EA. WIRING OUTLET & OR FIXTURES AT WHICH CURRENT IS USED OR CONTROLLED		.65 EA.	
	ELEC. RANGES	DISHWASHER	7.00	
	DRYERS / HEATER	DISP.	7.00	
	220 OUTLET	WELDER	7.00	
	0-1 HP 4.00	OVER 30-50 HP	23.00	
	OVER 1 TO 5 HP 11.00	OVER 50-100	38.00	
	OVER 5 TO 30 HP 15.00	OVER 100 HP	59.00	
	EA. TIME CLOCK		4.00	
	SWIMMING POOL/LIGHT TRANSFORMER		11.00	

SERVICE & OR SUB-PANELS

	0 TO 200 AMPS	11.00
	201 TO 400 AMPS	34.00
	401 TO 600 AMPS	53.00
	OVER 600 AMPS	106.00

NEW SINGLE FAMILY DWELLING

	Area of Construction 0 to 750 Sq. Ft.	53.00
	Area of Construction 751 to 1000 Sq. Ft.	64.00
	Area of Construction 1001 to 1500 Sq. Ft.	85.00
	Area of Construction 1501 to 2000 Sq. Ft.	106.00
	Area of Construction 2001 to 2500 Sq. Ft.	127.00
	Area of Construction 2501 to 3000 Sq. Ft.	148.00
	EA. ADD 500 Sq. Ft.	11.00

MIN. $21.00

MIN. $42.00 FOR WATER WELL PUMP — TOTAL FEE $

COUNTY OF FRESNO
PUBLIC WORKS & DEVELOPMENT SERVICES DEPARTMENT
DEVELOPMENT SERVICES DIVISION
2220 TULARE STREET - 6TH FLOOR
FRESNO, CALIFORNIA 93721
LOCATION:
SOUTHWEST CORNER OF TULARE AND M STREET - AT STREET LEVEL

APPLICATION FOR PERMIT

ZONE 1-2-3

PHONE NUMBERS:
24 HOUR ANSWERING SERVICE
FOR INSPECTIONS 453-5031
LOCAL (209) 453-5029
TOLL FREE 1 (800) 742-101

FOR APPLICANT TO FILL IN (Type or Print in Black Ink)

ADDRESS 6374 E. Shepherd

NEAREST TOWN Clovis | NEAREST CROSS ST. Temperance | NEW ☐

OWNER Mark Maikovich

MAIL ADDRESS Same

CITY Clovis TEL. NO. 439-9673

BLDG CONTRACTOR _____ ST. LIC. _____ TEL. NO. _____

ADDRESS _____

PLUMB CONTRACTOR Cal Sewage ST. LIC. 453064 TEL. NO. 237-6886

ADDRESS 6015 N. Monte

ELECT CONTRACTOR _____ ST. LIC. [redacted] TEL. NO. _____

ADDRESS _____

MECH CONTRACTOR _____ ST. LIC. _____ TEL. NO. _____

ADDRESS _____

DESIGNER _____ ST. LIC. _____ TEL. NO. _____

ADDRESS _____

LEGAL DESC.

PROJECT: Septic Replacement - (No Septic Records)

FLOOD MAP PAGE _____ ZONE _____

A.P.N. 304-031-07

ZONING

REQUIRED SETBACKS	FRONT MIN.	FRONT MAX.	SIDE INTERIOR	SIDE STREET	REAR MIN.

APPROVED BY _____ DATE _____

OCCUPANCY _____ APPROVED ☐ PENDING ☐

ZONE DISTRICT _____ REMARKS: _____

SCHOOL DISTRICT(S) _____

TYPE CONST.	OCCUP. GRP.	STORIES	BLDG. HT.

	SQ. FT.	UF	
BLDG.			
GAR/CP			
PATIO			
DECK			

TOTAL VALUATION $ _____

NO.	PLUMBING		EACH	FEE
	PERMIT FEE		13.00	13.00
	WATER CLOSET	URINAL	11.00	
	KITCHEN SINK	DISPOSAL	11.00	
	WASH MACH.	BATH TUB	11.00	
	LAVATORY	SHOWER	11.00	
	WATER PIPING and/or SERVICE		11.00	
	EA. LAWN SPRINKLER SYST. FOR S.F.D. WITH BACK FLOW DEVICES		21.00	
	ALL OTHER BK. FLOW DEV.		11.00	
	EA. GAS PIPING SYSTEM	1-5 outlets	11.00	
	EA. Additional Outlet	6 or more	2.00 ea	
	GAS APPLIANCE		13.00	
	EA. BLDG. SEWER		32.00	

NEW SINGLE FAMILY DWELLING

All plumbing work in a newly constructed single family dwelling excluding sewer & septic system.	one bathroom	85.00
	two bathroom	95.00
	three bathroom	106.00
	For each additional bathroom fixture	11.00

Min. $21.00 — TOTAL FEE $ _____

NO.	SEPTIC	EACH	FEE
1	PERMIT FEE	13.00	13
1	NEW SYSTEM	53.00	53
	REPAIR SYSTEM	32.00	

TOTAL FEE $ 66

NO.	MECHANICAL		EACH	FEE
	PERMIT FEE		13.00	13.00
	EA. GAS PIPING SYSTEM	1-5 outlets	11.00	
	EA. Additional Outlet	6 or more	2.00 ea	
	GAS APPLIANCE		13.00	
	MECH. HOOD			
	DUCT SYSTEM			

REFRIGERATION COOLING UNITS

	LESS THAN 7 TONS	13.00
	OVER 7 TONS to 14 TONS	19.00
	OVER 14 TONS	30.00

NEW SINGLE FAMILY DWELLING

	0 to 750 SQ. FT.	21.00
	751 to 1500 SQ. FT.	32.00
	1501 to 2500 SQ. FT.	42.00
	EA. ADD. 500 SQ. FT.	2.00

Min. $21.00 — TOTAL FEE $ _____

SLUC	PLAN CHECK
	ENERGY SURCHARGE
	S.M.I.
CONSOLIDATED PERMIT FEE USED?	YES / NO
	BUILDING PERMIT
	ELECTRICAL PERMIT
	PLUMBING PERMIT
	SEPTIC 66 00
	MECH. PERMIT
APPROVED BY	
FEES BY	SWIMMING POOL
VALIDATED BY	REINSPECTION
ACCOUNT NO. 124	SEWER
	DRAINAGE
CASH ☐	MICROFILM
CHECK ☐	TOTAL 66 —

WHEN VALIDATED THIS APPLICATION IS YOUR PERMIT

J-3819

FORM NO. 1002
10M - Am. Press 10/87

THIS PERMIT SHALL EXPIRE BY LIMITATION AND BECOME NULL AND VOID IF THE WORK IS NOT COMMENCED OR IF NO INSPECTIONS ARE CALLED FOR WITHIN 180 DAYS.

INSPECTION COPY

JOB ADDRESS

INSPECTION RECORD

BUILDING INSPECTION	INSPECTOR'S APPROVAL	DATE	REMARKS	INSPECTOR'S TRIPS	DATE	CN	NR
Foundation: location forms setback							
Foundation: Garage							
Floor Girders & Joists							
Flood Prone-Elev.							
Frame							
Roof Sheathing							
Roof Covering							
Lath (exterior)							
Fireplace, damper							
Fireplace, roof							
Shower Wall Over Tub							
Shower Pan & Walls							
Patio and Porch Piers							
Pre Deck							
Pool Fencing and Gates							
Pool Steel: location forms setback							
Bond Beam & Steel							
Grading Permit Issued - Finaled							
Shear Panel Nailing							
Insulation							
Fire Protection							
FINAL INSPECTION							

ELECTRICAL INSPECTION	INSPECTOR'S APPROVAL	DATE	REMARKS	INSPECTOR'S TRIPS	DATE	CN	NR
Conduit Pvc Galv. Interior							
Conduit Pvc Galv. Exterior							
Rough Wiring							
Elec. Main Panel							
Temporary Meter							
Temporary Power Pole							
Ground Electrode							
Ground Clamp							
Supplemental Ground Driven Rod							
[illegible]							
[illegible]							
[illegible] Bonding							
[illegible] Bonding							
FINAL INSPECTION							

PLUMBING INSPECTION	INSPECTOR'S APPROVAL	DATE	REMARKS	INSPECTOR'S TRIPS	DATE	CN	NR
Ground Hubbard [illegible]							
Water Pipe							
[illegible]							
Gas Pipe [illegible]							
Gas Service [illegible]							
Drain & Gas							
Tub Recess							
Water Tank	B. Terry	3-16-88					
House Sewer							
Septic T. & Pits Backfilled							
Temporary Meter							
Water Service							
Pump Sea							
FINAL INSPECTION	B. Terry	3-16-88					

MECHANICAL INSPECTION	INSPECTOR'S APPROVAL	DATE	REMARKS	INSPECTOR'S TRIPS	DATE	CN	NR
Ducts Underfloor							
Duct Overhead							
Fresh Air							
Furnace, gas vents, comb. air							
Refrigeration Unit							
Evaporative Cooler							
FINAL INSPECTION							

OCCUPANCY BOND	AMOUNT	INSPECTOR'S SIGN	DATE	APPROVED BY	DATE	REFUND BY	DATE

REMARKS:

DEVELOPMENT SERVICES DIVISION
2220 TULARE ST-SIXTH FLOOR
FRESNO, CA 93721
LOCATION:
SOUTHWEST CORNER OF TULARE & "M" STREET - STREET LEVEL

COUNTY OF FRESNO
DEPT. OF PUBLIC WORKS
AND DEVELOPMENT SERVICES
PLOT PLAN

24 HOUR INSPECTION REQUEST
ANSWERING SERVICE 453-5031
LOCAL: (209) 453-5029
TOLL FREE: 1 (800) 742-1011

NOTE: Please show the entire parcel of land with all existing and proposed structures

ADDRESS

Replace old Septic System

NOTE: All setbacks are measured from the property lines unless otherwise indicated.

APN:

Approved By	Date	PC #	Bldg. Permit # J38/9

ADDRESS 6374 E Shepherd NEAREST CROSS ST Temperance
OWNER Mark Maikovich MAIL ADDRESS Same
CITY Clovis STATE CA. ZIP 93612 TEL. NO. 439-9693

SEWAGE DISPOSAL SPECIFICATIONS: ( ) Community Sewer; ( ) Engineered System; (X) Septic
TYPE OF USE TO BE SERVED _____ NO. BEDROOMS _____ GARBAGE GRINDER _____ FIXTURE UNITS _____
MIN. SEPTIC TANK _____ GAL. LEACHING FACTOR 1.20 SQ. FT./100 GAL. MIN. SEEPAGE PIT OR LEACHING FIELD AREA _____

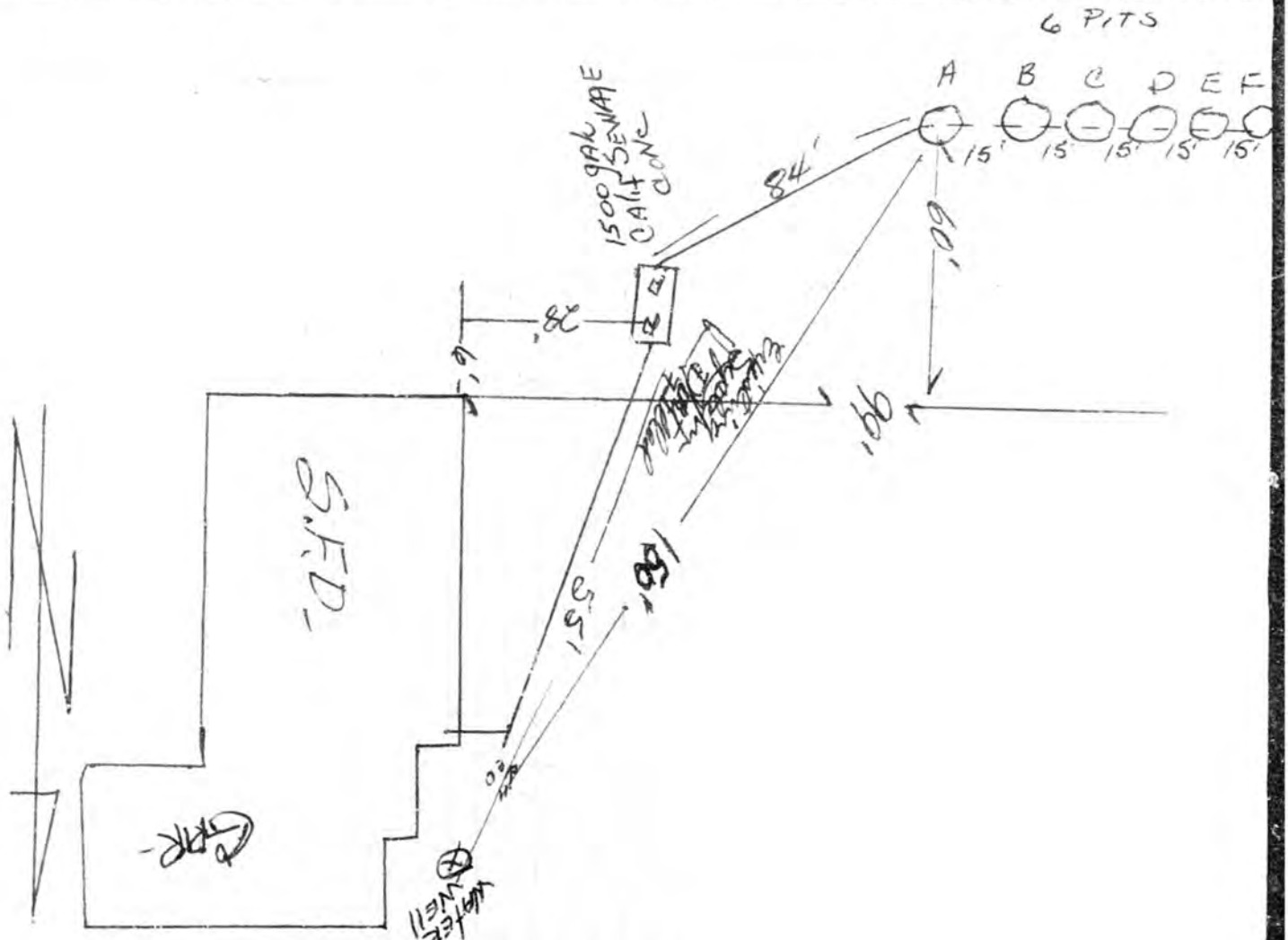
WATER WELL SPECIFICATIONS
DISTANCE TO NEAREST WELL _____ FT
WELL LOG NO. _____
DATE _____
GPM _____

HEALTH DEPT. COMMENTS
NO DRYWELLS DEEPER THAN 20'
ON SITE INSPECTION BY _____ DATE _____

This plot plan accurately shows all existing and proposed structures, buildings and mobile units on the property and their relationship to property lines and each other.
I hereby state that the information above is correct. I understand that the permit must be obtained before any construction is started and that an inspection of all work is required, including underground work prior to backfilling.

Signature [signature] Date 2-16-87

INSPECTION COPY



SEWAGE DISPOSAL SYSTEM SPECIFICATION

SEEPAGE PIT

IN	NUMBER	6
IN	DIAMETER	4'
IN	DEPTH	18 15 15 15 15 15
IN	LINING	A B C D E F Block
	LOT LINE	8'
GAL	FOUNDATION	8'

1500

Calif Sewage Conc

INSPECTIONS

(1) Pre-Pool by _____ Date _____

(2) Final by B. Verry Date 3-16-88

PLEASE USE BLACK INK
THIS FORM IS TO BE MICROFILMED

Mailing Address:
2220 Tulare St. - 6th Floor
Fresno, CA 93721
Location:
Southwest Corner of Tulare
& "M" Street - Street Level

COUNTY OF FRESNO
DEPT. OF PUBLIC WORKS & DEVELOPMENT SERVICES

APPLICATION FOR AGRICULTURAL EXEMPTION

Phone Numbers:
Local: (209) 453-5002
Toll Free: 1-(800) 742-1011

FOR APPLICANT TO COMPLETE (Type or Print in **BLACK INK**):

Project Address 6374 E. Shepherd - Clovis
Property Owner ARK MAIKOVICH
Mailing Address 2766 W. Stuart
City FRESNO Zip 93711 Phone 2994504
Legal Description of Property 304-031-07

Proposed Use of Structure Enclosed Turkey Growout building

OFFICE USE ONLY:
APN: 304 - 031 - 07 Acres 14.40
Sec 22 - 12, 21 Zone Dist AE-20
Minimum Setbacks:
Front 35 Rear 20
Sides:
Interior 20 Street —
R.A.T.E. Map No. 595 Zone C
S.L.U.C. 0941 Bldg Area 27,000 ✗
(✓) New Evaluation 162,000
( ) Relocated from
Approved By Sa Date 1/12/87

I, as owner of this property, would like to request an exemption to the building permit requirements. I understand that to qualify for this exemption, I must limit the use of the structure to the following: (check one)

(✗) The housing of poultry, livestock, or similar animals; the storage of farm equipment, feed or supplies used on the farm; or the storage of crops grown on the property.
( ) The sale or processing of agricultural products grown on the property (maximum building area of 400 square feet).
( ) A greenhouse which is covered primarily by pliable plastic sheets.

I further understand that I am **not exempt from permit or inspection requirements** for the installation of any **plumbing or mechanical equipment,** or any **electrical wiring.**

Under the penalty of perjury, I declare that these statements are true to the best of my knowledge, and request that the construction of the described structure be exempted from all requirements of Title 15.08 of the Fresno County Ordinance Code. I hereby also authorize representatives of Fresno County to enter upon this property to verify the use of this structure.

SIGNATURE [signature] DATE 1/4/88

FEE: $25.00

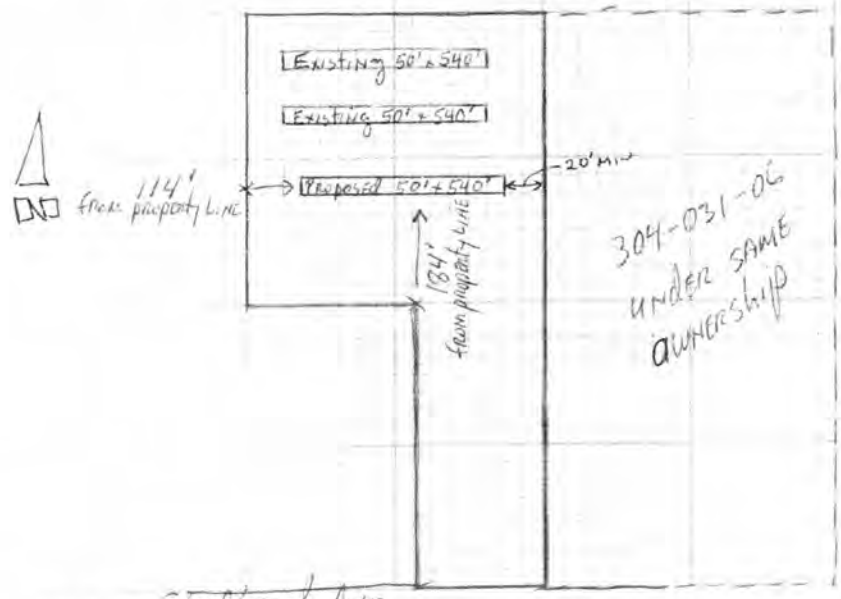
J-2888

AG-EXMP 25.00
3 IRIS TOTL 25.00
288814:55JAN.12'88± CHECK 25.00
LINE 03

Validated By
Cash ( ) Check (✓)

PLOT PLAN

NOTE: Please show the entire parcel of land with all existing and proposed structures.



NOTE: All setbacks are measured from the property lines unless otherwise indicated.

INSPECTION INFO: Turkey Ranch

SETBACK VERIFICATION
USE VERIFICATION: AG USE
Electrical Plumbing
Inspector [signature] Date 6-14-88

Form #17
Rev. 4/87

Appendix B

ENVIRONMENTAL LIEN AND AUL REPORT

Order Number:
014-22171 DD1-EL1

AFX Reference Number:
79-284358-47

Subject Property:
62.16 AC LOTS 5-12 DEVONSHIRE TRACT
FRESNO, CA 93619

Completed:
01/10/2023

AFX RESEARCH, LLC

A Quarter-Century of Title Document Research Expertise

999 Monterey St. Suite 380, San Luis Obispo, CA 93401

(877) 848-5337 / www.afxllc.com

ENVIRONMENTAL LIEN AND AUL REPORT

Order #: 014-22171 DD1-EL1 | Reference #: 79-284358-47 | Completed: 01/10/2023

SOURCES SEARCHED

Source 1: FRESNO COUNTY RECORDER'S OFFICE

Source 2: CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

Source 3: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Examiner Notes: **NOTICE:** JUDICIAL RECORDS NOT SEARCHED. BASED ON AVAILABLE INFORMATION EVALUATED BY THE TITLE SEARCH PROFESSIONAL, THE JURISDICTION DOES NOT REQUIRE A SEARCH OF JUDICIAL RECORDS IN ORDER TO IDENTIFY ENVIRONMENTAL LIENS.

TARGET PROPERTY

Current Owner(s): HARLAN LAND CO

Street Address: 62.16 AC LOTS 5-12 DEVONSHIRE TRACT

City, State Zip Code: FRESNO, CA 93619

APN/Parcel/PIN: 557-031-23 County: FRESNO

Legal Description: 62.16 AC LOTS 5-12 DEVONSHIRE TRACT

PROPERTY OWNERSHIP

Instrument: **GRANT DEED**

Date Recorded: 06/15/1983 Instrument: 83052896

Dated: 06/14/1983

Grantor(s): FLOYD L HARLAN, SHAWN STEVENSON, LAVONNE LANE HARLAN, KAREN LEOLA HARLAN AND WM C CROSSLAND, TRUSTEE OF THE GREG F HARLAN TRUST

Grantee(s): HARLAN LAND CO

ENVIRONMENTAL LIENS

NO ENVIRONMENTAL LIENS FOUND.

ACTIVITY AND USE LIMITATIONS (AUL)

NO AUL FOUND.

LEASES

NO LEASES FOUND.

MISCELLANEOUS INSTRUMENTS

NO MISCELLANEOUS INSTRUMENTS FOUND.

THANK YOU FOR YOUR ORDER

For questions, please contact our office at 1-877-848-5337.

Order Number:
014-22171 DD1-EL1

AFX Reference Number:
79-284358-47

Our Environmental Lien and AUL report provides a summary of recorded information on a specific property from the time the current owner purchased the property, to present time. The report is intended to assist in the search for environmental liens filed in land title records. The report will verify property ownership and provide information on recorded environmental liens and/or Activity and Use Limitations that have been recorded from the time the current owner purchased the property, forward. This report complies with ASTM 1527-21 standards when used in conjunction with a review of the owner's most recent insurance title policy. Environmental Liens and Activity Use Limitations may exist in the insurance title policy that do not appear within this report.

Our professional network of trained researchers follow established industry protocols and use client-supplied property information to complete this Environmental Lien and AUL report. The research is conducted at all appropriate government offices based on the location of the subject property. This would include City, County, State, Federal and Tribal offices as needed. The report includes:

- Current deed information (i.e. grantor, grantee, recording dates)
- Legal Description
- Environmental Lien information
- Activity and Use Limitation information
- Any Environmental Liens and/or documents referencing AULs that are listed within our summary report

DISCLAIMER

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ENVIRONMENTAL LIEN AND AUL REPORT

Order Number:
014-22171 DD1-EL2

AFX Reference Number:
79-285906-47

Subject Property:
6374 E SHEPHERD AVE
CLOVIS, CA 93619

Effective:
12

Completed:
01/06/2023

AFX RESEARCH, LLC

A Quarter-Century of Title Document Research Expertise

999 Monterey St. Suite 380, San Luis Obispo, CA 93401

(877) 848-5337 / www.afxllc.com

SOURCES SEARCHED

Source 1: FRESNO COUNTY RECORDER'S OFFICE

Source 2: CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

Source 3: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Examiner Notes: **NOTICE:** JUDICIAL RECORDS NOT SEARCHED. BASED ON AVAILABLE INFORMATION EVALUATED BY THE TITLE SEARCH PROFESSIONAL, THE JURISDICTION DOES NOT REQUIRE A SEARCH OF JUDICIAL RECORDS IN ORDER TO IDENTIFY ENVIRONMENTAL LIENS.

TARGET PROPERTY

Current Owner(s): RONALD M. MAIKOVICH, AS TRUSTEE, OR HIS SUCCESSOR, IN TRUST, UDT DATED SEPTEMBER 23, 2013, FBO THE RONALD M. MAIKOVICH SEPARATE PROPERTY LIVING TRUST AS TO AN UNDIVIDED 50% INTEREST AND LORAINE GAY RODDA-FOX, AS TRUSTEE OF THE LORAINE GAY RODDA-FOX LIVING TRUST DATED AUGUST 7, 2006 AS TO AN UNDIVIDED 50% INTEREST

Street Address: 6374 E SHEPHERD AVE

City, State Zip Code: CLOVIS, CA 93619

APN/Parcel/PIN: 557-031-44S County: FRESNO

Legal Description: 19.07 AC SUR RTS IN SE1/4 OF SW1/4 SEC 22 T12R21

PROPERTY OWNERSHIP

Instrument 1. **QUIT CLAIM DEED**

Date Recorded: 10/30/2013 Instrument: 2013-0151048

Dated: 09/23/2013

Grantor(s): RONALD M. MAIKOVICH, A MARRIED MAN AS HIS SOLE AND SEPARATE PROPERTY

Grantee(s): RONALD M. MAIKOVICH, AS TRUSTEE, OR HIS SUCCESSOR, IN TRUST, UDT DATED SEPTEMBER 23, 2013, FBO THE RONALD M. MAIKOVICH SEPARATE PROPERTY LIVING TRUST

Instrument 2. **QUIT CLAIM DEED**

Date Recorded: 10/15/2013 Instrument: 2013-0145065

Dated: 09/23/2013

Grantor(s): RONALD M. MAIKOVICH, AS TRUSTEE, OR HIS SUCCESSORS, IN TRUST, UDT DATED JUNE 7, 2004, FBO THE MAIKOVICH LIVING TRUST, AS THE SOLE AND SEPARATE PROPERTY OF RONALD M. MAIKOVICH

Grantee(s): RONALD M. MAIKOVICH, A MARRIED MAN AS HIS SOLE AND SEPARATE PROPERTY

PROPERTY OWNERSHIP (con't...)

Instrument 3. **GRANT DEED**

Date Recorded: 08/17/2006 Instrument: 2006-017807

Dated: 08/07/2006

Grantor(s): LORAINE GAY RODDA-FOX, AN UNMARRIED WOMAN, AS TO AN UNDIVIDED 50% INTEREST

Grantee(s): LORAINE GAY RODDA-FOX, AS TRUSTEE OF THE LORAINE GAY RODDA-FOX LIVING TRUST DATED AUGUST 7, 2006

Instrument 4. **QUIT CLAIM DEED**

Date Recorded: 06/28/2004 Instrument: 2004141870

Dated: 06/07/2004

Grantor(s): RONALD MARK MAIKOVICH, A MARRIED MAN AS HIS SOLE AND SEPARATE PROPERTY

Grantee(s): RONALD M. MAIKOVICH, AS TRUSTEE, OR HIS SUCCESSORS, IN TRUST, UNDER DECLARATION OF TRUST DATED 06/07/2004, FOR THE BENEFIT OF THE MAIKOVICH LIVING TRUST, AS THE SOLE AND, SEPARATE PROPERTY OF RONALD M. MAIKOVICH

Notes: CORRECTIVE QUIT CLAIM DEED IN #2004230469, RECORDED ON 10/12/2004, (CORRECT THE LEGAL DESCRIPTION)

ENVIRONMENTAL LIENS

NO ENVIRONMENTAL LIENS FOUND.

ACTIVITY AND USE LIMITATIONS (AUL)

NO AUL FOUND.

LEASES

NO LEASES FOUND.

MISCELLANEOUS INSTRUMENTS

NO MISCELLANEOUS INSTRUMENTS FOUND.

THANK YOU FOR YOUR ORDER

For questions, please contact our office at 1-877-848-5337.

Order Number:
014-22171 DD1-EL2

AFX Reference Number:
79-285906-47

Our Environmental Lien and AUL report provides a summary of recorded information on a specific property from the time the current owner purchased the property, to present time. The report is intended to assist in the search for environmental liens filed in land title records. The report will verify property ownership and provide information on recorded environmental liens and/or Activity and Use Limitations that have been recorded from the time the current owner purchased the property, forward. This report complies with ASTM 1527-21 standards when used in conjunction with a review of the owner's most recent insurance title policy. Environmental Liens and Activity Use Limitations may exist in the insurance title policy that do not appear within this report.

Our professional network of trained researchers follow established industry protocols and use client-supplied property information to complete this Environmental Lien and AUL report. The research is conducted at all appropriate government offices based on the location of the subject property. This would include City, County, State, Federal and Tribal offices as needed. The report includes:

- Current deed information (i.e. grantor, grantee, recording dates)
- Legal Description
- Environmental Lien information
- Activity and Use Limitation information
- Any Environmental Liens and/or documents referencing AULs that are listed within our summary report

DISCLAIMER

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ENVIRONMENTAL LIEN AND AUL REPORT

Order Number:
014-22171 DD1-EL3

AFX Reference Number:
79-285907-47

Subject Property:
SWLY 1.09 AC IN LOT 4 DEVONSHIRE TRACT
FRESNO COUNTY, CA

Completed:
01/10/2023

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ENVIRONMENTAL LIEN AND AUL REPORT

Order #: 014-22171 DD1-EL3 | Reference #: 79-285907-47 | Completed: 01/10/2023

SOURCES SEARCHED

Source 1: FRESNO COUNTY RECORDER'S OFFICE

Source 2: CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

Source 3: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Examiner Notes: **NOTICE:** JUDICIAL RECORDS NOT SEARCHED. BASED ON AVAILABLE INFORMATION EVALUATED BY THE TITLE SEARCH PROFESSIONAL, THE JURISDICTION DOES NOT REQUIRE A SEARCH OF JUDICIAL RECORDS IN ORDER TO IDENTIFY ENVIRONMENTAL LIENS.

TARGET PROPERTY

Current Owner(s): HARLAN LAND CO

Property Description: SWLY 1.09 AC IN LOT 4 DEVONSHIRE TRACT

County, State: FRESNO COUNTY, CA

APN/Parcel/PIN: 558-010-25 County: FRESNO

Legal Description: SWLY 1.09 AC IN LOT 4 DEVONSHIRE TRACT

PROPERTY OWNERSHIP

Instrument: **GRANT DEED**

Date Recorded: 06/15/1983 Instrument: 83052896

Dated: 06/14/1983

Grantor(s): FLOYD L HARLAN, SHAWN STEVENSON, LAVONNE LANE HARLAN, KAREN LEOLA HARLAN AND WM C CROSSLAND, TRUSTEE OF THE GREG F HARLAN TRUST

Grantee(s): HARLAN LAND CO

ENVIRONMENTAL LIENS

NO ENVIRONMENTAL LIENS FOUND.

ACTIVITY AND USE LIMITATIONS (AUL)

NO AUL FOUND.

LEASES

NO LEASES FOUND.

MISCELLANEOUS INSTRUMENTS

NO MISCELLANEOUS INSTRUMENTS FOUND.

THANK YOU FOR YOUR ORDER

For questions, please contact our office at 1-877-848-5337.

Order Number:
014-22171 DD1-EL3

AFX Reference Number:
79-285907-47

Our Environmental Lien and AUL report provides a summary of recorded information on a specific property from the time the current owner purchased the property, to present time. The report is intended to assist in the search for environmental liens filed in land title records. The report will verify property ownership and provide information on recorded environmental liens and/or Activity and Use Limitations that have been recorded from the time the current owner purchased the property, forward. This report complies with ASTM 1527-21 standards when used in conjunction with a review of the owner's most recent insurance title policy. Environmental Liens and Activity Use Limitations may exist in the insurance title policy that do not appear within this report.

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- Current deed information (i.e. grantor, grantee, recording dates)
- Legal Description
- Environmental Lien information
- Activity and Use Limitation information
- Any Environmental Liens and/or documents referencing AULs that are listed within our summary report

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ENVIRONMENTAL LIEN AND AUL REPORT

Order Number:
014-22171 DD1-EL4

AFX Reference Number:
79-285908-47

Subject Property:
FRESNO COUNTY, CA

Effective:
12/28/2022

Completed:
01/06/2023

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Order #: 014-22171 DD1-EL4 | Reference #: 79-285908-47 | Completed: 01/06/2023 | Effective: 12/28/2022

SOURCES SEARCHED

Source 1: FRESNO COUNTY RECORDER'S OFFICE

Source 2: CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

Source 3: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Examiner Notes: **NOTICE:** JUDICIAL RECORDS NOT SEARCHED. BASED ON AVAILABLE INFORMATION EVALUATED BY THE TITLE SEARCH PROFESSIONAL, THE JURISDICTION DOES NOT REQUIRE A SEARCH OF JUDICIAL RECORDS IN ORDER TO IDENTIFY ENVIRONMENTAL LIENS.

TARGET PROPERTY

Current Owner(s): RONALD M. MAIKOVICH, AS TRUSTEE, OR HIS SUCCESSOR, IN TRUST, UDT DATED SEPTEMBER 23, 2013, FBO THE RONALD M. MAIKOVICH SEPARATE PROPERTY LIVING TRUST AS TO AN UNDIVIDED 50% INTEREST AND LORAINE GAY RODDA-FOX, AS TRUSTEE OF THE LORAINE GAY RODDA-FOX LIVING TRUST DATED AUGUST 7, 2006 AS TO AN UNDIVIDED 50% INTEREST

Property Description: N/A

County, State: FRESNO COUNTY, CA

APN/Parcel/PIN: 557-031-35 County: FRESNO

Legal Description: 14.18 AC IN W1/2 OF SE1/4 OF SW1/4 SEC 22 T12R21

PROPERTY OWNERSHIP

Instrument 1. **QUIT CLAIM DEED**

Date Recorded: 10/30/2013 Instrument: 2013-0151048

Dated: 09/23/2013

Grantor(s): RONALD M. MAIKOVICH, A MARRIED MAN AS HIS SOLE AND SEPARATE PROPERTY

Grantee(s): RONALD M. MAIKOVICH, AS TRUSTEE, OR HIS SUCCESSOR, IN TRUST, UDT DATED SEPTEMBER 23, 2013, FBO THE RONALD M. MAIKOVICH SEPARATE PROPERTY LIVING TRUST

Instrument 2. **QUIT CLAIM DEED**

Date Recorded: 10/15/2013 Instrument: 2013-0145065

Dated: 09/23/2013

Grantor(s): RONALD M. MAIKOVICH, AS TRUSTEE, OR HIS SUCCESSORS, IN TRUST, UDT DATED JUNE 7, 2004, FBO THE MAIKOVICH LIVING TRUST, AS THE SOLE AND SEPARATE PROPERTY OF RONALD M. MAIKOVICH

Grantee(s): RONALD M. MAIKOVICH, A MARRIED MAN AS HIS SOLE AND SEPARATE PROPERTY

PROPERTY OWNERSHIP (con't...)

Instrument 3. **GRANT DEED**

Date Recorded: 08/17/2006 Instrument: 2006-017807

Dated: 08/07/2006

Grantor(s): LORAINE GAY RODDA-FOX, AN UNMARRIED WOMAN, AS TO AN UNDIVIDED 50% INTEREST

Grantee(s): LORAINE GAY RODDA-FOX, AS TRUSTEE OF THE LORAINE GAY RODDA-FOX LIVING TRUST DATED AUGUST 7, 2006

Instrument 4. **QUIT CLAIM DEED**

Date Recorded: 06/28/2004 Instrument: 2004-141870

Dated: 06/07/2004

Grantor(s): RONALD MARK MAIKOVICH, A MARRIED MAN AS HIS SOLE AND SEPARATE PROPERTY

Grantee(s): RONALD M. MAIKOVICH, AS TRUSTEE, OR HIS SUCCESSORS, IN TRUST, UNDER DECLARATION OF TRUST DATED 06/07/2004, FOR THE BENEFIT OF THE MAIKOVICH LIVING TRUST, AS THE SOLE AND, SEPARATE PROPERTY OF RONALD M. MAIKOVICH

Notes: CORRECTING QUIT CLAIM DEED RECORDED ON 10/12/2004, #2004-0230469 (CORRECT THE LEGAL DESCRIPTION)

ENVIRONMENTAL LIENS

NO ENVIRONMENTAL LIENS FOUND.

ACTIVITY AND USE LIMITATIONS (AUL)

NO AUL FOUND.

LEASES

NO LEASES FOUND.

MISCELLANEOUS INSTRUMENTS

NO MISCELLANEOUS INSTRUMENTS FOUND.

THANK YOU FOR YOUR ORDER

For questions, please contact our office at 1-877-848-5337.

Order Number:
014-22171 DD1-EL4

AFX Reference Number:
79-285908-47

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- Legal Description
- Environmental Lien information
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3

FRESNO County Recorder
Paul Dictos, C.P.A.
DOC- 2013-0151048
Check Number 619
Wednesday, OCT 30, 2013 14:59:14
Ttl Pd $25.00 Rcpt # 0004000141
ELP/R5/1-3

Recording Requested by and When Recorded)
Mail this document and Tax Statements To:)
)
Ronald M. Maikovich, Trustee)
12022 Avonette Court)
San Diego, California 92131)
)Space Above For Recorder's Use.

APN 557-031-35; 557-031-33S; 557-031-05S

QUITCLAIM DEED

The undersigned Grantor(s) declare(s):
Documentary Transfer Tax is $0.00. (Transfer to revocable living trust. R & T §11911)

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged, RONALD M. MAIKOVICH, a married man as his sole and separate property, remises, releases, and forever quitclaims to RONALD M. MAIKOVICH, as trustee, or his successors, in trust, UDT dated September 23, 2013, FBO the RONALD M. MAIKOVICH SEPARATE PROPERTY LIVING TRUST, all of his rights, title and interest in and to the real property in the City of Clovis, County of Fresno, State of California, described as follows:

SEE EXHIBIT "A" ATTACHED HERETO AND INCORPORATED BY THIS REFERENCE HEREIN

For all purposes, the character of this property is the sole and separate property of Ronald M. Maikovich.

Dated: 9/23/13

RONALD M. MAIKOVICH

State of California)
)ss
County of San Diego)

On 9-23 2013, before me, MICHAEL B. FURMAN, a Notary Public, personally appeared RONALD M. MAIKOVICH, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to this Instrument and acknowledged to me that he executed the same in his authorized capacity(ies), and that by his signature(s) on this Instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the Instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal

(Signature of Notary Public)

MICHAEL B. FURMAN
COMM. # 1887568
NOTARY PUBLIC - CALIFORNIA
SAN DIEGO COUNTY
MY COMM. EXP. APR. 27, 2014

EXHIBIT "A"

PARCEL 1:

THE EAST HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN, EXCEPTING THEREFROM AN UNDIVIDED ONE-HALF INTEREST IN AND TO ALL OIL, GAS AND OTHER HYDROCARBONS AND MINERALS THEREIN AND THEREUNDER, TOGETHER WITH ALL EASEMENTS AND RIGHTS NECESSARY OR CONVENIENT FOR THE PRODUCTION, STORAGE AND TRANSPORTATION THEREOF, AND THE EXPLORATION AND TESTING OF THE SAID REAL PROPERTY AND ALSO THE RIGHT TO DRILL FOR, PRODUCE AND USE WATER FROM THE SAID REAL PROPERTY IN CONNECTION WITH DRILLING OR MINING OPERATIONS THEREON, AS RESERVED IN THE DEED DATED AUGUST 8, 1950 FROM L. C. DEAVER AND WIFE, TO DARIUS N. KEATON AND WIFE, RECORDED SEPTEMBER 8, 1950 IN BOOK 2857 PAGE 384 OF OFFICIAL RECORDS, FRESNO COUNTY RECORDS, APN: 304-031-0687.

EXCEPTING THEREFROM THAT PORTION OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 12 EAST, MOUNT DIABLO BASE AND MERIDIAN DEEDED TO THE CITY OF CLOVIS, A CALIFORNIA MUNICIPAL CORPORATION, DESCRIBED AS FOLLOWS:

THE NORTH 14.00 FEET OF THE SOUTH 34.00 FEET OF THE EAST HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN.

APN: 557-031-06S

PARCEL 2:

LOT 13 OF DEVONSHIRE TRACT SUBDIVISION NO. 1, AS PER MAP RECORDED IN BOOK 5 PAGE 42 OF RECORD OF SURVEYS, FRESNO COUNTY RECORDS, EXCEPTING THEREFROM AN UNDIVIDED ONE-HALF INTEREST IN AND TO ALL OIL, GAS AND OTHER HYDROCARBONS AND MINERALS THEREIN AND THEREUNDER, TOGETHER WITH ALL EASEMENTS AND RIGHTS NECESSARY OR CONVENIENT FOR THE PRODUCTION, STORAGE AND TRANSPORTATION THEREOF AND THE EXPLORATION AND TESTING OF THE SAID REAL PROPERTY AND ALSO THE RIGHT TO DRILL FOR, PRODUCE AND USE WATER FROM THE SAID REAL PROPERTY IN CONNECTION WITH DRILLING OR MINING OPERATION THEREON, AS RESERVED IN THE DEED DATED AUGUST 8, 1950 FROM L. C. DEAVER AND WIFE, TO DARIUS N. KEATON AND WIFE, RECORDED SEPTEMBER 8, 1950, IN BOOK 2857 PAGE 384 OF OFFICIAL RECORDS, FRESNO COUNTY RECORDS, APN: 304-031-0586

EXHIBIT "A"
(continued)

PARCEL 3:

THE WEST HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN, EXCEPTING THEREFROM THE FOLLOWING DESCRIBED LAND; COMMENCING AT A POINT 280 FEET WEST OF THE SOUTHEAST CORNER OF SAID WEST HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER; THENCE NORTH 589 FEET, TO A POINT WHICH IS 402 FEET EAST OF THE WEST LINE; THERETO WEST 402 FEET; THENCE SOUTH 589 FEET; THENCE EAST 382 FEET TO THE POINT OF COMMENCEMENT. APN: 204-031-072

EXCEPTING THEREFROM THAT PORTION OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 12 EAST, MOUNT DIABLO BASE AND MERIDIAN DEEDED TO THE CITY OF CLOVIS, A CALIFORNIA MUNICIPAL CORPORATION, DESCRIBED AS FOLLOWS:

THE NORTH 14.00 FEET OF THE SOUTH 34.00 FEET OF THE WEST HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN.

APN: 557-031-07

EXCEPTING THEREFROM THE ABOVE DESCRIBED EXCEPTED LAND, THE FOLLOWING DESCRIBED LAND:

COMMENCING AT A POINT 280.00 FEET WEST OF THE SOUTHEAST CORNER OF SAID WEST HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER; THENCE NORTH 589.00 FEET, TO A POINT WHICH IS 402.00 FEET EAST OF THE WEST LINE; THENCE WEST 402.00 FEET; THENCE SOUTH 589.00 FEET; THENCE EAST 382.00 FEET TO THE POINT OF COMMENCEMENT.

3

FRESNO County Recorder
Paul Dictos, C.P.A.
DOC- 2013-0145065
Check Number 608
Tuesday, OCT 15, 2013 14:56:25
Ttl Pd $25.00 Rcpt # 0003991949
APR/R1/1-3

Recording Requested by and When Recorded
Mail this document and Tax Statements To:

Ronald M. Maikovich
12022 Avonette Court
San Diego, California 92131

APN 557-031-35; 557-031-33S; 557-031-05S

QUITCLAIM DEED

The undersigned Grantor(s) declare(s):
Documentary Transfer Tax is $0.00. (Transfer from a revocable living trust to settlor thereof)

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged, RONALD M. MAIKOVICH, as trustee, or his successors, in trust, UDT dated June 7, 2004, FBO the MAIKOVICH LIVING TRUST, as the sole and separate property of RONALD M. MAIKOVICH, remises, releases and forever quitclaims to RONALD M. MAIKOVICH, a married man as his sole and separate property, all of said trust's rights, title and interest in and to the real property in the City of Clovis, County of Fresno, State of California, described as follows:

SEE EXHIBIT "A" ATTACHED HERETO AND INCORPORATED BY THIS REFERENCE HEREIN

Dated: 9/23/13

RONALD M. MAIKOVICH

State of California)
)ss
County of San Diego)

On 9/23 2013 before me, **MICHAEL B. FURMAN**, a Notary Public, personally appeared **Ronald M. Maikovich** who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to this Instrument and acknowledged to me that he executed the same in his authorized capacities, and that by his signatures on this Instrument the person, or the entity upon behalf of which the person acted, executed the Instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal

MICHAEL B FURMAN
COMM. # 1887568
NOTARY PUBLIC - CALIFORNIA
SAN DIEGO COUNTY
MY COMM EXP APR 27 2014

(Signature of Notary Public)

EXHIBIT "A"

PARCEL 1:

THE EAST HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN, EXCEPTING THEREFROM AN UNDIVIDED ONE-HALF INTEREST IN AND TO ALL OIL, GAS AND OTHER HYDROCARBONS AND MINERALS THEREIN AND THEREUNDER, TOGETHER WITH ALL EASEMENTS AND RIGHTS NECESSARY OR CONVENIENT FOR THE PRODUCTION, STORAGE AND TRANSPORTATION THEREOF, AND THE EXPLORATION AND TESTING OF THE SAID REAL PROPERTY AND ALSO THE RIGHT TO DRILL FOR, PRODUCE AND USE WATER FROM THE SAID REAL PROPERTY IN CONNECTION WITH DRILLING OR MINING OPERATIONS THEREON, AS RESERVED IN THE DEED DATED AUGUST 8, 1950 FROM L. C. DEAVER AND WIFE, TO DARIUS N. KEATON AND WIFE, RECORDED SEPTEMBER 8, 1950 IN BOOK 2857 PAGE 384 OF OFFICIAL RECORDS, FRESNO COUNTY RECORDS, APN: 304-031-0687.

EXCEPTING THEREFROM THAT PORTION OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 12 EAST, MOUNT DIABLO BASE AND MERIDIAN DEEDED TO THE CITY OF CLOVIS, A CALIFORNIA MUNICIPAL CORPORATION, DESCRIBED AS FOLLOWS:

> THE NORTH 14.00 FEET OF THE SOUTH 34.00 FEET OF THE EAST HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN.
>
> APN: 557-031-06S

PARCEL 2:

LOT 13 OF DEVONSHIRE TRACT SUBDIVISION NO. 1, AS PER MAP RECORDED IN BOOK 5 PAGE 42 OF RECORD OF SURVEYS, FRESNO COUNTY RECORDS, EXCEPTING THEREFROM AN UNDIVIDED ONE-HALF INTEREST IN AND TO ALL OIL, GAS AND OTHER HYDROCARBONS AND MINERALS THEREIN AND THEREUNDER, TOGETHER WITH ALL EASEMENTS AND RIGHTS NECESSARY OR CONVENIENT FOR THE PRODUCTION, STORAGE AND TRANSPORTATION THEREOF AND THE EXPLORATION AND TESTING OF THE SAID REAL PROPERTY AND ALSO THE RIGHT TO DRILL FOR, PRODUCE AND USE WATER FROM THE SAID REAL PROPERTY IN CONNECTION WITH DRILLING OR MINING OPERATION THEREON, AS RESERVED IN THE DEED DATED AUGUST 8, 1950 FROM L. C. DEAVER AND WIFE, TO DARIUS N. KEATON AND WIFE, RECORDED SEPTEMBER 8, 1950, IN BOOK 2857 PAGE 384 OF OFFICIAL RECORDS, FRESNO COUNTY RECORDS, APN: 304-031-0586

EXHIBIT "A"
(continued)

PARCEL 3:

THE WEST HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN, EXCEPTING THEREFROM THE FOLLOWING DESCRIBED LAND; COMMENCING AT A POINT 280 FEET WEST OF THE SOUTHEAST CORNER OF SAID WEST HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER; THENCE NORTH 589 FEET, TO A POINT WHICH IS 402 FEET EAST OF THE WEST LINE; THERETO WEST 402 FEET; THENCE SOUTH 589 FEET; THENCE EAST 382 FEET TO THE POINT OF COMMENCEMENT. APN: 204-031-072

EXCEPTING THEREFROM THAT PORTION OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 12 EAST, MOUNT DIABLO BASE AND MERIDIAN DEEDED TO THE CITY OF CLOVIS, A CALIFORNIA MUNICIPAL CORPORATION, DESCRIBED AS FOLLOWS:

THE NORTH 14.00 FEET OF THE SOUTH 34.00 FEET OF THE WEST HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN.

APN: 557-031-07

EXCEPTING THEREFROM THE ABOVE DESCRIBED EXCEPTED LAND, THE FOLLOWING DESCRIBED LAND:

COMMENCING AT A POINT 280.00 FEET WEST OF THE SOUTHEAST CORNER OF SAID WEST HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER; THENCE NORTH 589.00 FEET, TO A POINT WHICH IS 402.00 FEET EAST OF THE WEST LINE; THENCE WEST 402.00 FEET; THENCE SOUTH 589.00 FEET; THENCE EAST 382.00 FEET TO THE POINT OF COMMENCEMENT.

2

FRESNO County Recorder
Robert C. Werner
DOC- 2006-0171807
Check Number 4390
Thursday, AUG 17, 2006 13:10:47
Ttl Pd $12.00 Nbr-0002267254
JZG/R3/1-2

RECORDING REQUESTED BY AND WHEN RECORDED PLEASE MAIL TO:

Gibson & Gibson, Inc.
A Law Corporation
100 Estates Drive
Roseville, CA 95678

MAIL TAX STATEMENTS TO:

Loraine Gay Rodda-Fox
7481 Greenburn Drive
Roseville, CA 95678

DOCUMENTARY TRANSFER TAX $-0-
R & T 11930 Grantee is a Trust for the benefit of the Grantors.

Signature of Agent

GRANT DEED

FOR NO CONSIDERATION,

LORAINE GAY RODDA-FOX, an unmarried woman, as to an undivided 50% interest in said real property,

hereby GRANT(S) to

LORAINE GAY RODDA-FOX, as trustee of THE LORAINE GAY RODDA-FOX LIVING TRUST DATED August 7, 2006

the real property in the City of Clovis, County of Fresno, State of California, described as:

LEGAL DESCRIPTION ATTACHED HERETO AND MADE A PART HEREOF
BY REFERENCE (APN: 557-031-06S, 557-031-07S, 557-031-05S)

DATED: August 7, 2006

LORAINE GAY RODDA-FOX

STATE OF CALIFORNIA)
) ss:
COUNTY OF PLACER)

On August 7, 2006, before me, Patricia D. Morgan Abdella, Notary Public, personally appeared LORAINE GAY RODDA-FOX, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Signature

PATRICIA D. MORGAN ABDELLA
COMM. #1605034
NOTARY PUBLIC • CALIFORNIA
PLACER COUNTY
Comm. Exp. SEPT. 16, 2009
MGC1

MAIL TAX STATEMENT AS SET FORTH ABOVE

EXHIBIT "A"

PARCEL 1:

THE EAST HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN, EXCEPTING THEREFROM AN UNDIVIDED ONE-HALF INTEREST IN AND TO ALL OIL, GAS AND OTHER HYDROCARBONS AND MINERALS THEREIN AND THEREUNDER, TOGETHER WITH ALL EASEMENTS AND RIGHTS NECESSARY OR CONVENIENT FOR THE PRODUCTION, STORAGE AND TRANSPORTATION THEREOF, AND THE EXPLORATION AND TESTING OF THE SAID REAL PROPERTY AND ALSO THE RIGHT TO DRILL FOR, PRODUCE AND USE WATER FROM THE SAID REAL PROPERTY IN CONNECTION WITH DRILLING OR MINING OPERATIONS THEREON, AS RESERVED IN THE DEED DATED AUGUST 8, 1950 FROM L. C. DEAVER AND WIFE, TO DARIUS N. KEATON AND WIFE, RECORDED SEPTEMBER 8, 1950 IN BOOK 2857 PAGE 384 OF OFFICIAL RECORDS, FRESNO COUNTY RECORDS, APN: 304-031-0687.

PARCEL 2:

LOT 13 OF DEVONSHIRE TRACT SUBDIVISION NO. 1, AS PER MAP RECORDED IN BOOK 5 PAGE 42 OF RECORD OF SURVEYS, FRESNO COUNTY RECORDS, EXCEPTING THEREFROM AN UNDIVIDED ONE-HALF INTEREST IN AND TO ALL OIL, GAS AND OTHER HYDROCARBONS AND MINERALS THEREIN AND THEREUNDER, TOGETHER WITH ALL EASEMENTS AND RIGHTS NECESSARY OR CONVENIENT FOR THE PRODUCTION, STORAGE AND TRANSPORTATION THEREOF AND THE EXPLORATION AND TESTING OF THE SAID REAL PROPERTY AND ALSO THE RIGHT TO DRILL FOR, PRODUCE AND USE WATER FROM THE SAID REAL PROPERTY IN CONNECTION WITH DRILLING OR MINING OPERATION THEREON, AS RESERVED IN THE DEED DATED AUGUST 8, 1950 FROM L. C. DEAVER AND WIFE, TO DARIUS N. KEATON AND WIFE, RECORDED SEPTEMBER 8, 1950, IN BOOK 2857 PAGE 384 OF OFFICIAL RECORDS, FRESNO COUNTY RECORDS, APN: 304-031-0586

PARCEL 3:

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2

Recording Requested by and When Recorded Mail this document and Tax Statements To:

RONALD M. MAIKOVICH
12022 AVONETTE COURT
San Diego, CA 92131

FRESNO County Recorder
Robert C. Werner
DOC- 2004-0141870
Check Number 5390
Monday, JUN 28, 2004 13:17:28
Ttl Pd $12.00 Nbr-0001520529
emf/R5/1-2

Space Above For Recorder's Use.

APN 557-031-35; 557-031-33S; 557-031-05S

QUITCLAIM DEED

This conveyance transfers the grantor's interest into his revocable living trust
R & T 11911
Documentary Transfer Tax is $0.00.

Ronald M. Maikovich

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,

RONALD MARK MAIKOVICH, a married man as his sole and separate property

does hereby remise, release and forever quitclaim to

RONALD M. MAIKOVICH, as Trustee, or his successors, in trust, under Declaration of Trust dated 6-7-04, for the benefit of the MAIKOVICH LIVING TRUST, as the sole and separate property of RONALD M. MAIKOVICH

all of his 50% undivided interest and title in and to the real property in the City of Clovis, County of Fresno, State of California, described in EXHIBIT "A", attached hereto and incorporated by reference herein.

Dated: 6/7/04

RONALD MARK MAIKOVICH

State of California)
)ss
County of San Diego)

On 6-7 2004, before me, the undersigned, personally appeared RONALD MARK MAIKOVICH, who proved to me on the basis of satisfactory evidence to be the person whose names are subscribed to this Instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on this Instrument the person, or the entity upon behalf of which the person acted, executed the Instrument.

WITNESS my hand and official seal

MICHAEL B. FURMAN
Comm. # 1347241
NOTARY PUBLIC - CALIFORNIA
San Diego County
My Comm. Expires March 19, 2006

(Signature of Notary Public)

EXHIBIT "A"

PARCEL 1:

THE EAST HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN, EXCEPTING THEREFROM AN UNDIVIDED ONE-HALF INTEREST IN AND TO ALL OIL, GAS AND OTHER HYDROCARBONS AND MINERALS THEREIN AND THEREUNDER, TOGETHER WITH ALL EASEMENTS AND RIGHTS NECESSARY OR CONVENIENT FOR THE PRODUCTION, STORAGE AND TRANSPORTATION THEREOF, AND THE EXPLORATION AND TESTING OF THE SAID REAL PROPERTY AND ALSO THE RIGHT TO DRILL FOR, PRODUCE AND USE WATER FROM THE SAID REAL PROPERTY IN CONNECTION WITH DRILLING OR MINING OPERATIONS THEREON, AS RESERVED IN THE DEED DATED AUGUST 8, 1950 FROM L. C. DEAVER AND WIFE, TO DARIUS N. KEATON AND WIFE, RECORDED SEPTEMBER 8, 1950 IN BOOK 2857 PAGE 384 OF OFFICIAL RECORDS, FRESNO COUNTY RECORDS, APN: 304-031-0687.

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PARCEL 3:

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2

Recording Requested by and When Recorded)
Mail this document and Tax Statements To:)
)
)
RONALD M. MAIKOVICH)
12022 AVONETTE COURT)
SAN DIEGO, CA 92131)
)
)
)

FRESNO County Recorder
Robert C. Werner
DOC- 2004-0230469
Check Number 5489
Tuesday, OCT 12, 2004 12:58:24
Ttl Pd $15.00 Nbr-0001624959
gsf/R4/1-3

APN 557-031-35; 557-031-33S; 557-031-05S

CORRECTING QUITCLAIM DEED

This document is to correct the legal description contained in that certain document entitled "Quitclaim Deed" dated June 7, 2004 and recorded on June 28, 2004 in the official records of the Fresno County Recorder as Document Number 2004-0141870

This conveyance transfers the grantor's interest into his revocable living trust
R. & T 11911
Documentary Transfer Tax is $0.00. X Ronald M. Maikovich
Ronald M. Maikovich

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,

RONALD MARK MAIKOVICH, a married man as his sole and separate property

does hereby remise, release and forever quitclaim to

RONALD M. MAIKOVICH, as Trustee, or his successors, in trust, under Declaration of Trust dated June 7, 2004, for the benefit of the MAIKOVICH LIVING TRUST, as the sole and separate property of RONALD M. MAIKOVICH

all of his 50% undivided interest and title in and to the real property in the City of Clovis, County of Fresno, State of California, described in EXHIBIT "A", attached hereto and incorporated by reference herein.

Dated: X 9/24/04 X Ronald Mark Maikovich
RONALD MARK MAIKOVICH

State of California)
)ss
County of San Diego)

On Sept. 24 — 2004, before me, the undersigned, personally appeared RONALD MARK MAIKOVICH, who proved to me on the basis of satisfactory evidence to be the person whose names are subscribed to this Instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on this Instrument the person, or the entity upon behalf of which the person acted, executed the Instrument.

WITNESS my hand and official seal

OFFICIAL SEAL
SARAH SHARPE
NOTARY PUBLIC-CALIFORNIA
COMM. NO. 1357270
SAN DIEGO COUNTY
MY COMM. EXP. MAY 19, 2006

Sarah Sharpe
(Signature of Notary Public)

1

EXHIBIT "A"

PARCEL 1:

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EXCEPTING THEREFROM THAT PORTION OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 12 EAST, MOUNT DIABLO BASE AND MERIDIAN DEEDED TO THE CITY OF CLOVIS, A CALIFORNIA MUNICIPAL CORPORATION, DESCRIBED AS FOLLOWS:

THE NORTH 14.00 FEET OF THE SOUTH 34.00 FEET OF THE EAST HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN.

APN: 557-031-06S

PARCEL 2:

LOT 13 OF DEVONSHIRE TRACT SUBDIVISION NO. 1, AS PER MAP RECORDED IN BOOK 5 PAGE 42 OF RECORD OF SURVEYS, FRESNO COUNTY RECORDS, EXCEPTING THEREFROM AN UNDIVIDED ONE-HALF INTEREST IN AND TO ALL OIL, GAS AND OTHER HYDROCARBONS AND MINERALS THEREIN AND THEREUNDER, TOGETHER WITH ALL EASEMENTS AND RIGHTS NECESSARY OR CONVENIENT FOR THE PRODUCTION, STORAGE AND TRANSPORTATION THEREOF AND THE EXPLORATION AND TESTING OF THE SAID REAL PROPERTY AND ALSO THE RIGHT TO DRILL FOR, PRODUCE AND USE WATER FROM THE SAID REAL PROPERTY IN CONNECTION WITH DRILLING OR MINING OPERATION THEREON, AS RESERVED IN THE DEED DATED AUGUST 8, 1950 FROM L. C. DEAVER AND WIFE, TO DARIUS N. KEATON AND WIFE, RECORDED SEPTEMBER 8, 1950, IN BOOK 2857 PAGE 384 OF OFFICIAL RECORDS, FRESNO COUNTY RECORDS, APN: 304-031-0586

EXHIBIT "A"
(continued)

PARCEL 3:

THE WEST HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN, EXCEPTING THEREFROM THE FOLLOWING DESCRIBED LAND; COMMENCING AT A POINT 280 FEET WEST OF THE SOUTHEAST CORNER OF SAID WEST HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER; THENCE NORTH 589 FEET, TO A POINT WHICH IS 402 FEET EAST OF THE WEST LINE; THERETO WEST 402 FEET; THENCE SOUTH 589 FEET; THENCE EAST 382 FEET TO THE POINT OF COMMENCEMENT. APN: 204-031-072

EXCEPTING THEREFROM THAT PORTION OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 12 EAST, MOUNT DIABLO BASE AND MERIDIAN DEEDED TO THE CITY OF CLOVIS, A CALIFORNIA MUNICIPAL CORPORATION, DESCRIBED AS FOLLOWS:

THE NORTH 14.00 FEET OF THE SOUTH 34.00 FEET OF THE WEST HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 21 EAST, MOUNT DIABLO BASE AND MERIDIAN.

APN: 557-031-07

EXCEPTING THEREFROM THE ABOVE DESCRIBED EXCEPTED LAND, THE FOLLOWING DESCRIBED LAND:

COMMENCING AT A POINT 280.00 FEET WEST OF THE SOUTHEAST CORNER OF SAID WEST HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER; THENCE NORTH 589.00 FEET, TO A POINT WHICH IS 402.00 FEET EAST OF THE WEST LINE; THENCE WEST 402.00 FEET; THENCE SOUTH 589.00 FEET; THENCE EAST 382.00 FEET TO THE POINT OF COMMENCEMENT.

ENVIRONMENTAL LIEN AND AUL REPORT

Order Number:
014-22171 DD1-EL5

AFX Reference Number:
79-285909-47

Subject Property:
FRESNO COUNTY, CA

Effective:
12/28/2022

Completed:
01/06/2023

AFX RESEARCH, LLC

A Quarter-Century of Title Document Research Expertise

999 Monterey St. Suite 380, San Luis Obispo, CA 93401

(877) 848-5337 / www.afxllc.com

Order #: 014-22171 DD1-EL5 | Reference #: 79-285909-47 | Completed: 01/06/2023 | Effective: 12/28/2022

SOURCES SEARCHED

Source 1: FRESNO COUNTY RECORDER'S OFFICE

Source 2: CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

Source 3: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Examiner Notes: **NOTICE:** JUDICIAL RECORDS NOT SEARCHED. BASED ON AVAILABLE INFORMATION EVALUATED BY THE TITLE SEARCH PROFESSIONAL, THE JURISDICTION DOES NOT REQUIRE A SEARCH OF JUDICIAL RECORDS IN ORDER TO IDENTIFY ENVIRONMENTAL LIENS.

TARGET PROPERTY

Current Owner(s): RONALD M. MAIKOVICH, THE RONALD M. MAIKOVICH SEPARATE PROPERTY LIVING TRUST

Property Description: N/A

County, State: FRESNO COUNTY, CA

APN/Parcel/PIN: 557-031-05S County: FRESNO

Legal Description: SUR RTS 10.06 AC LOT 13 DEVONSHIRE TRACT

PROPERTY OWNERSHIP

Instrument 1. **QUIT CLAIM DEED**

Date Recorded: 10/30/2013 Instrument: 2013-0151048

Dated: 09/23/2013

Grantor(s): RONALD M. MAIKOVICH

Grantee(s): RONALD M. MAIKOVICH, THE RONALD M. MAIKOVICH SEPARATE PROPERTY LIVING TRUST

Instrument 2. **QUIT CLAIM DEED**

Date Recorded: 10/15/2013 Instrument: 2013-0145065

Dated: 09/23/2013

Grantor(s): RONALD M. MAIKOVICH, THE RONALD M. MAIKOVICH SEPARATE PROPERTY LIVING TRUST

Grantee(s): RONALD M. MAIKOVICH

Instrument 3. **GRANT DEED**

Date Recorded: 08/17/2006 Instrument: 2006-017807

Dated: 08/07/2006

Grantor(s): LORAINE GAY RODDA-FOX (50% INTEREST)

Grantee(s): LORAINE GAY RODDA-FOX, THE LORAINE GAY RODDA-FOX LIVING TRUST

PROPERTY OWNERSHIP (con't...)

Instrument 4. **QUIT CLAIM DEED**

Date Recorded: 06/28/2004 Instrument: 2004-0141870

Dated: 06/07/2004

Grantor(s): RONALD MARK MAIKOVICH

Grantee(s): RONALD M. MAIKOVICH, THE MAIKOVICH LIVING TRUST

Notes: CORRECTING QUITCLAIM DEED IN #2004-0230469, RECORDED ON 10/12/2004

ENVIRONMENTAL LIENS

NO ENVIRONMENTAL LIENS FOUND.

ACTIVITY AND USE LIMITATIONS (AUL)

NO AUL FOUND.

LEASES

NO LEASES FOUND.

MISCELLANEOUS INSTRUMENTS

NO MISCELLANEOUS INSTRUMENTS FOUND.

THANK YOU FOR YOUR ORDER

For questions, please contact our office at 1-877-848-5337.

Order Number:
014-22171 DD1-EL5

AFX Reference Number:
79-285909-47

Our Environmental Lien and AUL report provides a summary of recorded information on a specific property from the time the current owner purchased the property, to present time. The report is intended to assist in the search for environmental liens filed in land title records. The report will verify property ownership and provide information on recorded environmental liens and/or Activity and Use Limitations that have been recorded from the time the current owner purchased the property, forward. This report complies with ASTM 1527-21 standards when used in conjunction with a review of the owner's most recent insurance title policy. Environmental Liens and Activity Use Limitations may exist in the insurance title policy that do not appear within this report.

Our professional network of trained researchers follow established industry protocols and use client-supplied property information to complete this Environmental Lien and AUL report. The research is conducted at all appropriate government offices based on the location of the subject property. This would include City, County, State, Federal and Tribal offices as needed. The report includes:

- Current deed information (i.e. grantor, grantee, recording dates)
- Legal Description
- Environmental Lien information
- Activity and Use Limitation information
- Any Environmental Liens and/or documents referencing AULs that are listed within our summary report

DISCLAIMER

This report was prepared for the intended use of AFX Research, LLC (AFX) and client, exclusively. This report is not a guarantee of title, nor a commitment to insure, nor a policy of title insurance. No warranty, expressed or implied, is made whatsoever in connection with this report. AFX Research, LLC specifically disclaims the making of any such warranties, including without limitation, merchantability or fitness for a particular use or purpose. The information contained in this report is retrieved as it is recorded from the various agencies that make it available. The total liability is limited to the fee paid for this report.

Krazan

& ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

Phase I ESA Questionnaire - Owner

Project Information:

Project Name: Triangle Property	Property Address:
Project Number: 014-22171	Parcel Number: 557-010-25 557-031-23

Questionnaire Completed By:

Name:	Address:
Company:	City/State/Zip:
Title:	Phone:
Date of Response:	Email Address:

How are you associated with the subject site? One of the owners

How long have you been associated with the subject site? Property has been in family since 1940's, I have knowledge since 1976.

Do you have any commonly known, reasonably ascertainable, or specialized knowledge or experience related to the subject site or nearby properties?

See above

What is the subject site currently used for?

grazing

Are there structures on the subject site? Yes How Many? 1

Windmill

Do you know of historical uses of the subject site? NO

Do you know of any previous structures on the subject site? NO

Does any maintenance, repair, or manufacturing activities take place at the subject site (currently or historically)? NO

Do you know of any chemicals or hazardous materials being used, stored or discharged on the subject site? (list any chemicals / hazardous materials)

No

Are agricultural chemicals (pesticides/herbicides) stored, applied, or mixed/formulated on the subject site? (please provide approximate storage/mixing locations)

No

Are you aware of the historical use of persistent pesticides/herbicides (such as DDT) at the subject site?

No

Is hazardous waste generated at the subject site? Hauled off-site? By whom? No

Any hazardous waste treatment or disposal at the subject site?

No

Do you have any current or past knowledge of the presence or underground or aboveground storage tanks being located on the subject site? (if yes, please provide info including no., size, contents, and locations)

Water tank at windmill

Do you have any current or past knowledge of subsurface automotive repair related features (i.e. sumps, oil/water clarifiers, automotive hydraulic hoists etc)?

No

Are you aware of any environmental cleanups or hazardous materials releases/spills at the subject site?

No

Do you know of any Institutional Controls (Env. Cleanup Liens) or Engineering Controls (slurry walls or vapor barriers) filed or recorded against the subject site? No

Municipal Utility Providers at the subject site: N/A

Potable Water: Yes No Provided by whom? N/A

Sewer: Yes No Provided by whom? No N/A

Electricity: Yes (No) Provided by whom?

Natural Gas: Yes (No) Provided by whom?

Solid Waste (garbage): Yes (No) Provided by whom? N/A

Has fuel oil been utilized at the subject site for heating purposes? N/A

Are there currently or were there historically any septic systems? Yes (No)
If yes, how many?_____

Are there currently or were there historically any water wells located on the subject site? (Yes) No
If yes, how many? 1 windmill

Are there currently or were there historically any dry wells located on the subject site? Yes (No)

Are there currently or were there historically any monitoring wells located on the subject site? Yes (No)

Do you know of any buried materials such as garbage dumps or burn pits on the subject site? NO

Are there any drainage or disposal ponds located on the subject site? NO

Are you aware of, or have you been notified of, any contamination issues to soil or groundwater either at the subject site or in the vicinity of the subject site? NO

What is the purpose of the Phase I? determine environmental issues

If purchase price has been established, does it reasonably reflect fair market value? Trick Question

Are there any proposed changes in the uses of the subject site? NO

Knowledge of Previous Owner(s) and Phone Number? I'm it.

Name: Date:
(Please Print) Shawn Stevenson 1/8/23

Signature:

Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

Phase I ESA Questionnaire - Owner

Project Information:

Project Name: Triangle Property	Property Address:
Project Number: 014-22171	Parcel Number: 557-031-05S 557-031-35 557-031-44S

Questionnaire Completed By:

Name: Ron Maikovich	Address: 12022 Avonette Ct.
Company:	City/State/Zip: San Diego Ca. 92131
Title: owner	Phone: 858-264-7794
Date of Response: 1/5/23	Email Address: rmmaikovich@gmail.com

How are you associated with the subject site? Owner

How long have you been associated with the subject site? 70 yrs.

Do you have any commonly known, reasonably ascertainable, or specialized knowledge or experience related to the subject site or nearby properties? No

What is the subject site currently used for? Portion rented to landscape co.

Are there structures on the subject site? yes How Many? one house

Do you know of historical uses of the subject site? Poultry Ranch

Do you know of any previous structures on the subject site? No

Does any maintenance, repair, or manufacturing activities take place at the subject site (currently or historically)?
Not to my knowledge

Do you know of any chemicals or hazardous materials being used, stored or discharged on the subject site? (list any chemicals / hazardous materials)
Not to my knowledge

Are agricultural chemicals (pesticides/herbicides) stored, applied, or mixed/formulated on the subject site? (please provide approximate storage/mixing locations)
Not to my knowledge

Are you aware of the historical use of persistent pesticides/herbicides (such as DDT) at the subject site?
Not to my knowledge

Is hazardous waste generated at the subject site? Hauled off-site? By whom?
Not to my knowledge

Any hazardous waste treatment or disposal at the subject site?

Do you have any current or past knowledge of the presence of underground or aboveground storage tanks being located on the subject site? (If yes, please provide info including no., size, contents, and locations)
One small, empty diesel fuel tank near shop building

Do you have any current or past knowledge of subsurface automotive repair related features (i.e. sumps, oil/water clarifiers, automotive hydraulic hoists etc)?
Not to my knowledge

Are you aware of any environmental cleanups or hazardous materials releases/spills at the subject site?
Not to my knowledge

Do you know of any Institutional Controls (Env. Cleanup Liens) or Engineering Controls (slurry walls or vapor barriers) filed or recorded against the subject site? No

Municipal Utility Providers at the subject site:

Potable Water: (Yes) No Provided by whom? Well

Sewer: (Yes) No Provided by whom? Septic

Electricity: (Yes) No Provided by whom? PG&E

Natural Gas: Yes (No) Provided by whom?

Solid Waste (garbage): (Yes) No Provided by whom? County

Has fuel oil been utilized at the subject site for heating purposes? No

Are there currently or were there historically any septic systems? (Yes) No
If yes, how many? One

Are there currently or were there historically any water wells located on the subject site? (Yes) No
If yes, how many? Four

Are there currently or were there historically any dry wells located on the subject site? Yes (No)

Are there currently or were there historically any monitoring wells located on the subject site? Yes (No)

Do you know of any buried materials such as garbage dumps or burn pits on the subject site? Turkey disposal pits prior to 1990

Are there any drainage or disposal ponds located on the subject site? No

Are you aware of, or have you been notified of, any contamination issues to soil or groundwater either at the subject site or in the vicinity of the subject site? No

What is the purpose of the Phase I? _____

If purchase price has been established, does it reasonably reflect fair market value? yes

Are there any proposed changes in the uses of the subject site? yes

Knowledge of Previous Owner(s) and Phone Number? Not known

Name: Ron Maikovich (Please Print) Date: 1/5/23

Signature: [illegible]

Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

Phase I ESA Questionnaire – User

Project Information:

Project Name: Triangle Property	Property Address:
Project Number: 014-22171	Parcel Number: 557-010-25 557-031-23

Questionnaire Completed By:

Name: Todd Wilson	Address: 7550 N. Palm Avenue, Suite 102
Company: Wilson Homes	City/State/Zip: Fresno, CA 93711
Title: Vice President	Phone: 559.224.7550
Date of Response: 1/5/23	Email Address:twilson@wilsondevelopment.com

Introduction

"In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfield Revitalization Act of 2001 (the 'Brownfields Amendments'), the user must provide the following information (if available) to the environmental professional. Failure to provide this information could result in a determination that 'all appropriate inquiry' is not completed"- American Society for Testing and Materials (ASTM) E1527-13 Appendix X3: User Questionnaire

1. Are you aware of any environmental cleanup liens against the subject site that are filed or recorded under federal, tribal, state, or local law?

No

2. Are you aware of any activity use limitations (AULs) such as engineering controls, land use restrictions, or institutional controls that are in place at the subject site and/or have been filed or recorded in a registry under federal, tribal, state, or local law?

No

3. As the user of the Phase I Environmental Site Assessment (ESA), do you have any specialized knowledge or experience related to the subject site or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the subject site or an adjacent property so that you would have specialized knowledge of the chemicals and processes used by this type of business?

No

4. Does the purchase price being paid for the subject site reasonably reflect the fair market value of the subject site? Yes No

   A. If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the subject site?

   N/A

5. Are you aware of commonly known or reasonably ascertainable information about the subject site that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example:

A. Do you know the past uses of the subject site? If so, briefly explain.
No

B. Do you know of specific chemicals that are present or once were present at the subject site? If so, briefly explain.
No

C. Do you know of spills or other chemical releases that have taken place at the subject site? If so, briefly explain.
No

D. Do you know of any environmental cleanups that have taken place at the subject site? If so, briefly explain.
No

6. As the user of the Phase I ESA, based on your knowledge and experience related to the subject site, are there any obvious indicators that point to the presence or likely presence of contamination at the subject site?
No

7. What is the reason for preparation of this Phase I ESA? (Property purchase/sale; bank loan; proposed development; etc.)
The reason for preparation of this Phase I ESA is for the purchase of the subject property that will ultimately be developed with residential development.

I, the user of this Phase I ESA (or authorized representative of the User), do hereby attest that I have carefully considered the questions herein and have presented answers to the best of my knowledge and ability based upon the Responsibilities of the User as required within ASTM E1527-13 guidance.

Name TODD WILSON Date 1.6.2022
(Please Print)

Signature

Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

Phase I ESA Questionnaire – User

Project Information:

Project Name: Triangle Property	Property Address:
Project Number: 014-22171	Parcel Number: 557-031-05S 557-031-35 557-031-44S

Questionnaire Completed By:

Name: Todd Wilson	Address: 7550 N. Palm Avenue, Suite 102
Company: Wilson Homes	City/State/Zip: Fresno, CA 93711
Title: Vice President	Phone: 559.224.7550
Date of Response: 1/5/23	Email Address: twilson@wilsondevelopment.com

Introduction

"In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfield Revitalization Act of 2001 (the 'Brownfields Amendments'), the user must provide the following information (if available) to the environmental professional. Failure to provide this information could result in a determination that 'all appropriate inquiry' is not completed"- American Society for Testing and Materials (ASTM) E1527-13 Appendix X3: User Questionnaire

1. Are you aware of any environmental cleanup liens against the subject site that are filed or recorded under federal, tribal, state, or local law?
No

2. Are you aware of any activity use limitations (AULs) such as engineering controls, land use restrictions, or institutional controls that are in place at the subject site and/or have been filed or recorded in a registry under federal, tribal, state, or local law?
No

3. As the user of the Phase I Environmental Site Assessment (ESA), do you have any specialized knowledge or experience related to the subject site or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the subject site or an adjacent property so that you would have specialized knowledge of the chemicals and processes used by this type of business?
No

4. Does the purchase price being paid for the subject site reasonably reflect the fair market value of the subject site? Yes No

   A. If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the subject site?
   NA

5. Are you aware of commonly known or reasonably ascertainable information about the subject site that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example:

A. Do you know the past uses of the subject site? If so, briefly explain.
No

B. Do you know of specific chemicals that are present or once were present at the subject site? If so, briefly explain.
No

C. Do you know of spills or other chemical releases that have taken place at the subject site? If so, briefly explain.
No

D. Do you know of any environmental cleanups that have taken place at the subject site? If so, briefly explain.
No

6. As the user of the Phase I ESA, based on your knowledge and experience related to the subject site, are there any obvious indicators that point to the presence or likely presence of contamination at the subject site?
No

7. What is the reason for preparation of this Phase I ESA? (Property purchase/sale; bank loan; proposed development; etc.)
The reason for preparation of this Phase I ESA is for the purchase of the subject property that will ultimately be developed with residential and commercial development.

I, the user of this Phase I ESA (or authorized representative of the User), do hereby attest that I have carefully considered the questions herein and have presented answers to the best of my knowledge and ability based upon the Responsibilities of the User as required within ASTM E1527-13 guidance.

Name TODD WILSON, VP Date 1·6·2022
(Please Print)

Signature

Appendix C

Triangle Property
East Shepherd Avenue/North Temperance Avenue
Clovis, CA 93619

Inquiry Number: 7208868.2s
December 20, 2022

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION	PAGE
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	9
Orphan Summary	20
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-16
Physical Setting Source Map Findings	A-18
Physical Setting Source Records Searched	PSGR-1

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E1527-21), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

EAST SHEPHERD AVENUE/NORTH TEMPERANCE AVENUE
CLOVIS, CA 93619

COORDINATES

Latitude (North):	36.8706010 - 36ˆ 52' 14.16''
Longitude (West):	119.6647820 - 119ˆ 39' 53.21''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	262467.0
UTM Y (Meters):	4083630.8
Elevation:	408 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	12012157 CLOVIS, CA
Version Date:	2018
North Map:	12012171 FRIANT, CA
Version Date:	2018

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140618, 20140619
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
EAST SHEPHERD AVENUE/NORTH TEMPERANCE AVENUE
CLOVIS, CA 93619

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	GASOLINE TANK	6374 E SHEPHERD	SWEEPS UST, CA FID UST	Lower	1 ft.
A2	GASOLINE TANK	6374 E SHEPHERD	HIST UST	Lower	1 ft.
3	BOB CAMPBELL	6120 E SHEPHERD AVE	RCRA NonGen / NLR	Lower	49, 0.009, SSW
B4	HENRY CARTER	6658 E SHEPHERD	SWEEPS UST, CA FID UST	Lower	158, 0.030, SSE
B5	HENRY CARTER	6658 E SHEPHERD	HIST UST	Lower	158, 0.030, SSE
C6	M/M WILLIAM R VERDUG	7016 E SHEPHERD AVE	SWEEPS UST, CA FID UST	Higher	1269, 0.240, ESE
C7	M/M WILLIAM R VERDUG	7016 E SHEPHERD AVE	HIST UST	Higher	1269, 0.240, ESE
C8	M/M WILLIAM R VERDUG	7016 E SHEPHEARD AVE	HIST UST	Higher	1269, 0.240, ESE
9	HARLAN RANCH ELEMENT	EAST SHEPERD AVENUE/	ENVIROSTOR, SCH	Higher	4184, 0.792, ESE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL ..... National Priority List
Proposed NPL ..... Proposed National Priority List Sites
NPL LIENS ..... Federal Superfund Liens

Lists of Federal Delisted NPL sites

Delisted NPL ..... National Priority List Deletions

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY ..... Federal Facility Site Information listing
SEMS ..... Superfund Enterprise Management System

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE ..... Superfund Enterprise Management System Archive

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS ..... Corrective Action Report

Lists of Federal RCRA TSD facilities

RCRA-TSDF ..... RCRA - Treatment, Storage and Disposal

Lists of Federal RCRA generators

RCRA-LQG ..... RCRA - Large Quantity Generators
RCRA-SQG ..... RCRA - Small Quantity Generators
RCRA-VSQG ..... RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ..... Land Use Control Information System

EXECUTIVE SUMMARY

US ENG CONTROLS..... Engineering Controls Sites List
US INST CONTROLS..... Institutional Controls Sites List

Federal ERNS list

ERNS..... Emergency Response Notification System

Lists of state- and tribal (Superfund) equivalent sites

RESPONSE..... State Response Sites

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF..... Solid Waste Information System

Lists of state and tribal leaking storage tanks

LUST..... Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land
CPS-SLIC..... Statewide SLIC Cases

Lists of state and tribal registered storage tanks

FEMA UST..... Underground Storage Tank Listing
UST..... Active UST Facilities
AST..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST..... Underground Storage Tanks on Indian Land

Lists of state and tribal voluntary cleanup sites

VCP..... Voluntary Cleanup Program Properties
INDIAN VCP..... Voluntary Cleanup Priority Listing

Lists of state and tribal brownfield sites

BROWNFIELDS..... Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT..... Waste Management Unit Database
SWRCY..... Recycler Database
HAULERS..... Registered Waste Tire Haulers Listing
INDIAN ODI..... Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9..... Torres Martinez Reservation Illegal Dump Site Locations
ODI..... Open Dump Inventory
IHS OPEN DUMPS..... Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL..... Delisted National Clandestine Laboratory Register

HIST Cal-Sites	Historical Calsites Database
SCH	School Property Evaluation Program
CDL	Clandestine Drug Labs
Toxic Pits	Toxic Pits Cleanup Act Sites
CERS HAZ WASTE	CERS HAZ WASTE
US CDL	National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

CERS TANKS	California Environmental Reporting System (CERS) Tanks

Local Land Records

LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information
DEED	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites

EXECUTIVE SUMMARY

LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
DOCKET HWC	Hazardous Waste Compliance Docket Listing
ECHO	Enforcement & Compliance History Information
UXO	Unexploded Ordnance Sites
FUELS PROGRAM	EPA Fuels Program Registered Listing
PFAS NPL	Superfund Sites with PFAS Detections Information
PFAS FEDERAL SITES	Federal Sites PFAS Information
PFAS TSCA	PFAS Manufacture and Imports Information
PFAS RCRA MANIFEST	PFAS Transfers Identified In the RCRA Database Listing
PFAS ATSDR	PFAS Contamination Site Location Listing
PFAS WQP	Ambient Environmental Sampling for PFAS
PFAS NPDES	Clean Water Act Discharge Monitoring Information
PFAS ECHO	Facilities in Industries that May Be Handling PFAS Listing
PFAS ECHO FIRE TRAINING	Facilities in Industries that May Be Handling PFAS Listing
PFAS PART 139 AIRPORT	All Certified Part 139 Airports PFAS Information Listing
AQUEOUS FOAM NRC	Aqueous Foam Related Incidents Listing
PFAS	PFAS Contamination Site Location Listing
AQUEOUS FOAM	Former Fire Training Facility Assessments Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
ICE	ICE
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
HAZNET	Facility and Manifest Data
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
UIC GEO	UIC GEO (GEOTRACKER)
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
PROJECT	PROJECT (GEOTRACKER)
WDR	Waste Discharge Requirements Listing
CIWQS	California Integrated Water Quality System
CERS	CERS
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)

EXECUTIVE SUMMARY

MINES MRDS..... Mineral Resources Data System
HWTS..... Hazardous Waste Tracking System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP..... EDR Proprietary Manufactured Gas Plants
EDR Hist Auto..... EDR Exclusive Historical Auto Stations
EDR Hist Cleaner..... EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF..... Recovered Government Archive Solid Waste Facilities List
RGA LUST..... Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Lists of state- and tribal hazardous waste facilities

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 07/25/2022 has revealed that there is 1 ENVIROSTOR site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
HARLAN RANCH ELEMENT	***EAST SHEPERD AVENUE/***	***ESE 1/2 - 1 (0.792 mi.)***	***9***	***16***

Facility Id: 10070075
Status: No Further Action

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Registered Storage Tanks

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there are 3 SWEEPS UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
M/M WILLIAM R VERDUG Status: A Tank Status: A Comp Number: 42943	***7016 E SHEPHERD AVE***	***ESE 1/8 - 1/4 (0.240 mi.)***	***C6***	***14***

Lower Elevation	Address	Direction / Distance	Map ID	Page
GASOLINE TANK Status: A Tank Status: A Comp Number: 31919	***6374 E SHEPHERD***	***0 - 1/8 (0.000 mi.)***	***A1***	***9***
HENRY CARTER Status: A Tank Status: A Comp Number: 58563	***6658 E SHEPHERD***	***SSE 0 - 1/8 (0.030 mi.)***	***B4***	***13***

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there are 4 HIST UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
M/M WILLIAM R VERDUG Facility Id: 00000042943	7016 E SHEPHERD AVE	ESE 1/8 - 1/4 (0.240 mi.)	C7	15
M/M WILLIAM R VERDUG	7016 E SHEPHEARD AVE	ESE 1/8 - 1/4 (0.240 mi.)	C8	15

Lower Elevation	Address	Direction / Distance	Map ID	Page
GASOLINE TANK Facility Id: 00000031919	6374 E SHEPHERD	0 - 1/8 (0.000 mi.)	A2	9
HENRY CARTER Facility Id: 00000058563	6658 E SHEPHERD	SSE 0 - 1/8 (0.030 mi.)	B5	13

EXECUTIVE SUMMARY

CA FID UST: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, and dated 10/31/1994 has revealed that there are 3 CA FID UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
M/M WILLIAM R VERDUG Facility Id: 10007222 Status: A	***7016 E SHEPHERD AVE***	***ESE 1/8 - 1/4 (0.240 mi.)***	***C6***	***14***

Lower Elevation	Address	Direction / Distance	Map ID	Page
GASOLINE TANK Facility Id: 10006342 Status: A	***6374 E SHEPHERD***	***0 - 1/8 (0.000 mi.)***	***A1***	***9***
HENRY CARTER Facility Id: 10008227 Status: A	***6658 E SHEPHERD***	***SSE 0 - 1/8 (0.030 mi.)***	***B4***	***13***

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 11/21/2022 has revealed that there is 1 RCRA NonGen / NLR site within approximately 0.25 miles of the target property.

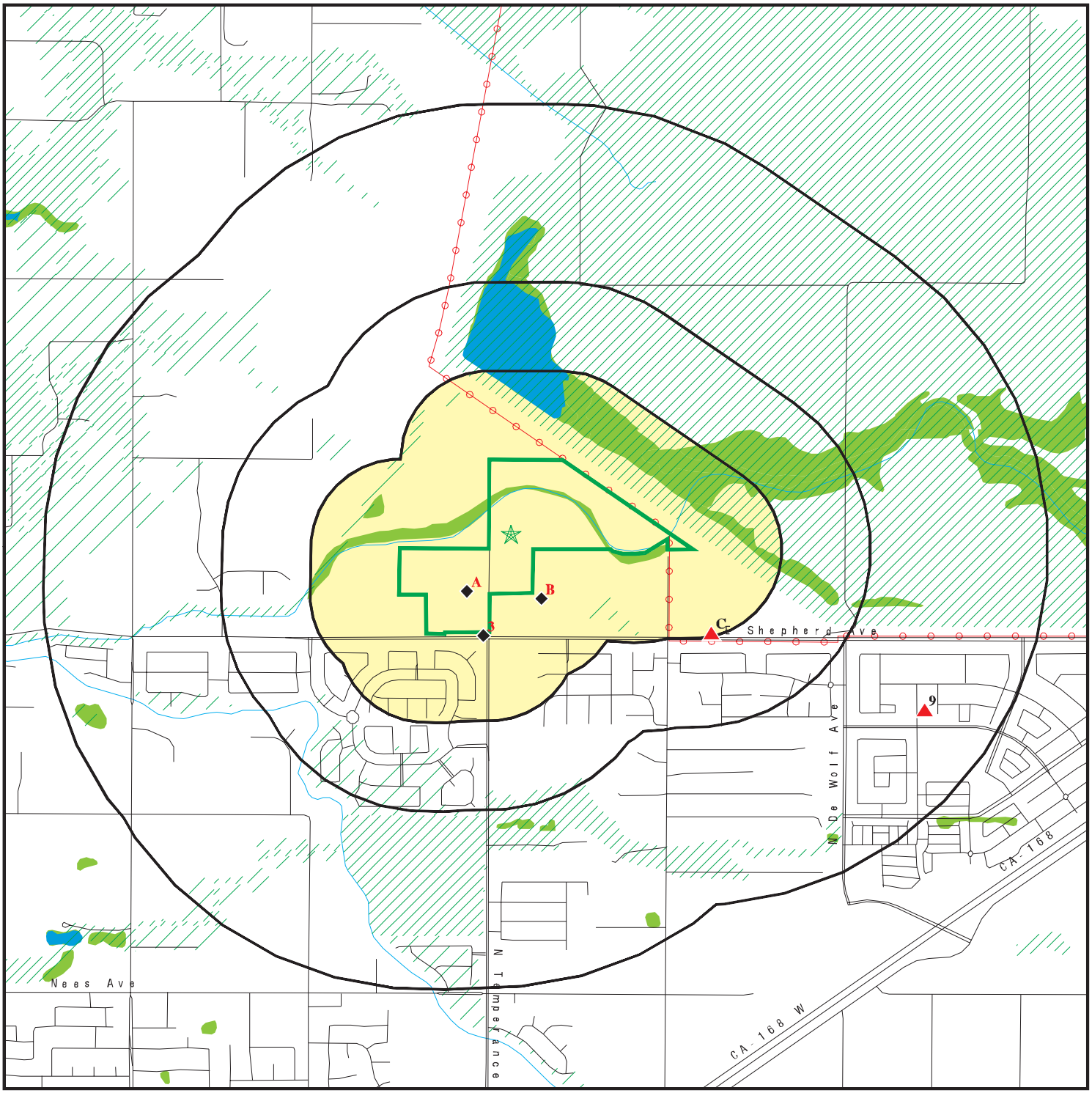
Lower Elevation	Address	Direction / Distance	Map ID	Page
BOB CAMPBELL EPA ID:: CAC003069072	6120 E SHEPHERD AVE	SSW 0 - 1/8 (0.009 mi.)	3	10

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
	CDL

OVERVIEW MAP - 7208868.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Power transmission lines

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

National Wetland Inventory

State Wetlands

Areas of Concern

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Triangle Property	CLIENT: Krazan & Associates, Inc.
ADDRESS: East Shepherd Avenue/North Temperance Avenue Clovis CA 93619	CONTACT: Dulcinea Deleon INQUIRY #: 7208868.2s
LAT/LONG: 36.870601 / 119.664782	DATE: December 20, 2022 1:45 pm

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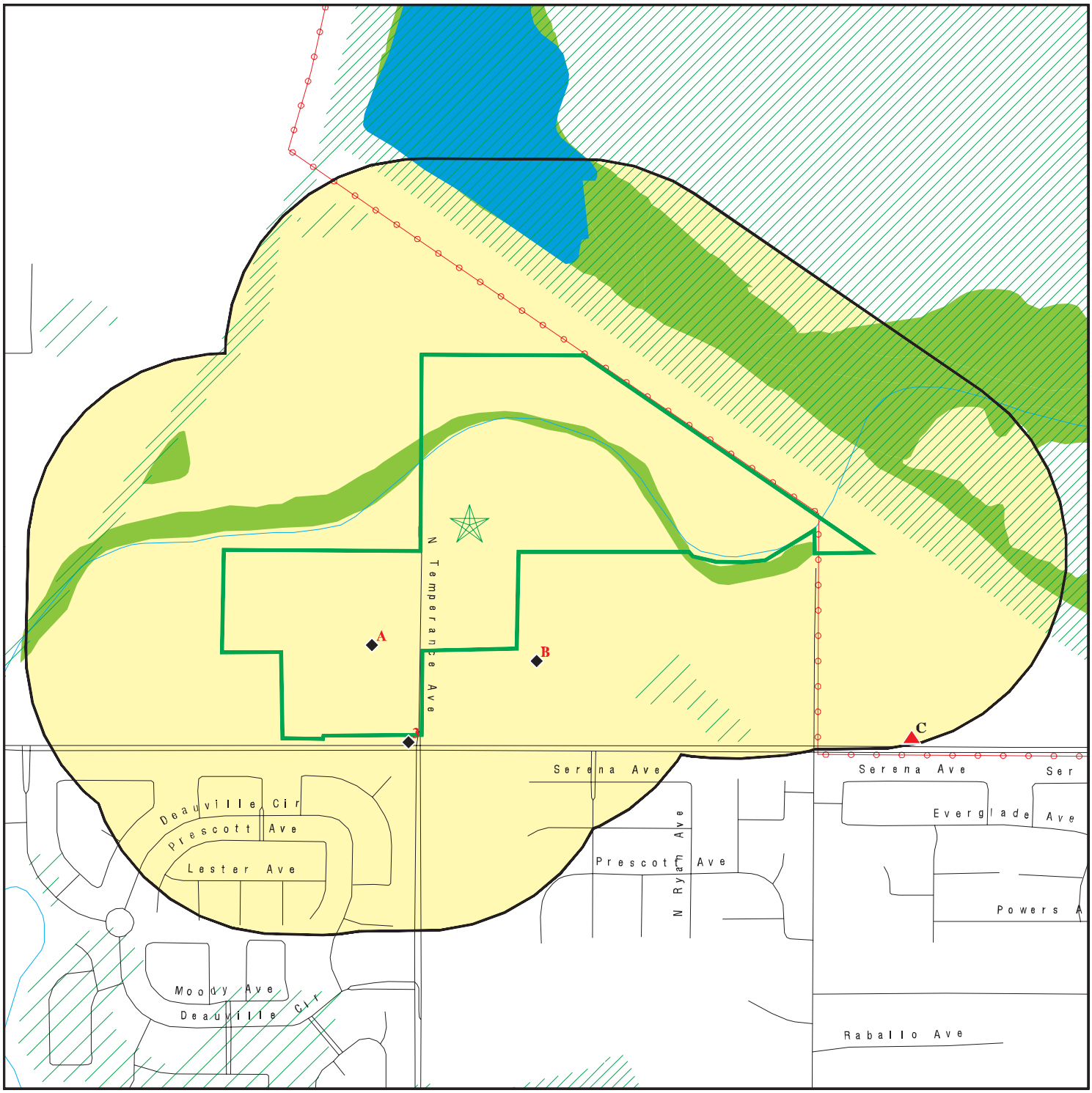
DETAIL MAP - 7208868.2S



0 1/8 1/4 1/2 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Triangle Property	CLIENT: Krazan & Associates, Inc.
ADDRESS: East Shepherd Avenue/North Temperance Avenue Clovis CA 93619	CONTACT: Dulcinea Deleon INQUIRY #: 7208868.2s
LAT/LONG: 36.870601 / 119.664782	DATE: December 20, 2022 1:47 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Lists of Federal NPL (Superfund) sites								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Lists of Federal Delisted NPL sites								
Delisted NPL	1.000		0	0	0	0	NR	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Lists of Federal CERCLA sites with NFRAP								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA facilities undergoing Corrective Action								
CORRACTS	1.000		0	0	0	0	NR	0
Lists of Federal RCRA TSD facilities								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA generators								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
Lists of state- and tribal (Superfund) equivalent sites								
RESPONSE	1.000		0	0	0	0	NR	0
Lists of state- and tribal hazardous waste facilities								
ENVIROSTOR	1.000		0	0	0	1	NR	1
Lists of state and tribal landfills and solid waste disposal facilities								
SWF/LF	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
Lists of state and tribal leaking storage tanks								
LUST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
Lists of state and tribal registered storage tanks								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
Lists of state and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
Lists of state and tribal brownfield sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		2	1	NR	NR	NR	3
HIST UST	0.250		2	2	NR	NR	NR	4
CERS TANKS	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		2	1	NR	NR	NR	3
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		1	0	NR	NR	NR	1
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
PFAS NPL	0.250		0	0	NR	NR	NR	0
PFAS FEDERAL SITES	0.250		0	0	NR	NR	NR	0
PFAS TSCA	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
PFAS RCRA MANIFEST	0.250		0	0	NR	NR	NR	0
PFAS ATSDR	0.250		0	0	NR	NR	NR	0
PFAS WQP	0.250		0	0	NR	NR	NR	0
PFAS NPDES	0.250		0	0	NR	NR	NR	0
PFAS ECHO	0.250		0	0	NR	NR	NR	0
PFAS ECHO FIRE TRAINING	0.250		0	0	NR	NR	NR	0
PFAS PART 139 AIRPORT	0.250		0	0	NR	NR	NR	0
AQUEOUS FOAM NRC	0.250		0	0	NR	NR	NR	0
PFAS	0.250		0	0	NR	NR	NR	0
AQUEOUS FOAM	TP		NR	NR	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
MINES MRDS	0.001		0	NR	NR	NR	NR	0
HWTS	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	7	4	0	1	0	12

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1 **GASOLINE TANK** **SWEEPS UST** **S101630089**
6374 E SHEPHERD **CA FID UST** **N/A**
< 1/8 **CLOVIS, CA 93612**
1 ft.

Site 1 of 2 in cluster A

Relative:
Lower

Actual:
404 ft.

SWEEPS UST:

Name:	GASOLINE TANK
Address:	6374 E SHEPHERD
City:	CLOVIS
Status:	Active
Comp Number:	31919
Number:	9
Board Of Equalization:	Not reported
Referral Date:	07-01-85
Action Date:	Not reported
Created Date:	02-29-88
Owner Tank Id:	#1
SWRCB Tank Id:	10-000-031919-000001
Tank Status:	A
Capacity:	500
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	REG UNLEADED
Number Of Tanks:	1

CA FID UST:

Facility ID:	10006342
Regulated By:	UTNKA
Regulated ID:	00031919
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	2094399693
Mail To:	Not reported
Mailing Address:	2766 W STUART
Mailing Address 2:	Not reported
Mailing City,St,Zip:	CLOVIS 93612
Contact:	Not reported
Contact Phone:	Not reported
DUNs Number:	Not reported
NPDES Number:	Not reported
EPA ID:	Not reported
Comments:	Not reported
Status:	Active

A2 **GASOLINE TANK** **HIST UST** **U001587595**
6374 E SHEPHERD **N/A**
< 1/8 **CLOVIS, CA 93612**
1 ft.

Site 2 of 2 in cluster A

Relative:
Lower

Actual:
404 ft.

HIST UST:

Name:	GASOLINE TANK
Address:	6374 E SHEPHERD
City,State,Zip:	CLOVIS, CA 93612
File Number:	00024BDC
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/00024BDC.pdf
Region:	STATE

GASOLINE TANK (Continued) **U001587595**

Facility ID:	00000031919
Facility Type:	Other
Other Type:	TURKEY FARM
Contact Name:	RAY AVILA
Telephone:	2094399693
Owner Name:	MARK MAIKOVICH
Owner Address:	2766 W STUART
Owner City,St,Zip:	FRESNO, CA 93711
Total Tanks:	0001
Tank Num:	001
Container Num:	#1
Year Installed:	Not reported
Tank Capacity:	00000500
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	Not reported
Leak Detection:	Stock Inventor, None

Click here for Geo Tracker PDF:

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3 SSW < 1/8 0.009 mi. 49 ft. **BOB CAMPBELL** **RCRA NonGen / NLR** **1026169024**
6120 E SHEPHERD AVE **CAC003069072**
CLOVIS, CA 93619

Relative: Lower
Actual: 401 ft.

RCRA Listings:

Date Form Received by Agency:		20200602
Handler Name:	BOB CAMPBELL	
Handler Address:		6120 E SHEPHERD AVE
Handler City,State,Zip:		CLOVIS, CA 93619
EPA ID:		CAC003069072
Contact Name:		TODD HATCH
Contact Address:		6120 E SHEPHERD AVE
Contact City,State,Zip:		CLOVIS, CA 93619
Contact Telephone:		559-974-2018
Contact Fax:		Not reported
Contact Email:		TODD_HATCH@YAHOO.COM
Contact Title:		Not reported
EPA Region:		09
Land Type:		Not reported
Federal Waste Generator Description:		Not a generator, verified
Non-Notifier:		Not reported
Biennial Report Cycle:		Not reported
Accessibility:		Not reported
Active Site Indicator:		Not reported
State District Owner:		Not reported
State District:		Not reported
Mailing Address:		6120 E SHEPHERD AVE
Mailing City,State,Zip:		CLOVIS, CA 93619
Owner Name:	BOB CAMPBELL	
Owner Type:		Other
Operator Name:	TODD HATCH	
Operator Type:		Other
Short-Term Generator Activity:		No
Importer Activity:		No
Mixed Waste Generator:		No

BOB CAMPBELL (Continued) **1026169024**

Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	No
Universal Waste Destination Facility:	No
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	20200608
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:
Owner/Operator Indicator: Owner
Owner/Operator Name: BOB CAMPBELL

BOB CAMPBELL (Continued) **1026169024**

Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	6120 E SHEPHERD AVE
Owner/Operator City,State,Zip:	CLOVIS, CA 93619
Owner/Operator Telephone:	559-974-2018
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name: TODD HATCH	
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	6120 E SHEPHERD AVE
Owner/Operator City,State,Zip:	CLOVIS, CA 93619
Owner/Operator Telephone:	559-974-2018
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	20200602
Handler Name: BOB CAMPBELL	
Federal Waste Generator Description:	Not a generator, verified
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

List of NAICS Codes and Descriptions:

NAICS Code:	56299
NAICS Description:	ALL OTHER WASTE MANAGEMENT SERVICES

Facility Has Received Notices of Violations:

Violations:	No Violations Found

Evaluation Action Summary:

Evaluations:	No Evaluations Found

B4 SSE < 1/8 0.030 mi. 158 ft. | **HENRY CARTER 6658 E SHEPHERD CLOVIS, CA 93612** | **SWEEPS UST CA FID UST** | **S101621075 N/A**

Site 1 of 2 in cluster B

Relative: Lower

Actual: 403 ft.

SWEEPS UST:

Name:	HENRY CARTER
Address:	6658 E SHEPHERD
City:	CLOVIS
Status:	Active
Comp Number:	58563
Number:	9
Board Of Equalization:	Not reported
Referral Date:	07-01-85
Action Date:	Not reported
Created Date:	02-29-88
Owner Tank Id:	1-HUPA
SWRCB Tank Id:	10-000-058563-000001
Tank Status:	A
Capacity:	350
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	REG UNLEADED
Number Of Tanks:	1

CA FID UST:

Facility ID:	10008227
Regulated By:	UTNKA
Regulated ID:	00058563
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	2092983475
Mail To:	Not reported
Mailing Address:	6658 E SHEPHERD
Mailing Address 2:	Not reported
Mailing City,St,Zip:	CLOVIS 93612
Contact:	Not reported
Contact Phone:	Not reported
DUNs Number:	Not reported
NPDES Number:	Not reported
EPA ID:	Not reported
Comments:	Not reported
Status:	Active

B5 SSE < 1/8 0.030 mi. 158 ft. | **HENRY CARTER 6658 E SHEPHERD CLOVIS, CA 93612** | **HIST UST** | **U001587602 N/A**

Site 2 of 2 in cluster B

Relative: Lower

Actual: 403 ft.

HIST UST:

Name:	HENRY CARTER
Address:	6658 E SHEPHERD
City,State,Zip:	CLOVIS, CA 93612
File Number:	0002448D
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002448D.pdf
Region:	STATE

HENRY CARTER (Continued) **U001587602**

Facility ID:	00000058563
Facility Type:	Other
Other Type:	FARM
Contact Name:	HENRY CARTER
Telephone:	2092983475
Owner Name:	HENRY H. & PAGEAN CARTER
Owner Address:	6658 E. SHEPHERD
Owner City,St,Zip:	CLOVIS, CA 93612
Total Tanks:	0001
Tank Num:	001
Container Num:	1-HUPA
Year Installed:	1964
Tank Capacity:	00000350
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor

Click here for Geo Tracker PDF:

C6
ESE
1/8-1/4
0.240 mi.
1269 ft.

M/M WILLIAM R VERDUGO **SWEEPS UST** **S101621101**
7016 E SHEPHERD AVE **CA FID UST** **N/A**
CLOVIS, CA 93612

Site 1 of 3 in cluster C

Relative:
Higher

Actual:
412 ft.

SWEEPS UST:

Name:	M/M WILLIAM R VERDUGO
Address:	7016 E SHEPHERD AVE
City:	CLOVIS
Status:	Active
Comp Number:	42943
Number:	9
Board Of Equalization:	Not reported
Referral Date:	07-01-85
Action Date:	Not reported
Created Date:	02-29-88
Owner Tank Id:	1
SWRCB Tank Id:	10-000-042943-000001
Tank Status:	A
Capacity:	550
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	LEADED
Number Of Tanks:	1

CA FID UST:

Facility ID:	10007222
Regulated By:	UTNKA
Regulated ID:	00042943
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	2092996429
Mail To:	Not reported
Mailing Address:	7016 E SHEPHERD AVE

M/M WILLIAM R VERDUGO (Continued) **S101621101**

Mailing Address 2:	Not reported
Mailing City,St,Zip:	CLOVIS 93612
Contact:	Not reported
Contact Phone:	Not reported
DUNs Number:	Not reported
NPDES Number:	Not reported
EPA ID:	Not reported
Comments:	Not reported
Status:	Active

C7 **M/M WILLIAM R VERDUGO** **HIST UST** **U001587635**
ESE **7016 E SHEPHERD AVE** **N/A**
1/8-1/4 **CLOVIS, CA 93612**
0.240 mi.
1269 ft. **Site 2 of 3 in cluster C**

Relative:
Higher

Actual:
412 ft.

HIST UST:

Name:	M/M WILLIAM R VERDUGO
Address:	7016 E SHEPHERD AVE
City,State,Zip:	CLOVIS, CA 93612
File Number:	Not reported
URL:	Not reported
Region:	STATE
Facility ID:	00000042943
Facility Type:	Other
Other Type:	FARM USE
Contact Name:	Not reported
Telephone:	2092996429
Owner Name:	M/M WILLIAM R VERDUGO
Owner Address:	7016 E SHEPHERD AVE
Owner City,St,Zip:	CLOVIS, CA 93612
Total Tanks:	0001
Tank Num:	001
Container Num:	1
Year Installed:	Not reported
Tank Capacity:	00000550
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	None

C8 **M/M WILLIAM R VERDUGO** **HIST UST** **S118412575**
ESE **7016 E SHEPHEARD AVE** **N/A**
1/8-1/4 **CLOVIS, CA 93612**
0.240 mi.
1269 ft. **Site 3 of 3 in cluster C**

Relative:
Higher

Actual:
412 ft.

HIST UST:

Name:	M/M WILLIAM R VERDUGO
Address:	7016 E SHEPHEARD AVE
City,State,Zip:	CLOVIS, CA 93612
File Number:	00024B7A
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/00024B7A.pdf
Region:	Not reported
Facility ID:	Not reported

M/M WILLIAM R VERDUGO (Continued) **S118412575**

Facility Type:	Not reported
Other Type:	Not reported
Contact Name:	Not reported
Telephone:	Not reported
Owner Name:	Not reported
Owner Address:	Not reported
Owner City,St,Zip:	Not reported
Total Tanks:	Not reported
Tank Num:	Not reported
Container Num:	Not reported
Year Installed:	Not reported
Tank Capacity:	Not reported
Tank Used for:	Not reported
Type of Fuel:	Not reported
Container Construction Thickness:	Not reported
Leak Detection:	Not reported

Click here for Geo Tracker PDF:

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9 ESE 1/2-1 0.792 mi. 4184 ft. **HARLAN RANCH ELEMENTARY SCHOOL** **ENVIROSTOR SCH** **S106568071 N/A**
EAST SHEPERD AVENUE/DEWOLF AVENUE
FRESNO, CA 93611

Relative: Higher
Actual: 416 ft.

ENVIROSTOR:

Name:	HARLAN RANCH ELEMENTARY SCHOOL
Address:	EAST SHEPERD AVENUE/DEWOLF AVENUE
City,State,Zip:	FRESNO, CA 93611
Facility ID:	10070075
Status:	No Further Action
Status Date:	04/29/2005
Site Code:	104430
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	19
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Not reported
Supervisor:	Mark Malinowski
Division Branch:	Northern California Schools & Santa Susana
Assembly:	23
Senate:	08
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	36.86350
Longitude:	-119.6438
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ORCHARD, AGRICULTURAL - ROW CROPS
Potential COC:	Arsenic Chlordane Total Chromium (1:6 ratio Cr VI:Cr III DDD DDE DDT Endrin Lead Mercury (elemental Silver Toxaphene
Confirmed COC:	30021-NO 30023-NO 30001-NO 30004-NO 30005-NO 30006-NO 30007-NO 30008-NO 30010-NO 30013-NO 30014-NO
Potential Description:	SOIL

HARLAN RANCH ELEMENTARY SCHOOL (Continued) **S106568071**

Alias Name: CLOVIS USD-PRPSD HARLAN RANCH ELEM SCL
Alias Type: Alternate Name
Alias Name: 104430
Alias Type: Project Code (Site Code)
Alias Name: 10070075
Alias Type: Envirostor ID Number

Completed Info:

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 05/25/2005
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Inspections/Visit (Non LUR)
Completed Date: 09/17/2004
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 08/18/2004
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 04/29/2005
Comments: DTSC approved the PEA with a no further action determination.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 01/14/2005
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

Name: HARLAN RANCH ELEMENTARY SCHOOL
Address: EAST SHEPERD AVENUE/DEWOLF AVENUE
City,State,Zip: FRESNO, CA 93611
Facility ID: 10070075
Site Type: School Investigation
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED

HARLAN RANCH ELEMENTARY SCHOOL (Continued) **S106568071**

Acres:	19
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Not reported
Supervisor:	Mark Malinowski
Division Branch:	Northern California Schools & Santa Susana
Site Code:	104430
Assembly:	23
Senate:	08
Special Program Status:	Not reported
Status:	No Further Action
Status Date:	04/29/2005
Restricted Use:	NO
Funding:	School District
Latitude:	36.86350
Longitude:	-119.6438
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ORCHARD, AGRICULTURAL - ROW CROPS
Potential COC:	Arsenic, Chlordane, Total Chromium (1:6 ratio Cr VI:Cr III, DDD, DDE, DDT, Endrin, Lead, Mercury (elemental, Silver, Toxaphene
Confirmed COC:	30021-NO, 30023-NO, 30001-NO, 30004-NO, 30005-NO, 30006-NO, 30007-NO, 30008-NO, 30010-NO, 30013-NO, 30014-NO
Potential Description:	SOIL
Alias Name:	CLOVIS USD-PRPSD HARLAN RANCH ELEM SCL
Alias Type:	Alternate Name
Alias Name:	104430
Alias Type:	Project Code (Site Code)
Alias Name:	10070075
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	05/25/2005
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Inspections/Visit (Non LUR)
Completed Date:	09/17/2004
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	08/18/2004
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Report
Completed Date:	04/29/2005
Comments:	DTSC approved the PEA with a no further action determination.
Completed Area Name:	PROJECT WIDE

HARLAN RANCH ELEMENTARY SCHOOL (Continued) **S106568071**

Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Workplan
Completed Date:	01/14/2005
Comments:	Not reported

Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

Count: 1 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
FRESNO COUNTY	S107526622		1/4 MI N OF CENTRAL & TEMPERAN		CDL

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: N/A
Last EDR Contact: 12/01/2022
Next Scheduled EDR Contact: 01/09/2023
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: N/A
Last EDR Contact: 12/01/2022
Next Scheduled EDR Contact: 01/09/2023
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Lists of Federal Delisted NPL sites

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: N/A
Last EDR Contact: 12/01/2022
Next Scheduled EDR Contact: 01/09/2023
Data Release Frequency: Quarterly

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 08/25/2022
Date Data Arrived at EDR: 09/06/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 90

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 09/06/2022
Next Scheduled EDR Contact: 01/10/2023
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/01/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: Quarterly

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/01/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: Quarterly

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 11/21/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 14

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 11/21/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Quarterly

Lists of Federal RCRA TSD facilities

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 11/21/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 11/21/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Quarterly

Lists of Federal RCRA generators

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 11/21/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 11/21/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 11/21/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 11/21/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 11/21/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 11/21/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 08/16/2022
Date Data Arrived at EDR: 08/22/2022
Date Made Active in Reports: 10/24/2022
Number of Days to Update: 63

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 11/01/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 08/15/2022
Date Data Arrived at EDR: 08/17/2022
Date Made Active in Reports: 10/24/2022
Number of Days to Update: 68

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/16/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 08/15/2022
Date Data Arrived at EDR: 08/17/2022
Date Made Active in Reports: 10/24/2022
Number of Days to Update: 68

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/16/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/12/2022
Date Data Arrived at EDR: 12/14/2022
Date Made Active in Reports: 12/19/2022
Number of Days to Update: 5

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 12/14/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

Lists of state- and tribal (Superfund) equivalent sites

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 07/25/2022
Date Data Arrived at EDR: 07/25/2022
Date Made Active in Reports: 10/05/2022
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/24/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Quarterly

Lists of state- and tribal hazardous waste facilities

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 07/25/2022
Date Data Arrived at EDR: 07/25/2022
Date Made Active in Reports: 10/05/2022
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/24/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Quarterly

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 08/08/2022
Date Data Arrived at EDR: 08/08/2022
Date Made Active in Reports: 10/20/2022
Number of Days to Update: 73

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 11/03/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: Quarterly

Lists of state and tribal leaking storage tanks

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)
Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/17/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Quarterly

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 06/02/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 79

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/11/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/28/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/28/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/06/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/08/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/14/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/17/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: No Update Planned

Lists of state and tribal registered storage tanks

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 10/14/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 02/01/2022
Number of Days to Update: 88

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 09/27/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases

UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 08/24/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/21/2022
Number of Days to Update: 82

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Varies

UST: Active UST Facilities

Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/28/2022
Number of Days to Update: 89

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Semi-Annually

MILITARY UST SITES: Military UST Sites (GEOTRACKER)

Military ust sites

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/17/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities

A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 03/27/2023
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 06/02/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 79

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/14/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/08/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/07/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/28/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/11/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

Lists of state and tribal voluntary cleanup sites

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 07/25/2022
Date Data Arrived at EDR: 07/25/2022
Date Made Active in Reports: 10/05/2022
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/24/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Quarterly

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 07/08/2021
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 12/13/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Varies

Lists of state and tribal brownfield sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 09/19/2022
Date Data Arrived at EDR: 09/19/2022
Date Made Active in Reports: 12/07/2022
Number of Days to Update: 79

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 12/14/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 02/23/2022
Date Data Arrived at EDR: 03/10/2022
Date Made Active in Reports: 03/10/2022
Number of Days to Update: 0

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 12/07/2022
Next Scheduled EDR Contact: 03/27/2023
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 10/20/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/18/2022
Number of Days to Update: 79

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 08/12/2022
Date Data Arrived at EDR: 08/16/2022
Date Made Active in Reports: 08/26/2022
Number of Days to Update: 10

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 11/15/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 10/20/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 10/28/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 07/29/2022
Date Data Arrived at EDR: 08/18/2022
Date Made Active in Reports: 10/24/2022
Number of Days to Update: 67

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/16/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database
The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program
This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 07/25/2022
Date Data Arrived at EDR: 07/25/2022
Date Made Active in Reports: 10/05/2022
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/24/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs
A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 11/23/2022
Next Scheduled EDR Contact: 02/13/2023
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites
Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 07/18/2022
Date Data Arrived at EDR: 07/18/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 74

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Quarterly

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 07/29/2022
Date Data Arrived at EDR: 08/18/2022
Date Made Active in Reports: 10/24/2022
Number of Days to Update: 67

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/16/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing

Aboveground storage tank sites

Date of Government Version: 08/04/2022
Date Data Arrived at EDR: 08/04/2022
Date Made Active in Reports: 10/20/2022
Number of Days to Update: 77

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 10/26/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Varies

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 07/18/2022
Date Data Arrived at EDR: 07/18/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 74

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Quarterly

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 08/23/2022
Date Data Arrived at EDR: 08/24/2022
Date Made Active in Reports: 11/14/2022
Number of Days to Update: 82

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 12/19/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 12/01/2022
Next Scheduled EDR Contact: 01/09/2023
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing
Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 08/25/2022
Date Data Arrived at EDR: 08/25/2022
Date Made Active in Reports: 11/14/2022
Number of Days to Update: 81

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 11/29/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 09/19/2022
Date Data Arrived at EDR: 09/19/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 11

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 12/14/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System
California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 06/30/2022
Date Data Arrived at EDR: 07/18/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 74

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)
Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/17/2022
Number of Days to Update: 78

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)
Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/17/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch
Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 11/21/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 11/21/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 08/11/2022
Date Data Arrived at EDR: 08/11/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 50

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 11/10/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 06/07/2021
Date Data Arrived at EDR: 07/13/2021
Date Made Active in Reports: 03/09/2022
Number of Days to Update: 239

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 10/13/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/03/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 11/03/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 12/14/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 10/28/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 10/28/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/17/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 12/12/2022
Next Scheduled EDR Contact: 03/27/2023
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 08/14/2020
Date Made Active in Reports: 11/04/2020
Number of Days to Update: 82

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 11/01/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 07/18/2022
Date Data Arrived at EDR: 07/18/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 11

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/18/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 12/01/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 04/27/2022
Date Data Arrived at EDR: 05/04/2022
Date Made Active in Reports: 05/10/2022
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/27/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 12/01/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 01/20/2022
Date Data Arrived at EDR: 01/20/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 64

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/06/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 09/27/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/26/2022
Date Data Arrived at EDR: 11/22/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 13

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/22/2022
Number of Days to Update: 84

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 11/29/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 11/23/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 11/03/2022
Next Scheduled EDR Contact: 02/13/2023
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 09/21/2022
Next Scheduled EDR Contact: 01/10/2023
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 10/24/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 06/30/2022
Date Data Arrived at EDR: 07/21/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 71

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 09/27/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 03/02/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 23

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 11/21/2022
Next Scheduled EDR Contact: 01/02/2023
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 10/06/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 07/26/2021
Date Data Arrived at EDR: 07/27/2021
Date Made Active in Reports: 10/22/2021
Number of Days to Update: 87

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 10/27/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 11/09/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 10/27/2022
Date Data Arrived at EDR: 11/01/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 12/01/2022
Next Scheduled EDR Contact: 01/09/2023
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/03/2022
Date Data Arrived at EDR: 08/17/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 14

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 11/17/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Semi-Annually

MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 08/01/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 59

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 11/28/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Quarterly

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/21/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/21/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/13/2022
Date Data Arrived at EDR: 09/14/2022
Date Made Active in Reports: 12/05/2022
Number of Days to Update: 82

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 12/13/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 08/03/2022
Date Data Arrived at EDR: 08/25/2022
Date Made Active in Reports: 10/24/2022
Number of Days to Update: 60

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 11/29/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 06/25/2022
Date Data Arrived at EDR: 07/01/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 91

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 09/30/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 11/15/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 01/11/2022
Date Made Active in Reports: 02/14/2022
Number of Days to Update: 34

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 10/05/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 08/11/2022
Date Data Arrived at EDR: 08/11/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 50

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 11/10/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Quarterly

PFAS NPL: Superfund Sites with PFAS Detections Information

EPA's Office of Land and Emergency Management and EPA Regional Offices maintain data describing what is known about site investigations, contamination, and remedial actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) where PFAS is present in the environment.

Date of Government Version: 02/23/2022
Date Data Arrived at EDR: 07/08/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 123

Source: Environmental Protection Agency
Telephone: 703-603-8895
Last EDR Contact: 10/04/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Varies

PFAS FEDERAL SITES: Federal Sites PFAS Information

Several federal entities, such as the federal Superfund program, Department of Defense, National Aeronautics and Space Administration, Department of Transportation, and Department of Energy provided information for sites with known or suspected detections at federal facilities.

Date of Government Version: 02/23/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 10/06/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Varies

PFAS TSCA: PFAS Manufacture and Imports Information

EPA issued the Chemical Data Reporting (CDR) Rule under the Toxic Substances Control Act (TSCA) and requires chemical manufacturers and facilities that manufacture or import chemical substances to report data to EPA. EPA publishes non-confidential business information (non-CBI) and includes descriptive information about each site, corporate parent, production volume, other manufacturing information, and processing and use information.

Date of Government Version: 01/03/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 10/04/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Varies

PFAS RCRA MANIFEST: PFAS Transfers Identified In the RCRA Database Listing

To work around the lack of PFAS waste codes in the RCRA database, EPA developed the PFAS Transfers dataset by mining e-Manifest records containing at least one of these common PFAS keywords: PFAS, PFOA, PFOS, PERFL, AFFF, GENX, GEN-X (plus the VT waste codes). These keywords were searched for in the following text fields: Manifest handling instructions (MANIFEST_HANDLING_INSTR), Non-hazardous waste description (NON_HAZ_WASTE_DESCRIPTION), DOT printed information (DOT_PRINTED_INFORMATION), Waste line handling instructions (WASTE_LINE_HANDLING_INSTR), Waste residue comments (WASTE_RESIDUE_COMMENTS).

Date of Government Version: 01/03/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 10/06/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Varies

PFAS ATSDR: PFAS Contamination Site Location Listing

PFAS contamination site locations from the Department of Health & Human Services, Center for Disease Control & Prevention. ATSDR is involved at a number of PFAS-related sites, either directly or through assisting state and federal partners. As of now, most sites are related to drinking water contamination connected with PFAS production facilities or fire training areas where aqueous film-forming firefighting foam (AFFF) was regularly used.

Date of Government Version: 06/24/2020
Date Data Arrived at EDR: 03/17/2021
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 601

Source: Department of Health & Human Services
Telephone: 202-741-5770
Last EDR Contact: 10/28/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Varies

PFAS WQP: Ambient Environmental Sampling for PFAS

The Water Quality Portal (WQP) is a part of a modernized repository storing ambient sampling data for all environmental media and tissue samples. A wide range of federal, state, tribal and local governments, academic and non-governmental organizations and individuals submit project details and sampling results to this public repository. The information is commonly used for research and assessments of environmental quality.

Date of Government Version: 01/03/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 10/06/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Varies

PFAS NPDES: Clean Water Act Discharge Monitoring Information

Any discharger of pollutants to waters of the United States from a point source must have a National Pollutant Discharge Elimination System (NPDES) permit. The process for obtaining limits involves the regulated entity (permittee) disclosing releases in a NPDES permit application and the permitting authority (typically the state but sometimes EPA) deciding whether to require monitoring or monitoring with limits.

Date of Government Version: 01/03/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 10/06/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Varies

PFAS ECHO: Facilities in Industries that May Be Handling PFAS Listing

Regulators and the public have expressed interest in knowing which regulated entities may be using PFAS. EPA has developed a dataset from various sources that show which industries may be handling PFAS. Approximately 120,000 facilities subject to federal environmental programs have operated or currently operate in industry sectors with processes that may involve handling and/or release of PFAS.

Date of Government Version: 01/03/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 10/06/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Varies

PFAS ECHO FIRE TRAINING: Facilities in Industries that May Be Handling PFAS Listing

A list of fire training sites was added to the Industry Sectors dataset using a keyword search on the permitted facilitys name to identify sites where fire-fighting foam may have been used in training exercises. Additionally, you may view an example spreadsheet of the subset of fire training facility data, as well as the keywords used in selecting or deselecting a facility for the subset. as well as the keywords used in selecting or deselecting a facility for the subset. These keywords were tested to maximize accuracy in selecting facilities that may use fire-fighting foam in training exercises, however, due to the lack of a required reporting field in the data systems for designating fire training sites, this methodology may not identify all fire training sites or may potentially misidentify them.

Date of Government Version: 08/22/2018
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 10/06/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Varies

PFAS PART 139 AIRPORT: All Certified Part 139 Airports PFAS Information Listing

Since July 1, 2006, all certified part 139 airports are required to have fire-fighting foam onsite that meet military specifications (MIL-F-24385) (14 CFR 139.317). To date, these military specification fire-fighting foams are fluorinated and have been historically used for training and extinguishing. The 2018 FAA Reauthorization Act has a provision stating that no later than October 2021, FAA shall not require the use of fluorinated AFFF. This provision does not prohibit the use of fluorinated AFFF at Part 139 civilian airports; it only prohibits FAA from mandating its use. The Federal Aviation Administration?s document AC 150/5210-6D - Aircraft Fire Extinguishing Agents provides guidance on Aircraft Fire Extinguishing Agents, which includes Aqueous Film Forming Foam (AFFF).

Date of Government Version: 08/22/2018
Date Data Arrived at EDR: 10/26/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 10/26/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Varies

AQUEOUS FOAM NRC: Aqueous Foam Related Incidents Listing

The National Response Center (NRC) serves as an emergency call center that fields initial reports for pollution and railroad incidents and forwards that information to appropriate federal/state agencies for response. The spreadsheets posted to the NRC website contain initial incident data that has not been validated or investigated by a federal/state response agency. Response center calls from 1990 to the most recent complete calendar year where there was indication of Aqueous Film Forming Foam (AFFF) usage are included in this dataset. NRC calls may reference AFFF usage in the ?Material Involved? or ?Incident Description? fields.

Date of Government Version: 02/23/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 10/06/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Varies

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 10/31/2022
Number of Days to Update: 61

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Varies

AQUEOUS FOAM: Former Fire Training Facility Assessments Listing

Airports shown on this list are those believed to use Aqueous Film Forming Foam (AFFF), and certified by the Federal Aviation Administration (FAA) under Title 14, Code of Federal Regulations (CFR), Part 139 (14 CFR Part 139). This list was created by SWRCB using information available from the FAA. Location points shown are from the latitude and longitude listed on the FAA airport master record.

Date of Government Version: 09/06/2022
Date Data Arrived at EDR: 09/06/2022
Date Made Active in Reports: 10/26/2022
Number of Days to Update: 50

Source: State Water Resources Control Board
Telephone: 916-341-5455
Last EDR Contact: 10/09/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Varies

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 09/19/2022
Date Data Arrived at EDR: 09/19/2022
Date Made Active in Reports: 12/07/2022
Number of Days to Update: 79

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 12/14/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing
list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 12/07/2021
Date Data Arrived at EDR: 05/09/2022
Date Made Active in Reports: 05/17/2022
Number of Days to Update: 8

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 11/10/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 05/25/2022
Date Data Arrived at EDR: 05/26/2022
Date Made Active in Reports: 08/11/2022
Number of Days to Update: 77

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 11/14/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 08/18/2022
Date Data Arrived at EDR: 08/29/2022
Date Made Active in Reports: 11/14/2022
Number of Days to Update: 77

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 11/15/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities
A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 08/27/2021
Date Data Arrived at EDR: 09/01/2021
Date Made Active in Reports: 11/19/2021
Number of Days to Update: 79

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 11/07/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Annually

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/30/2022
Number of Days to Update: 78

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 12/15/2022
Next Scheduled EDR Contact: 03/27/2023
Data Release Frequency: Varies

ENF: Enforcement Action Listing
A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 07/12/2022
Date Data Arrived at EDR: 07/18/2022
Date Made Active in Reports: 09/29/2022
Number of Days to Update: 73

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 10/19/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 07/06/2022
Date Data Arrived at EDR: 07/21/2022
Date Made Active in Reports: 10/03/2022
Number of Days to Update: 74

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 08/09/2022
Date Data Arrived at EDR: 08/10/2022
Date Made Active in Reports: 08/30/2022
Number of Days to Update: 20

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 11/15/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: Varies

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 08/11/2022
Date Data Arrived at EDR: 08/11/2022
Date Made Active in Reports: 10/28/2022
Number of Days to Update: 78

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 11/10/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/11/2022
Date Data Arrived at EDR: 08/11/2022
Date Made Active in Reports: 10/28/2022
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/10/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 10/03/2022
Date Data Arrived at EDR: 10/03/2022
Date Made Active in Reports: 12/15/2022
Number of Days to Update: 73

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 10/03/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Quarterly

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2021
Date Data Arrived at EDR: 07/05/2022
Date Made Active in Reports: 09/19/2022
Number of Days to Update: 76

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 09/27/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Annually

MINES: Mines Site Location Listing

A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/18/2022
Number of Days to Update: 79

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing

The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 08/08/2022
Date Data Arrived at EDR: 08/25/2022
Date Made Active in Reports: 11/14/2022
Number of Days to Update: 81

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 11/29/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Varies

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 08/08/2022
Date Data Arrived at EDR: 08/08/2022
Date Made Active in Reports: 10/20/2022
Number of Days to Update: 73

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 11/03/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing

A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 08/25/2022
Date Data Arrived at EDR: 08/25/2022
Date Made Active in Reports: 11/14/2022
Number of Days to Update: 81

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 11/29/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/18/2022
Number of Days to Update: 79

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 09/07/2022
Date Data Arrived at EDR: 09/08/2022
Date Made Active in Reports: 11/29/2022
Number of Days to Update: 82

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 03/27/2023
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/18/2022
Number of Days to Update: 79

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/17/2022
Number of Days to Update: 78

Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 02/11/2021
Date Data Arrived at EDR: 07/01/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 90

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 10/06/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 11/08/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: No Update Planned

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 12/13/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/17/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/17/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing
In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/18/2022
Number of Days to Update: 79

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System
The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 08/16/2022
Date Data Arrived at EDR: 08/17/2022
Date Made Active in Reports: 08/18/2022
Number of Days to Update: 1

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 11/29/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data
The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 07/18/2022
Date Data Arrived at EDR: 07/18/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 74

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)
Non-Case Information sites

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/17/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)
Other Oil & Gas Projects sites

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/17/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/17/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/17/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 08/31/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/17/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Varies

HWTS: Hazardous Waste Tracking System
DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 04/05/2022
Date Data Arrived at EDR: 04/05/2022
Date Made Active in Reports: 04/26/2022
Number of Days to Update: 21

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 10/03/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Varies

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 09/28/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Varies

PCS: Permit Compliance System

PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 09/28/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Semi-Annually

PCS INACTIVE: Listing of Inactive PCS Permits

An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/28/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Semi-Annually

MINES MRDS: Mineral Resources Data System

Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 11/22/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 09/27/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks
Underground storage tank sites located in Alameda county.

Date of Government Version: 09/28/2022
Date Data Arrived at EDR: 09/29/2022
Date Made Active in Reports: 12/14/2022
Number of Days to Update: 76

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 09/27/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 07/22/2022
Date Data Arrived at EDR: 07/27/2022
Date Made Active in Reports: 08/01/2022
Number of Days to Update: 5

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 10/26/2022
Next Scheduled EDR Contact: 02/13/2023
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 09/27/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 06/14/2022
Date Data Arrived at EDR: 06/15/2022
Date Made Active in Reports: 09/02/2022
Number of Days to Update: 79

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 12/13/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 10/26/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 07/20/2022
Date Data Arrived at EDR: 07/20/2022
Date Made Active in Reports: 10/03/2022
Number of Days to Update: 75

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 10/20/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 05/04/2022
Date Data Arrived at EDR: 05/06/2022
Date Made Active in Reports: 07/28/2022
Number of Days to Update: 83

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 10/20/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/08/2022
Date Data Arrived at EDR: 08/09/2022
Date Made Active in Reports: 09/01/2022
Number of Days to Update: 23

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 10/20/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 06/28/2021
Date Data Arrived at EDR: 12/21/2021
Date Made Active in Reports: 03/03/2022
Number of Days to Update: 72

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 09/30/2022
Next Scheduled EDR Contact: 01/09/2023
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/12/2021
Date Data Arrived at EDR: 08/12/2021
Date Made Active in Reports: 11/08/2021
Number of Days to Update: 88

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 11/08/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 07/13/2022
Date Data Arrived at EDR: 07/14/2022
Date Made Active in Reports: 09/29/2022
Number of Days to Update: 77

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 11/08/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Varies

KERN COUNTY:

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 10/03/2022
Date Data Arrived at EDR: 10/05/2022
Date Made Active in Reports: 12/16/2022
Number of Days to Update: 72

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 10/05/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 10/03/2022
Date Data Arrived at EDR: 10/05/2022
Date Made Active in Reports: 12/16/2022
Number of Days to Update: 72

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 10/05/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/03/2020
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/14/2021
Number of Days to Update: 78

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 11/08/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 07/22/2022
Date Data Arrived at EDR: 07/25/2022
Date Made Active in Reports: 10/05/2022
Number of Days to Update: 72

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 10/04/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 07/31/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 80

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 03/27/2023
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 10/03/2022
Date Data Arrived at EDR: 10/04/2022
Date Made Active in Reports: 12/15/2022
Number of Days to Update: 72

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 09/27/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 07/11/2022
Date Data Arrived at EDR: 07/11/2022
Date Made Active in Reports: 09/23/2022
Number of Days to Update: 74

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 10/07/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2022
Date Data Arrived at EDR: 01/21/2022
Date Made Active in Reports: 04/11/2022
Number of Days to Update: 80

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 10/04/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/13/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills
This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 01/10/2022
Date Data Arrived at EDR: 01/12/2022
Date Made Active in Reports: 04/04/2022
Number of Days to Update: 82

Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 10/04/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory
A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 08/30/2022
Date Data Arrived at EDR: 09/20/2022
Date Made Active in Reports: 12/07/2022
Number of Days to Update: 78

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/14/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory
A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 08/30/2022
Date Data Arrived at EDR: 09/20/2022
Date Made Active in Reports: 12/08/2022
Number of Days to Update: 79

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/14/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 05/26/2021
Date Data Arrived at EDR: 07/09/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 82

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 10/20/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 10/04/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/22/2022
Date Data Arrived at EDR: 07/19/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 73

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/10/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 72

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 11/08/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 12/19/2022
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Semi-Annually

MENDOCINO COUNTY:

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/22/2021
Date Data Arrived at EDR: 11/18/2021
Date Made Active in Reports: 11/22/2021
Number of Days to Update: 4

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 11/15/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 02/15/2022
Date Data Arrived at EDR: 02/17/2022
Date Made Active in Reports: 05/11/2022
Number of Days to Update: 83

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 11/08/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 02/22/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 11/15/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 10/04/2021
Date Data Arrived at EDR: 10/06/2021
Date Made Active in Reports: 12/29/2021
Number of Days to Update: 84

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 12/19/2022
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 11/15/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 11/15/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/21/2022
Date Data Arrived at EDR: 07/25/2022
Date Made Active in Reports: 07/28/2022
Number of Days to Update: 3

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 10/20/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 05/24/2022
Date Data Arrived at EDR: 08/09/2022
Date Made Active in Reports: 10/28/2022
Number of Days to Update: 80

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/03/2022
Next Scheduled EDR Contact: 02/13/2023
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 04/08/2022
Date Data Arrived at EDR: 05/18/2022
Date Made Active in Reports: 08/03/2022
Number of Days to Update: 77

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/03/2022
Next Scheduled EDR Contact: 02/13/2023
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 05/24/2022
Date Data Arrived at EDR: 08/01/2022
Date Made Active in Reports: 10/20/2022
Number of Days to Update: 80

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/03/2022
Next Scheduled EDR Contact: 02/13/2023
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 08/26/2022
Date Data Arrived at EDR: 08/29/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 78

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 11/22/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 09/22/2022
Date Data Arrived at EDR: 09/26/2022
Date Made Active in Reports: 12/09/2022
Number of Days to Update: 74

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 03/27/2023
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 09/22/2022
Date Data Arrived at EDR: 09/26/2022
Date Made Active in Reports: 12/09/2022
Number of Days to Update: 74

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 03/27/2023
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 06/18/2021
Date Data Arrived at EDR: 09/28/2021
Date Made Active in Reports: 12/14/2021
Number of Days to Update: 77

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 09/30/2022
Next Scheduled EDR Contact: 01/09/2023
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 05/04/2022
Date Data Arrived at EDR: 06/30/2022
Date Made Active in Reports: 07/05/2022
Number of Days to Update: 5

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 12/09/2022
Next Scheduled EDR Contact: 01/10/2023
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 07/27/2022
Date Data Arrived at EDR: 07/27/2022
Date Made Active in Reports: 10/11/2022
Number of Days to Update: 76

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 10/26/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 08/22/2022
Date Data Arrived at EDR: 08/23/2022
Date Made Active in Reports: 11/11/2022
Number of Days to Update: 80

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 10/28/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database
The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 08/25/2022
Date Data Arrived at EDR: 08/25/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 82

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 11/29/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 10/27/2021
Date Data Arrived at EDR: 03/04/2022
Date Made Active in Reports: 05/31/2022
Number of Days to Update: 88

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing
A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/22/2021
Date Data Arrived at EDR: 10/19/2021
Date Made Active in Reports: 01/13/2022
Number of Days to Update: 86

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

SAN DIEGO CO SAM: Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 11/22/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

CUPA SAN FRANCISCO CO: CUPA Facility Listing
Cupa facilities

Date of Government Version: 08/04/2022
Date Data Arrived at EDR: 08/04/2022
Date Made Active in Reports: 10/20/2022
Number of Days to Update: 77

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 10/26/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Varies

LUST SAN FRANCISCO: Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 10/26/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 08/04/2022
Date Data Arrived at EDR: 08/04/2022
Date Made Active in Reports: 10/20/2022
Number of Days to Update: 77

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 10/26/2022
Next Scheduled EDR Contact: 02/13/2023
Data Release Frequency: Quarterly

SAN FRANCISO COUNTY:

SAN FRANCISCO MAHER: Maher Ordinance Property Listing
a listing of properties that fall within a Maher Ordinance, for all of San Francisco

Date of Government Version: 01/18/2022
Date Data Arrived at EDR: 01/20/2022
Date Made Active in Reports: 04/27/2022
Number of Days to Update: 97

Source: San Francisco Planning
Telephone: 628-652-7483
Last EDR Contact: 10/07/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 12/06/2022
Next Scheduled EDR Contact: 03/27/2023
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 08/10/2022
Date Data Arrived at EDR: 08/11/2022
Date Made Active in Reports: 10/28/2022
Number of Days to Update: 78

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 11/08/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 12/09/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 11/30/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 11/08/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 05/16/2022
Date Data Arrived at EDR: 05/18/2022
Date Made Active in Reports: 08/04/2022
Number of Days to Update: 78

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 10/28/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 11/15/2022
Next Scheduled EDR Contact: 03/06/2023
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 01/26/2021
Number of Days to Update: 82

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 10/26/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 11/08/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 11/08/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 11/22/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 09/15/2021
Date Data Arrived at EDR: 09/16/2021
Date Made Active in Reports: 12/09/2021
Number of Days to Update: 84

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 11/22/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 07/02/2021
Date Data Arrived at EDR: 07/06/2021
Date Made Active in Reports: 07/14/2021
Number of Days to Update: 8

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 12/13/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 06/30/2021
Date Data Arrived at EDR: 06/30/2021
Date Made Active in Reports: 09/24/2021
Number of Days to Update: 86

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 12/13/2022
Next Scheduled EDR Contact: 04/03/2023
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 02/08/2022
Date Data Arrived at EDR: 02/10/2022
Date Made Active in Reports: 05/04/2022
Number of Days to Update: 83

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 10/04/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 08/03/2022
Date Data Arrived at EDR: 08/25/2022
Date Made Active in Reports: 11/14/2022
Number of Days to Update: 81

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 11/23/2022
Next Scheduled EDR Contact: 03/13/2023
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 07/27/2022
Date Data Arrived at EDR: 07/27/2022
Date Made Active in Reports: 10/11/2022
Number of Days to Update: 76

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 11/08/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 07/13/2022
Date Data Arrived at EDR: 07/14/2022
Date Made Active in Reports: 09/29/2022
Number of Days to Update: 77

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 04/26/2021
Date Data Arrived at EDR: 04/28/2021
Date Made Active in Reports: 07/13/2021
Number of Days to Update: 76

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 10/05/2022
Next Scheduled EDR Contact: 02/16/2023
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 10/11/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 05/26/2022
Date Data Arrived at EDR: 07/21/2022
Date Made Active in Reports: 09/30/2022
Number of Days to Update: 71

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/19/2022
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: No Update Planned

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 11/01/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: No Update Planned

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 05/26/2022
Date Data Arrived at EDR: 07/25/2022
Date Made Active in Reports: 10/05/2022
Number of Days to Update: 72

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 10/17/2022
Next Scheduled EDR Contact: 01/30/2023
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 08/29/2022
Date Data Arrived at EDR: 08/31/2022
Date Made Active in Reports: 11/21/2022
Number of Days to Update: 82

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/02/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 09/21/2022
Date Data Arrived at EDR: 09/30/2022
Date Made Active in Reports: 12/14/2022
Number of Days to Update: 75

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 12/19/2022
Next Scheduled EDR Contact: 04/10/2023
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 10/25/2022
Date Data Arrived at EDR: 10/26/2022
Date Made Active in Reports: 10/31/2022
Number of Days to Update: 5

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 10/20/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 08/08/2022
Date Data Arrived at EDR: 08/08/2022
Date Made Active in Reports: 10/21/2022
Number of Days to Update: 74

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 11/16/2022
Next Scheduled EDR Contact: 02/20/2023
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 10/03/2022
Next Scheduled EDR Contact: 01/16/2023
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 10/29/2021
Date Made Active in Reports: 01/19/2022
Number of Days to Update: 82

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 10/28/2022
Next Scheduled EDR Contact: 02/06/2023
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 10/05/2022
Next Scheduled EDR Contact: 01/23/2023
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/18/2022
Number of Days to Update: 80

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 12/07/2022
Next Scheduled EDR Contact: 02/27/2023
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 12/01/2022
Next Scheduled EDR Contact: 03/20/2023
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

TRIANGLE PROPERTY
EAST SHEPHERD AVENUE/NORTH TEMPERANCE AVENUE
CLOVIS, CA 93619

TARGET PROPERTY COORDINATES

Latitude (North):	36.870601 - 36ˆ 52’ 14.16’’
Longitude (West):	119.664782 - 119ˆ 39’ 53.22’’
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	262467.0
UTM Y (Meters):	4083630.8
Elevation:	408 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	12012157 CLOVIS, CA
Version Date:	2018
North Map:	12012171 FRIANT, CA
Version Date:	2018

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

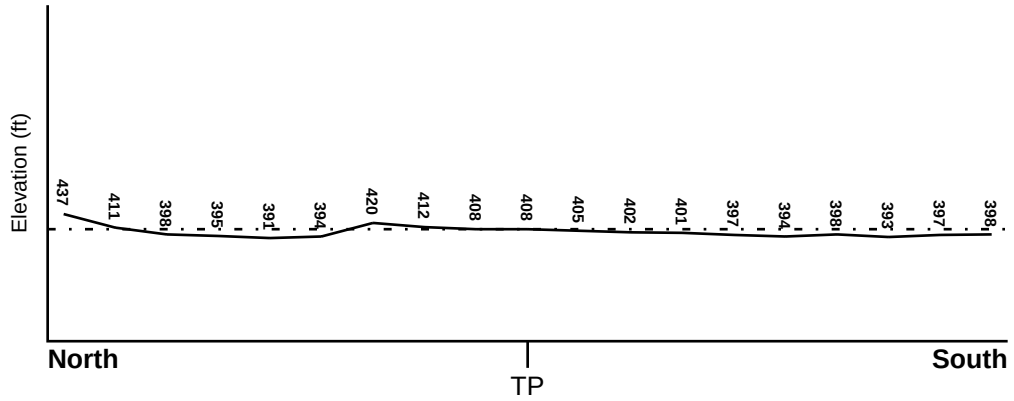
TOPOGRAPHIC INFORMATION

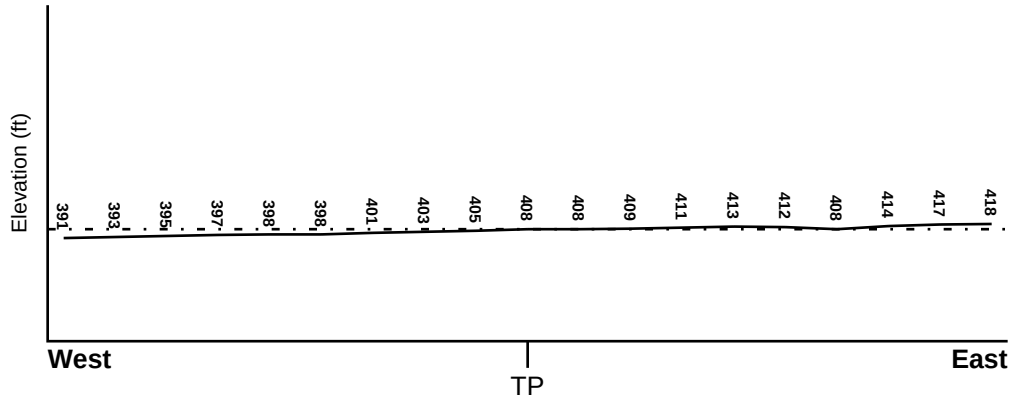
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

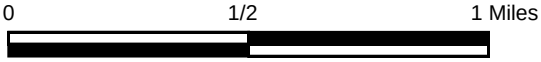
General Topographic Gradient: General SSW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 408 ft.



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06019C1585H	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06019C1045H	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
CLOVIS	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

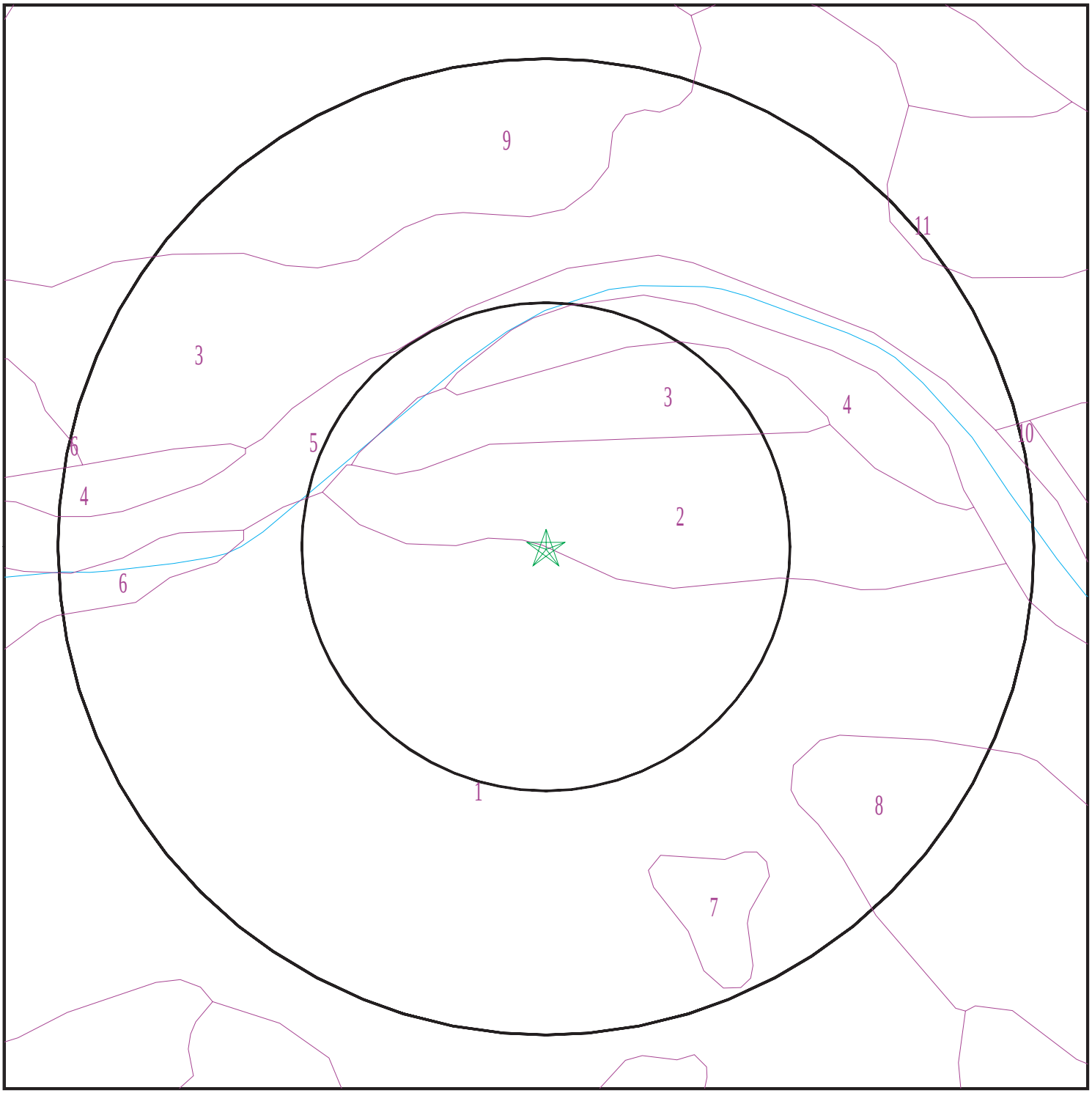
Era:	Mesozoic
System:	Cretaceous
Series:	Lower Cretaceous granitic rocks
Code:	Kg1 *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Plutonic and Intrusive Rocks

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 7208868.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME: Triangle Property ADDRESS: East Shepherd Avenue/North Temperance Avenue Clovis CA 93619 LAT/LONG: 36.870601 / 119.664782	CLIENT: Krazan & Associates, Inc. CONTACT: Dulcinea Deleon INQUIRY #: 7208868.2s DATE: December 20, 2022 1:47 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: ATWATER

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	24 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
2	24 inches	42 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
3	42 inches	59 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

Soil Map ID: 2

Soil Component Name: ATWATER

Soil Surface Texture: loamy sand

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	24 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
2	24 inches	42 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
3	42 inches	59 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

Soil Map ID: 3

Soil Component Name: FOSTER

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 7.4
2	16 inches	29 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 7.4
3	29 inches	59 inches	stratified sand to silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 7.4

Soil Map ID: 4

Soil Component Name: TUJUNGA

Soil Surface Texture: stratified sand to loamy sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	3 inches	59 inches	stratified sand to loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 6.1
2	0 inches	3 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 6.1

Soil Map ID: 5

Soil Component Name: RIVERWASH

Soil Surface Texture: coarse sand

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Excessively drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 31 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches	coarse sand	Not reported	Not reported	Max: 141 Min: 42	Max: Min:
2	5 inches	59 inches	stratified coarse sand to sandy loam	Not reported	Not reported	Max: 141 Min: 42	Max: Min:

Soil Map ID: 6

Soil Component Name: GRANGEVILLE

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Somewhat poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 153 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6
2	7 inches	59 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6

Soil Map ID: 7

Soil Component Name: ATWATER

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	24 inches	42 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1
2	42 inches	59 inches	loamy sand	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1
3	0 inches	24 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1

Soil Map ID: 8

Soil Component Name: SAN JOAQUIN

Soil Surface Texture: sandy clay loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	16 inches	27 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 6.5 Min: 5.6
2	27 inches	29 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 6.5 Min: 5.6
3	29 inches	35 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 6.5 Min: 5.6
4	35 inches	59 inches	coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 6.5 Min: 5.6
5	0 inches	16 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 6.5 Min: 5.6

Soil Map ID: 9

Soil Component Name: SAN JOAQUIN

Soil Surface Texture: loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.3 Min: 6.1
2	16 inches	27 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.3 Min: 6.1
3	27 inches	29 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.3 Min: 6.1
4	29 inches	35 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.3 Min: 6.1
5	35 inches	59 inches	coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.3 Min: 6.1

Soil Map ID: 10

Soil Component Name: DELLO

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Somewhat poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 122 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Clean Sands, Poorly graded sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 6.6
2	9 inches	35 inches	loamy sand	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Clean Sands, Poorly graded sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 6.6
3	35 inches	59 inches	sand	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Clean Sands, Poorly graded sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 6.6

Soil Map ID: 11

Soil Component Name: RAMONA

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1
2	11 inches	24 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1
3	24 inches	38 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1
4	38 inches	59 inches	coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	USGS40000178844	1/4 - 1/2 Mile South
A3	USGS40000178862	1/4 - 1/2 Mile South
6	USGS40000178858	1/4 - 1/2 Mile SSE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

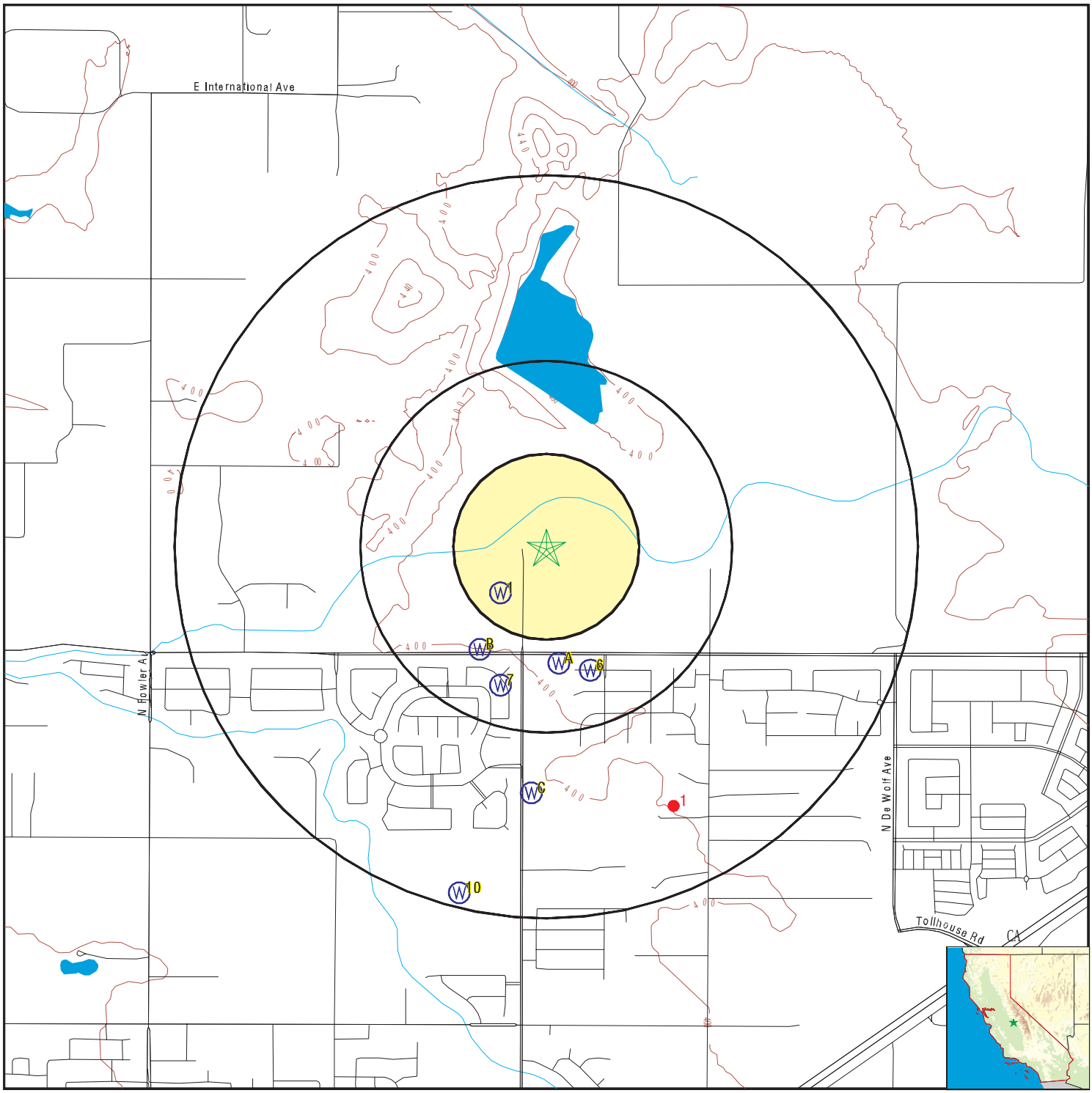
MAP ID	WELL ID	LOCATION FROM TP
1	CADWR0000019400	1/8 - 1/4 Mile SW
B4	CADWR9000031423	1/4 - 1/2 Mile SSW
B5	CADWR9000031424	1/4 - 1/2 Mile SSW
7	CADWR0000036075	1/4 - 1/2 Mile SSW
C8	CADWR9000031364	1/2 - 1 Mile South
C9	CADWR9000031353	1/2 - 1 Mile South
10	CADWR9000031315	1/2 - 1 Mile SSW

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	CAOG14000012466	1/2 - 1 Mile SSE

PHYSICAL SETTING SOURCE MAP - 7208868.2s



County Boundary
Major Roads
Contour Lines
Earthquake Fault Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location
HD Closest Hydrogeological Data
Oil, gas or related wells

N

SITE NAME:	Triangle Property	CLIENT:	Krazan & Associates, Inc.
ADDRESS:	East Shepherd Avenue/North Temperance Avenue Clovis CA 93619	CONTACT:	Dulcinea Deleon
		INQUIRY #:	7208868.2s
LAT/LONG:	36.870601 / 119.664782	DATE:	December 20, 2022 1:47 pm

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Map ID Direction Distance Elevation	Database	EDR ID Number
1 **SW** **1/8 - 1/4 Mile** **Lower**	**CA WELLS**	**CADWR0000019400**

Well ID:	12S21E22Q001M	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	12S21E22Q001M	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=12S21E22Q001M&store_num=		
GeoTracker Data:	Not Reported		

A2 **South** **1/4 - 1/2 Mile** **Lower**	**FED USGS**	**USGS40000178844**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	012S021E27B001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	125
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1963-10-14
Feet below surface:	65.22	Feet to sea level:	Not Reported
Note:	Not Reported		

A3 **South** **1/4 - 1/2 Mile** **Lower**	**FED USGS**	**USGS40000178862**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	012S021E22Q001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	100
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1963-10-14
Feet below surface:	60.17	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID Direction Distance Elevation	Database	EDR ID Number
B4 **SSW** **1/4 - 1/2 Mile** **Lower**	**CA WELLS**	**CADWR9000031423**

State Well #:	12S21E22P001M	Station ID:	17691
Well Name:	Not Reported	Basin Name:	Kings
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

B5 **SSW** **1/4 - 1/2 Mile** **Lower**	**CA WELLS**	**CADWR9000031424**

State Well #:	12S21E22P002M	Station ID:	17692
Well Name:	Not Reported	Basin Name:	Kings
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

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6 **SSE** **1/4 - 1/2 Mile** **Lower**	**FED USGS**	**USGS40000178858**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	012S021E23N001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	225
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1963-10-14
Feet below surface:	64.77	Feet to sea level:	Not Reported
Note:	Not Reported		

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7 **SSW** **1/4 - 1/2 Mile** **Lower**	**CA WELLS**	**CADWR0000036075**

Well ID:	12S21E27B001M	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	12S21E27B001M	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=12S21E27B001M&store_num=		
GeoTracker Data:	Not Reported		

Map ID Direction Distance Elevation	Database	EDR ID Number
C8 **South** **1/2 - 1 Mile** **Lower**	**CA WELLS**	**CADWR9000031364**

State Well #:	12S21E27F001M	Station ID:	17826
Well Name:	Not Reported	Basin Name:	Kings
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

C9 **South** **1/2 - 1 Mile** **Lower**	**CA WELLS**	**CADWR9000031353**

State Well #:	12S21E27F002M	Station ID:	34826
Well Name:	Not Reported	Basin Name:	Kings
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

10 **SSW** **1/2 - 1 Mile** **Lower**	**CA WELLS**	**CADWR9000031315**

State Well #:	12S21E27L001M	Station ID:	17827
Well Name:	Not Reported	Basin Name:	Kings
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance	Database	EDR ID Number
1 **SSE** **1/2 - 1 Mile**	**OIL_GAS**	**CAOG14000012466**

API #:	0401905987	Well #:	1
Well Status:	Plugged	Well Type:	Dry Hole
Lease Name:	Sagniere	Field Name:	Any Field
Area Name:	Any Area	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	07/23/1956		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93619	5	2

Federal EPA Radon Zone for FRESNO County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for FRESNO COUNTY, CA

Number of sites tested: 100

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.251 pCi/L	98%	2%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	1.433 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

OTHER STATE DATABASE INFORMATION

Groundwater Ambient Monitoring & Assessment Program
State Water Resources Control Board
Telephone: 916-341-5577
The GAMA Program is Californias comprehensive groundwater quality monitoring program. GAMA collects data by testing the untreated, raw water in different types of wells for naturally-occurring and man-made chemicals. The GAMA data includes Domestic, Monitoring and Municipal well types from the following sources, Department of Water Resources, Department of Heath Services, EDF, Agricultural Lands, Lawrence Livermore National Laboratory, Department of Pesticide Regulation, United States Geological Survey, Groundwater Ambient Monitoring and Assessment Program and Local Groundwater Projects.

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

California Oil and Gas Well Locations
Source: Dept of Conservation, Geologic Energy Management Division
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

PHYSICAL SETTING SOURCE RECORDS SEARCHED

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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STATE WATER RESOURCES CONTROL BOARD
HAZARDOUS SUBSTANCE STORAGE CONTAINER INFORMATION FOR FRESNO COUNTY
CONTAINER TYPES: 1,2,3,4,5
(1=FARM MOTOR VEHICLE FUEL TANKS, 2=ALL OTHER PRODUCT TANKS, 3=WASTE TANKS, 4=SUMPS, 5=PITS, PONDS, LAGOONS & OTHERS)

I OWNER
MARK MAIKOVICH
2766 W STUART FRESNO CA 93711

II FACILITY

	MAILING ADDRESS / TOWNSHIP/RANGE/SECTION	DEALER/FOREMAN/SUPERVISOR / TELEPHONE	TYPE OF BUSINESS / NO. OF CONTAINERS
GASOLINE TANK 6374 E SHEPHERD CLOVIS CA 93612	2766 W STUART FRESNO CA 93711	RAY AVILA (209) 439-9693	TURKEY FARM 1

CROSS STREET :
NW SHEPHERD & TEMPERANCE
T12 /R21 /S 2

III 24-HR. CONTACT PERSON / TELEPHONE
DAY: MAIKOVICH MARK (209) 439-9693 NIGHT: MAIKOVICH (209) 439-9693

********** OWNER ASSIGNED CONTAINER NUMBER: #1 ********** STATE BOARD ASSIGNED CONTAINER ID NUMBER: 00000031919001 **********

IV DESCRIPTION
A. CONTAINER TYPE : TANK
B. MANUFACTURER/YR OF MFG: /
C. YEAR INSTALLED : UNK
D. CAPACITY (GALLONS) : 500
E. REPAIRS : NONE IF YES WHEN :
F. CURRENTLY USED : YES IF NO, YEAR OF LAST USE:
G. STORES : PRODUCT
H. MOTOR VEHICLE FUEL/WASTE OIL : YES CONTAINS: UNLEADED

IS CONTAINER LOCATED ON A FARM : YES

V CONTAINER CONSTRUCTION
A. THICKNESS:
B. VAULTING: UNKNOWN
C. WALLING: SINGLE
D. MATERIAL : CARBON STEEL
E. LINING : OTHER
F. WRAPPING : TAR OR ASPHT

VI PIPING
A. ABOVEGROUND PIPING : UNKNOWN
B. UNDERGROUND PIPING : SUCTION
C. REPAIRS : NONE IF YES, YEAR OF MOST RECENT REPAIR:

VII LEAK DETECTION
STOCK INVENTORY NONE

VIII CHEMICAL COMPOSITION OF SUBSTANCES CURRENTLY STORED IN CONTAINER
12031 UNLEADED MOTOR VEHICLE FUEL

Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

February 24, 2021 Project No. 014-21021

Mr. Jeffrey Harris
Wilson Homes
7550 North Palm Avenue, Suite 102
Fresno, California 93711
jharris@wilsondevelopment.com

RE: Phase I Environmental Site Assessment
Shepherd North Properties
North Side of East Shepherd Avenue
Clovis, California

Dear Mr. Harris:

Krazan & Associates, Inc., (Krazan) completed a Phase I Environmental Site Assessment at the referenced site summarized in a report dated February 24, 2021. We appreciate the opportunity to serve your environmental due diligence needs. During the course of this assessment, Krazan identified evidence of recognized environmental conditions (RECs) in conjunction with the subject site as defined by ASTM E 1527-13. Krazan also identified potential areas of concern (PAOCs), site development issues and ASTM non-scope issues.

RECs

- During Krazan's February 2021 site reconnaissance, Mr. Campbell, the owner of the assessor's parcel number (APN) 557-031-37 property, indicated that a small underground storage tank (UST) was installed by a former property owner. This UST was reported by Mr. Campbell to be located near the northwest corner of the smaller barn/shed located north of the eastern rural residence on his property. No data related to the removal or environmental investigation of the reported UST was revealed in the course of this assessment. Consequently, the specific location and presence or absence of the reported UST and the related condition of the subject site subsurface in the area of the UST are unknown.

PAOCs

- During Krazan's February 2021 site reconnaissance, end-dump soil piles were observed along the southern boundary of the APN 557-012-28 property and in the southwestern portion of the APN 557-031-24 property. No odors, surface staining, stressed vegetation, or other obvious evidence of the presence of hazardous materials or hazardous waste was noted in association with the soil piles. The current owner of these parcels (Baihs-Dhillon) did not discuss these soil piles in the owner questionnaire. Given the absence of specific information concerning the origin or composition of the on-site soil piles, the presence or absence of potential significant concentrations of hazardous materials in the on-site soil piles is unknown.

- Based upon review of aerial photographs and the February 2021 site reconnaissance, Krazan identified two (2) former rural residences with associated structures that existed prior to underground storage tank (UST) regulations. Experience has shown that property owners in historical agricultural settings may have installed USTs in the vicinity of farm structures for their convenience which may go undetected in the absence of any regulatory or interview data. Consequently, the potential exists that current USTs may be located or may have been formerly located in the vicinity of these former homesteads. Consequently, the location and presence or absence of current and/or former USTs and the related condition of the subject site subsurface in the areas of current and/or former USTs are unknown.

Site Development Issues

- Based upon interview questionnaire responses from the subject site property owners' representatives, approximately seven (7) water wells and four (4) septic systems are associated with the subject site, the specific locations of which for all wells and septic systems are unknown. If the on-site water wells and septic systems are not to be used in the future, they should be properly assessed and abandoned/destroyed in accordance with state and local guidelines.

ASTM Non-Scope Issues

- At least six (6) structures occupy the subject site (formerly and current), the construction of which appears to have begun before 1937 and 1998. It is unknown if the on-site structures contain asbestos-containing materials (ACMs) or lead-based paint (LBP). An asbestos and LBP survey and sampling of the on-site structures was not included within the scope of this assessment. Based on the date of construction, there is a possibility that the on-site structures contain ACMs and LBP. Prior to the disturbance of any suspect ACMs or LBP at these structures via demolition, a comprehensive asbestos and LBP survey is recommended. If such materials are identified and need to be disturbed, repaired or removed, a licensed abatement contractor should be consulted.

- Based upon Krazan's February 2021 site reconnaissance, evidence was not apparent to suggest that the site contained a wetland. However, according to the U. S. Fish & Wildlife Service (USFWS) National Wetlands Inventory available via the USFWS Internet website, it is reported that a designated wetland appears to be located within the central portion of the subject site. A copy of the USFWS National Wetlands Inventory Map showing the referenced designated wetland is included as Appendix A of this report. If further assessment of the referenced designated wetland is desired, Krazan recommends that a qualified biologist be consulted.

If you have any questions regarding the information presented in this report, please call the undersigned at (559) 348-2200.

Respectfully Submitted,
KRAZAN & ASSOCIATES, INC.

Arthur C. Farkas, REA No. 07818
Environmental Professional

PHASE I ENVIRONMENTAL SITE ASSESSMENT SHEPHERD NORTH PROPERTIES NORTH OF EAST SHEPHERD AVENUE CLOVIS, CALIFORNIA

Pursuant to ASTM E 1527-13

Project No. 014-21021
February 24, 2021

Prepared for:
Mr. Jeffrey Harris
Wilson Homes
7550 North Palm Avenue, Suite 102
Fresno, California 93711
(559) 224-7550

Prepared by:
Krazan & Associates, Inc.
215 West Dakota Avenue
Clovis, California 93612
(559) 348-2200

Krazan & ASSOCIATES, INC.
SITE DEVELOPMENT ENGINEERS

TABLE OF CONTENTS
Project No. 014-21021

1.0 EXECUTIVE SUMMARY 1

2.0 PURPOSE AND SCOPE OF ASSESSMENT 2

2.1 Purpose 2
2.2 Scope of Work 2

3.0 SITE DESCRIPTION 2

3.1 Geology and Hydrogeology 3

4.0 SITE RECONNAISSANCE 4

4.1 Observations 4
4.2 Utilities 6
4.3 Adjacent Streets and Property Usage 7
4.4 ASTM Non-Scope Considerations 7

5.0 USER-PROVIDED INFORMATION 10

5.1 Title Report and Environmental Lien Search 11
5.2 Phase I Environmental Site Assessment User Questionnaire 11

6.0 SITE USAGE SURVEY 12

6.1 Site History 12
6.2 Interviews 15
6.3 Agricultural Chemicals 16
6.4 Regulatory Agency Interface 16
6.5 Regulatory Agency Lists Review 18

7.0 DISCUSSION OF FINDINGS 24

7.1 Evaluation of Data Gaps/Data Failure 24

8.0 CONCLUSIONS/OPINIONS 25

9.0 RELIANCE 27

10.0 LIMITATIONS 27

11.0 QUALIFICATIONS 28

REFERENCES 30

GLOSSARY OF TERMS 31

Maps
Figure No. 1: Vicinity Map ..... following Glossary of Terms
Figure No.'s 2A, 2B and 2C: Parcel Maps ..... following Figure No. 1
Figure No. 3: Site Map ..... following Figure No. 2

Color Photographs
Photographs ..... following Figure No. 3

TABLE OF CONTENTS (continued)
Project No. 014-21021

Appendices

National Wetlands Inventory Map ..... A
Phase I ESA User Questionnaire ..... B
Historical Aerial Photographs C
Historical Topographic Quadrangle Maps ..... D
Fresno County Building Department Records ..... E
Environmental Data Resources, Inc. (EDR), City Directory Abstract ..... F
EDR, Sanborn Fire Insurance Maps *Unmapped Property* Report ..... G
Phase I ESA Owner Questionnaires ..... H
Fresno County Fire Department Records I
EDR, Radius Map Report ..... J

February 24, 2021 Project No. 014-21021

PHASE I ENVIRONMENTAL SITE ASSESSMENT
SHEPHERD NORTH PROPERTIES
NORTH OF EAST SHEPHERD AVENUE
CLOVIS, CALIFORNIA

1.0 EXECUTIVE SUMMARY

Krazan & Associates, Inc. (Krazan) has conducted a Phase I Environmental Site Assessment (ESA) of the Shepherd North Properties located north of East Shepherd Avenue in the City of Clovis, California (subject site). It is incumbent upon the user to read this Phase I ESA report in its entirety. If not otherwise defined within the text of this report, please refer to the Glossary of Terms Section following the References Section for definitions of terms and acronyms utilized within this Phase I ESA report. Krazan conducted the Phase I ESA of the subject site in conformance with the American Society for Testing and Materials (ASTM) E 1527-13 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.* This Phase I ESA constitutes all appropriate inquiry (AAI) designed to identify recognized environmental conditions (RECs) in connection with the previous ownership and uses of the subject site as defined by ASTM E 1527-13.

ASTM E 1527-13 Section 1.1.1 *Recognized Environmental Conditions* – In defining a standard of good commercial and customary practice for conducting an environmental site assessment of a parcel of property, the goal of the processes established by this practice is to identify recognized environmental conditions. The term recognized environmental conditions means the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. *De minimis* conditions are not recognized environmental conditions.

During the course of this assessment, Krazan identified evidence of recognized environmental conditions (RECs) in conjunction with the subject site as defined by ASTM E 1527-13 and potential areas of concern (PAOCs), site development issues and ASTM non-scope issues which are discussed in detail in Section 8.0 of this report.

2.0 PURPOSE AND SCOPE OF ASSESSMENT

2.1 Purpose

According to ASTM E 1527-13, the purpose of this practice is to define good commercial and customary practice in the United States of America for conducting an *environmental site assessment* of a parcel of *commercial real estate* with respect to the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) and *petroleum products*. As such, this practice is intended to permit a *user* to satisfy one of the requirements to qualify for the *innocent landowner, contiguous property owner,* or *bona fide prospective purchaser* limitation on CERCLA liability (hereinafter, the *landowner liability protections,* or *LLPs*): that is, the practice that constitutes *all appropriate inquiries* into the previous ownership and uses of the *property* consistent with good commercial and customary practice as defined at 42 U.S.C. §9601(35)(B).

2.2 Scope of Work

The Phase I ESA includes the following scope of work: a) a site reconnaissance of existing on-site conditions and observations of adjacent property uses, b) a review of user-provided documents c) a review of historical aerial photographs, a review of pertinent building permit records, city directories, historical Sanborn Fire Insurance Maps (SFIMs), and interview(s) with person(s) knowledgeable of the previous and current ownership and uses of the subject site, d) a review of local regulatory agency records, and e) a review of local, state, and federal regulatory agency lists compiled by Environmental Data Resources, Inc. (EDR). The scope of work for this Phase I ESA conforms to ASTM E 1527-13. Krazan was provided authorization to conduct the Phase I ESA by Mr. Jeffrey Harris with Wilson Homes on February 3, 2021, in Krazan's February 2, 2021 Proposal/Cost Estimate No. P21-046.

3.0 SITE DESCRIPTION

The subject site is located north of E. Shepherd Avenue, south of E. Behymer Avenue and west of N. Temperance Avenue in Clovis, California. The subject site consists of eight (8) parcels measuring approximately 242.69 acres with the associated Fresno County Assessor's Parcel Numbers (APNs) 557-012-02, 557-012-28, 557-012-29, 557-022-11S, 557-031-24, 557-031-25, 557-031-27, and 557-031-37. The subject site is currently fallow land with current and former rural residences and associated structures.

General property information and property use are summarized in the following Table I. Refer to Figures No. 1 – 4 following the Reference Section:

TABLE I
Subject Site Information Summary

Current Owner:	Baihs-Dhillon, Kalfayan, Johal, Campbell, and Brown
Assessor's Parcel Number:	557-012-02, 557-012-28, 557-012-29, 557-022-11S, 557-031-24, 557-031-25, 557-031-27, and 557-031-37
Address:	6110 and 6120 E. Shepherd Avenue, 9255 N. Temperance Avenue, 5931 E. Perrin Avenue
Historical Addresses:	Yes, but unknown for APNs 557-012-29 and 557-022-11S
General Location:	North of E. Shepherd, South of E. Behymer, West of N. Temperance Avenue, and East of N. Burgan Avenue
Acreage:	Approximately 242.69 acres
Existing Use:	Fallow land and rural residences
Number of Buildings:	Three (3) rural residences, three (3) sheds/barns
Original Construction Date:	Two (2) rural residences prior to 1923 (per topographic map) One (1) rural residence circa-1950s (per Mr. Campbell)
Proposed Use:	Residential Development
Topographic Map:	U.S. Geological Survey, 7.5 minute Friant and Clovis, California topographic quadrangle maps, dated 1922 to 2000
Topographic Map Location:	Sections 21 and 22, Township 12 South, Range 21 East, Mount Diablo Baseline and Meridian
Latitude/Longitude:	36.87407° / –119.67362°
Topography:	Slight topographic changes and depressions, approximately 400 feet above mean sea level
Approximate Depth to Groundwater:	105 feet below ground surface (bgs), State of California Department of Water Resources (DWR)*
Regional Groundwater Flow Direction:	Northwest, DWR

State of California, Department of Water Resources, *Groundwater Information Center Interactive Map Application, Spring 2020*.

3.1 Geology and Hydrogeology

The subject site is located within the San Joaquin Valley, a broad structural trough bound by the Sierra Nevada and Coast Ranges of California. The San Joaquin Valley, which comprises the southern portion of the Great Valley of California, has been filled with several thousand feet of sedimentary deposits. Sediments in the eastern valley, derived from the erosion of the Sierra Nevada, have been deposited by major to minor west-flowing drainages and their tributaries. Near-surface sediments are dominated by sands and silty sands with lesser silts, minor clays, and gravel. The sedimentary deposits in the region form large coalescing alluvial fans with gentle slopes. The groundwater in the area is reported to be first encountered at a depth of approximately 105 feet bgs. The groundwater flow direction in the area of the subject site is generally towards the northwest.

4.0 SITE RECONNAISSANCE

A site reconnaissance, which included a visual observation of the subject site and surrounding properties, was conducted by Mr. Mark Edwards, Krazan's Environmental Assessor, on February 16 and 18, 2021. Krazan's Environmental Assessor was unaccompanied during the site reconnaissance. The objective of the site reconnaissance is to obtain information indicating the likelihood of identifying recognized environmental conditions, including hazardous substances and petroleum products, in connection with the property (including soils, surface waters, and groundwater).

4.1 Observations

The following Table II summarizes conditions encountered during our site reconnaissance. A discussion of visual observations in the table below. Refer to the Site Map (Figure No. 3) and color photographs following the text for the locations of items discussed in this section of the report.

TABLE II
Summary of Site Reconnaissance

Feature	Observed	Not Observed
Structures (existing)	X	
Evidence of Past Uses (foundations, debris)	X	
Hazardous Substances and/or Petroleum Products (including containers)	X	
Aboveground Storage Tanks (ASTs)		
Underground Storage Tanks (USTs) or Evidence of USTs	X	
Evidence of Underground Pipelines (irrigation)	X	
Strong, Pungent, or Noxious Odors		X
Pools of Liquid Likely to be Hazardous Materials or Petroleum Products		X
Drums		X
Unidentified Substance Containers		X
Potential Polychlorinated Biphenyl (PCB)-Containing Equipment	X	
Subsurface Hydraulic Equipment		X
Heating/Ventilation/Air conditioning (HVAC)		X
Stains or Corrosion on Floors, Walls, or Ceilings		X
Floor Drains, Sumps, or Oil/Water Clarifiers		X
Storm Drains	X	
Pits, Ponds, or Lagoons	X	
Stained Soil and/or Pavement		X
Soil Piles	X	
Stressed Vegetation		X
Waste or Wastewater (including stormwater) Discharges to Surface/ Surface Waters	X	
Wells (irrigation, domestic, dry, injection, abandoned, monitoring wells)	X	
Septic Systems	X	

The subject site consists of eight (8) parcels measuring approximately 242.69 acres with the associated Fresno County APNs 557-012-02, 557-012-28, 557-012-29, 557-022-11S, 557-031-24, 557-031-25, 557-031-27, and 557-031-37. Refer to Figure No. 3, Site Map, for locations of the following referenced on-site features:

- A majority of the subject site was observed to be vacant land utilized for grazing purposes and rural residential. Evidence of hazardous materials storage/waste was observed at the subject site.

- APN 557-012-02: This parcel is approximately 40 acres and was observed to be vacant land (Photograph No. 1). One pole-mounted transformer was observed in the northern-central portion of this parcel. An active water well was observed in the northern-central portion of this parcel (Photograph No. 2). An abandoned water well casing was observed in the northeast corner of this parcel (Photograph No. 3). A small depression was observed in the western-central portion of this parcel. At the time of the site reconnaissance, the depression was dry with remnants of brick and concrete in the bottom.

- APN 557-012-28: This parcel is approximately 19.55 acres and was observed to be vacant land. Soil piles of unknown origin were observed along the southern boundary of this parcel.

- APN 557-012-29: This parcel is approximately 19.55 acres and was observed to be vacant land.

- APN 557-022-11S: This parcel is approximately 19.70 acres and was primarily vacant land with evidence that two (2) former rural residences and associated structures were located along the northern boundary of this parcel (Photographs No. 6 and 7). An abandoned water well casing was observed in the northern portion of this parcel (Photograph No. 8). Piles of trash, which appeared to be non-hazardous, were observed in the northern portion of this parcel (Photograph No. 9).

- APN 557-031-24: This parcel is approximately 24.51 acres and was observed to be vacant land. Soil piles of unknown origin were observed in the southwestern portion of this parcel (Photograph No. 10). An active water well and storage tank were observed in the northeastern corner of this parcel (Photograph No. 11).

- APN 557-031-25: This parcel is approximately 23.80 acres and was observed to be vacant land.

- APN 557-031-27: This parcel is approximately 56.01 acres and was observed to be primarily vacant land with a rural residence and associated structures located in the southwest corner (Photograph No. 12). A buried recycled water line with flush-set access lid and bollard markers was observed along the eastern boundary of this parcel (Photographs No. 13 and 14). An associated water well (Photograph No. 15) and septic system (Photograph No. 16) were observed in the vicinity of the rural residence. An abandoned water well was observed west of the rural residence (Photograph No. 17). Piles of vegetation, bricks, tires, concrete, and other materials were observed in the southeastern portion of this parcel (Photographs No. 18 and 19). Remnants of former agricultural irrigation were observed in the eastern-central portion of this parcel (Photograph No. 20). The former channel of Dry Creek (prior to the off-site levee construction) was observed in the southern portion of this parcel.

- APN 557-031-37: This parcel is approximately 39.57 acres and was observed to be primarily vacant land with two (2) rural residences and associated structures in the southern-central portion of this parcel (Photographs No. 21 and 22). Two (2) water wells were observed (Photographs No. 23 and 24) and three (3) septic systems were reported by the owner. Three (3) barns/sheds were observed north of the rural residences (Photographs No. 25, 26 and 27). A swimming pool was observed north of the eastern rural residence (Photograph No. 28). A small UST was reported by the owner to have been installed on this parcel by a previous property owner, but was not observed during the site reconnaissance (Photograph No. 27). Small quantities of gasoline, oil and paints were observed in the barns and sheds (Photographs No. 29, 30 and 31). Remnants of former agricultural irrigation were observed in the central portion of this parcel (Photograph No. 32). A portion of Dry Creek was observed in the northwestern corner of this parcel.

- During the visual observations of the subject site, exposed surface soils did not exhibit obvious signs of discoloration. No standing water was observed on the subject site.

- High-voltage, pole-mounted electrical transmission lines were not observed. A number of pole-mounted transformers were observed on the subject site.

4.2 Utilities

Based on Krazan's research, the following Table III summarizes sources that provide utility services to the subject site:

TABLE III
Municipal Service / Utility Providers

Electricity	Pacific Gas and Electric
Natural Gas	Propane
Potable Water	Domestic Wells
Sanitary Sewer	Septic

Potable Water Source

Three (3) domestic water wells supply water to the rural residences on the subject site. Two (2) water wells were observed in the northern portion of the subject site which appeared to be utilized for grazing purposes. Two (2) domestic water wells are located on APN 557-031-37 and one (1) domestic water well is located on APN 557-031-27. It is unknown if the drinking water meets current State requirements for potable water. If the on-site water wells are not to be used as part of any planned redevelopment of the subject site, they should be properly destroyed in accordance with State and local guidelines.

Sewage Disposal System

At least four (4) septic systems are located on the subject site. Three (3) septic systems are located on APN 557-031-37 and at least one (1) septic system is located on APN 557-031-27. The presence of the septic systems is not anticipated to adversely impact the subject site due to their presumed use for domestic purposes only. If the septic systems are not to be used in any planned redevelopment of the

subject site, they should be properly abandoned/closed or destroyed in accordance with State and local guidelines.

4.3 Adjacent Streets and Property Usage

The following Table IV summarizes the current adjacent roads and adjacent property uses observed during the site reconnaissance:

TABLE IV
Adjacent Streets and Property Use

Direction	Adjacent Street	Adjacent Property Use
North	E. Behymer	Rural Residential & Grazing
South	E. Shepherd	Residential
East	N. Temperance	Rural Residential & Grazing
West	N. Burgan	Rural Residential

Based on the observed uses of the properties located immediately adjacent to the subject site, it is unlikely that significant quantities of hazardous materials are stored at the adjacent properties.

4.4 ASTM Non-Scope Considerations

According to ASTM E 1527-13, there may be environmental issues or conditions at the subject site that are outside the scope of the Phase I ESA practice (non-scope considerations). Some substances may be present at the subject site in quantities and under conditions that may lead to contamination of the subject site or of nearby properties but are not included in CERCLA's definition of hazardous substances (42 U.S.C. §9601[14]). ASTM non-scope considerations are discussed below.

Asbestos-Containing Materials

Asbestos is a group of naturally occurring mineral fibers that have been used commonly in a variety of building construction materials for insulation and as a fire-retardant. Because of its fiber strength and heat resistant properties, asbestos has been used for a wide range of manufactured goods, mostly in building materials, vehicle brakes, and heat-resistant fabrics, packaging, gaskets, and coatings. When asbestos-containing materials (ACMs) are damaged or disturbed by repair, remodeling, or demolition activities, microscopic asbestos fibers may become airborne and can be inhaled into the lungs, where they can cause significant health problems.

Construction of the structures located on the subject site appears to have begun before in 1923. It is unknown if the on-site structures contain ACMs. An asbestos survey and sampling of the on-site structures was not included within the scope of this assessment. Based on the date of construction, there

is a likelihood that the on-site structures contain ACMs and could be considered an environmental concern at this time.

Lead-Based Paint

Although lead-based paint (LBP) was banned in 1978, many buildings constructed prior to 1978 have paint that contains lead. Lead from paint, chips and dust can pose serious health hazards if not addressed properly.

Construction of the structures located on the subject site appears to have begun before 1923. It is unknown if the on-site structures contain lead-based paint (LBP). An LBP survey and sampling of the on-site structures was not included within the scope of this assessment. Based on the date of construction, there is a likelihood that the on-site structures contain LBP and could considered an environmental concern at this time.

Mold and Moisture Intrusion

A class of fungi, molds have been found to cause a variety of health problems in humans, including allergic, toxicological, and infectious responses. Molds are decomposers of organic materials, and thrive in humid environments, and produce spores to reproduce, just as plants produce seeds. When mold spores land on a damp spot indoors, they may begin growing and digesting whatever they are growing on in order to survive. When excessive moisture or water accumulates indoors, mold growth will often occur, particularly if the moisture problem remains undiscovered or unaddressed. As such, interior areas of buildings characterized by poor ventilation and high humidity are the most common locations of mold growth. Building materials including drywall, wallpaper, baseboards, wood framing, insulation and carpeting often play host to such growth. Moisture control is the key to mold control. Molds need both food and water to survive; since molds can digest most things, water is the factor that limits mold growth. The EPA recommends the following action to prevent the amplification of mold growth in buildings:

- Fix leaky plumbing and leaks in the building envelope as soon as possible.
- Watch for condensation and wet spots. Fix source(s) of moisture problem(s) as soon as possible.
- Prevent moisture due to condensation by increasing surface temperature or reducing the moisture level in air (humidity). To increase surface temperature, insulate or increase air circulation. To reduce the moisture level in air, repair leaks, increase ventilation (if outside air is cold and dry), or dehumidify (if outdoor air is warm and humid).
- Keep heating, ventilation, and air conditioning (HVAC) drip pans clean, flowing properly, and unobstructed.

- Vent moisture-generating appliances, such as dryers, to the outside where possible.
- Maintain low indoor humidity, below 60% relative humidity (RH), ideally 30-50%, if possible.
- Perform regular building/HVAC inspections and maintenance as scheduled.
- Clean and dry wet or damp spots within 48 hours.
- Do not let foundations stay wet. Provide drainage and slope the ground away from the foundation.

During Krazan's site reconnaissance, obvious visual evidence of the presence of mold or water intrusion was observed, therefore, mold and moisture intrusion have the potential to represent an environmental concern at this time.

Radon

Radon is a radioactive gas that is found in certain geologic environments and is formed by the natural breakdown of radium, which is found in the earth's crust. A radon survey was not included within the scope of this investigation; however, the State of California Department of Health Services (CDHS) maintains a statewide database of radon results in designated geographic areas. Radon detection devices are placed in homes throughout the study region to determine geographic regions with elevated radon concentrations. The U.S. EPA has set the safety standard for radon gas in homes to be 4.0 pico Curies per liter (pCi/L).

The US EPA has prepared a map to assist National, State and local organizations to target their resources and to implement radon-resistant building codes. The map divides the country into three Radon Zones, Zone 1 being those areas with the average predicted indoor radon concentration in residential dwellings exceeding the EPA Action Limit of 4.0 pCi/L. It is important to note that the EPA has found homes with elevated levels of radon in all three zones, and the EPA recommends site-specific testing in order to determine radon levels at a specific location. However, the map does give a valuable indication of the propensity of radon gas accumulation in structures. Review of the EPA Map of Radon Zones places the Property in Zone 2, where average predicted radon levels are between 2.0 and 4.0 pCi/L. Therefore, the available data suggests that the potential for radon to adversely impact the subject site appears to be low.

Wetlands

As defined by the U.S. EPA and the Department of Army, Corps of Engineers, wetlands are "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to

support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Jurisdictional wetlands are regulated under Section 404 of the Clean Water Act (1972, 1977, and 1987, and also the 1985 and 1990 Farm Bills), and are important for protection of aquatic waterfowl and species, water purification, and flood control.

According to current Corps of Engineers information, three basic criteria are currently used to define wetlands:

- Wetland hydrology - areas exhibiting surface or near-surface saturation or inundation at some point in time (greater than 12.5 percent of growing season defined on basis of frost-free days) during an average rainfall year.
- Hydrophilic vegetation - frequency of occurrence of wetland indicator plants (plant life growing in water, soil, or substrate that is periodically deficient in oxygen as a result of excessive water content).
- Hydric soil - landscape patterns identified by saturation, flooding, or ponding long enough during the growing season (generally seven days) which develop characteristic color changes in the upper part of the soil as a result of anaerobic conditions.

Based on Krazan's reconnaissance of the subject site, evidence was not apparent to suggest that the site contained a wetland. However, according to the U. S. Fish & Wildlife Service (USFWS) National Wetlands Inventory available via the USFWS Internet website, it is reported that the subject site contains a designated wetland. Therefore, at this time, regulations pertaining to wetlands may impact the subject site. Please refer to Appendix A for a copy of the National Wetlands Inventory Map.

Environmental Non-Compliance Issues

No obvious material non-compliance issues were identified in connection with the subject site in the process of preparing this report.

Activity and Use Limitations

No activity and use limitations were identified in connection with the subject site in the process of preparing this report.

5.0 USER-PROVIDED INFORMATION

A review of user-provided information was conducted in order to help identify pertinent information regarding potential environmental impacts associated with the subject site.

5.1 Title Report and Environmental Lien Search

A Final Title Report or Environmental Lien Search were not prepared by or provided to Krazan during the course of this assessment. The absence of a Final Title Report or Environmental Lien Search represents a data gap.

5.2 Phase I Environmental Site Assessment User Questionnaire

In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the *Brownfields Amendments*), the *user* must provide the following information (if available) to the *environmental professional*. Failure to provide this information could result in a determination that *all appropriate inquiry* is not complete. The user is asked to provide information or knowledge of the following:

1. Environmental cleanup liens that are filed or recorded against the site.
2. Activity and land use limitations that are in place on the site or that have been filed or recorded in a registry.
3. Specialized knowledge or experience of the person seeking to qualify for the LLPs.
4. Relationship of the purchase price to the fair market value of the *property* if it were not contaminated.
5. Commonly known or *reasonably ascertainable* information about the *property*.
6. The degree of obviousness of the presence or likely presence of contamination at the *property*, and the ability to detect the contamination by appropriate investigation.
7. The reason for preparation of this Phase I ESA.

A completed Phase I ESA user questionnaire was received from Mr. Jeffrey Harris with Wilson Homes, the Phase I ESA user. Please refer to Appendix B for a copy of the completed Phase I ESA User Questionnaire.

According to the questionnaire responses, Mr. Harris, to the best of his knowledge as the user of this Phase I ESA, was not aware of any environmental cleanup liens and activity or land use limitations which have been filed or recorded against the subject site; and Mr. Harris indicated that he did not have knowledge of specific chemicals being used at the subject site and/or unauthorized spills or chemical releases in connection with the subject site. Mr. Harris also indicated that he did not know about the past uses of the subject site. Additionally, Mr. Harris indicated that the reason for preparation of this Phase I ESA is related to a purchase of the property for a residential subdivision, and the purchase price reasonably reflects fair market value.

6.0 SITE USAGE SURVEY

The property usage survey included assessing property history, conducting interviews with persons knowledgeable of the previous and current ownership and uses of the subject site, and reviewing local, state, and federal regulatory agency records.

6.1 Site History

A review of historical aerial photographs, a USGS topographic quadrangle maps, building department records, reasonably ascertainable city directories, a search for historical Sanborn fire insurance maps (SFIMs), and Phase I ESA interviews were utilized to assess the history of the subject site.

Aerial Photograph Interpretation

Historical aerial photographs dated 1937, 1946, 1950, 1957, 1962, 1967, 1973, 1979, 1984, 1987, 1998, 2005, 2009, 2012, and 2016 were reviewed to assess the history of the subject site. These photographs were obtained from Environmental Data Resources, Inc. (EDR). The aerial photograph summary is provided in the following Table V. Please refer to Appendix C for a copy of the Historical Aerial Photographs.

TABLE V
Summary of Aerial Photograph Review

Year/Scale	Site Use	Site and Adjacent Property Observation
1937 1" = 750'	Vacant Land, Agricultural, and Rural Residential	The subject site and adjacent properties appear to be a mix of vacant land, agricultural and rural residential. Dry Creek is visible in the southern portion of the subject site. Rural residences are located on APNs 557-012-29 (unknown address), 557-022-11S (unknown address), 557-031-37 (6117 E. Shepherd), and 557-031-27 (9255 N. Temperance). 557-012-29 (unknown address): There appears to be a main residence to the north and an associated structure to the south. 557-022-11S (unknown address): There appears to be a main residence in the northeast corner of the APN and at least two (2) associated structures to the southwest. This APN also has visible agricultural uses. 557-031-37 (6117 E. Shepherd): There appears to be a main residence and at least two (2) associated structures in the vicinity of the current western-most residence and the two (2) barns/sheds. This APN also has visible agricultural uses. 557-031-27 (9255 N. Temperance): There appears to be a main residence and at least three (3) associated structures. The main residence appears to be in the vicinity of the current residence.

TABLE V (continued)
Summary of Aerial Photograph Review

Year/Scale	Site Use	Site and Adjacent Property Observation
1946 1" = 750'	Vacant Land, Agricultural, and Rural Residential	The subject site and adjacent properties appear to be similar to the 1937 aerial photograph except it appears the second residence at 6120 E. Shepherd is visible.
1950 1" = 750'	Vacant Land, Agricultural, and Rural Residential	The subject site and adjacent properties appear to be similar to the 1946 aerial photograph except the main residence and associated structure on APN 557-012-029 are no longer visible and the flood control levee northeast of the subject site is visible including a new water flow control ditch running though the subject site.
1957 1" = 750'	Vacant Land, Agricultural, and Rural Residential	The subject site and adjacent properties appear to be similar to the 1950 aerial photograph except it appears that subject site agricultural patterns have changed and a small ponding basin is visible in the northwest portion of the subject site. The off-site property southeast of the subject site appears to have been developed into a chicken farm.
1962 1" = 750'	Vacant Land, Agricultural, and Rural Residential	The subject site and adjacent properties appear to be similar to the 1957 aerial photograph except additional structures associated with the off-site chicken farm southeast of the subject site are visible. New off-site rural residences are visible.
1967 1" = 750'	Vacant Land, Agricultural, and Rural Residential	The subject site and adjacent properties appear to be similar to the 1962 aerial photograph except additional structures associated with the off-site chicken farm southeast of the subject site are visible. New off-site rural residences are visible.
1973 1" = 750'	Vacant Land, Agricultural, and Rural Residential	The subject site and adjacent properties appear to be similar to the 1967 aerial photograph except additional structures associated with the off-site chicken farm southeast of the subject site are visible. New off-site rural residences are visible.
1979 1" = 750'	Vacant Land, Agricultural, and Rural Residential	The subject site and adjacent properties appear to be similar to the 1973 aerial photograph except new off-site rural residences are visible.
1984 1" = 750'	Vacant Land, Agricultural, and Rural Residential	The subject site and adjacent properties appear to be similar to the 1979 aerial photograph except a swimming pool is visible north of 6120 E. Shepherd.
1987 1" = 750'	Vacant Land, Agricultural, and Rural Residential	The subject site and adjacent properties appear to be similar to the 1984 aerial photograph.
1998 1" = 750'	Vacant Land, Agricultural, and Rural Residential	The subject site and adjacent properties appear to be similar to the 1987 aerial photograph except the residence at 5931 E. Perrin is visible. New off-site rural residences are visible.
2005 1" = 750'	Vacant Land, Agricultural, and Rural Residential	The subject site and adjacent properties appear to be similar to the 1998 aerial photograph except the barn structure north of the 9255 N. Temperance residence is no longer visible. New off-site rural residences are visible and a higher density residential development is visible south of E. Shepherd Avenue.

TABLE V (continued)
Summary of Aerial Photograph Review

Year/Scale	Site Use	Site and Adjacent Property Observation
2009 1" = 500'	Agricultural	The subject site and adjacent properties appear to be similar to the 2006 aerial photograph.
2012 1" = 500'	Agricultural	The subject site and adjacent properties appear to be similar to the 2009 aerial photograph except the two (2) residences located on 557-022-11S (5931 E. Perrin and unknown address) are no longer visible.
2016 1" = 500'	Agricultural	The subject site and adjacent properties appear to be similar to the 2012 aerial photograph and similar to 2021 site reconnaissance observations.

Historical Topographic Quadrangle Map

Historical topographic quadrangle maps dated 1922, 1923, 1946, 1947, 1964, 1972, 1981, 2000, and 2012 were reviewed to assess the history of the subject site. These maps were obtained from EDR. The historical topographic quadrangle map summary is provided in the following Table VI. Please refer to Appendix D for a copy of the Historical Topographic Quadrangle Maps.

TABLE VI
Summary of Historical Topographic Map Review

Year	Site and Adjacent Property Observation
1922/1923	The subject site and adjacent properties appear to be undeveloped land with rural residences. Four (4) rural residences are visible on the subject site.
1946	The subject site and adjacent properties appear to be similar to the 1922/1923 topographic maps except two (2) of the four (4) rural residences are not depicted. A few off-site agricultural production areas are depicted.
1947	The subject site and adjacent properties appear to be similar to the 1946 topographic map.
1964	The subject site and adjacent properties appear to have been developed or undergone changes since the 1947 topographic map. Two (2) livable structures and one (1) non-livable structure are located at 557-031-27 (9255 N. Temperance), two (2) livable structures and one (1) non-livable structure are located at 557-031-37 (6117 E. Shepherd) and one (1) livable structure and one (1) non-livable structure are located at 557-022-11S (unknown address). Additional agricultural zones are depicted off-site. Structures associated with the off-site chicken farm located southeast of the subject site are depicted.
1972	The northern portion of the subject site is not depicted. The southern portion of the subject site appears to be similar to the 1964 topographic map except additional off-site structures are depicted.
1981	The subject site and adjacent properties appear to be similar to the 1972 topographic map
2000	The southern portion of the subject site is not depicted. The northern portion of the subject site appears to be similar to the 1964 topographic map (last year depicting the northern portion of the subject site)
2012	The subject site and adjacent properties appear to be similar to the 2000, however, the topographic map does not depict structures only elevation lines, roads and agricultural areas.

Fresno County – Building Department

On February 8, 2021, Krazan accessed available permit information through the Fresno County Building Department permit portal using physical addresses and APNs associated with the subject site.

The permits available for review were not associated with hazardous material storage or usage. Please refer to Appendix E for copies of Fresno County Building Permits.

City Directories

City directories dated 1922, 1927, 1932, 1937, 1942, 1947, 1952, 1958, 1962, 1965, 1970, 1975, 1980, 1986, 1990, 1994, 1996, 1999, 2002, 2004, 2009, 2014, and 2017 were reviewed to assess the history of the subject site. These city directories were obtained from EDR. Information obtained from review of cross-reference directories is consistent with that obtained from other sources during the course of this assessment indicating that the subject site was historically vacant land and rural residential. No listing or references for the use or disposal of hazardous materials on the subject site or adjacent properties were identified during the city directories review. Please refer to Appendix F for a copy of the EDR, City Directory Abstract.

Sanborn Fire Insurance Maps

Krazan reviews SFIMs to evaluate prior land use of the subject site and the adjacent properties. SFIMs typically exist for cities with populations of 2,000 or more, the coverage dependent on the location of the subject site within the city limits. Krazan contracted with EDR to provide copies of available SFIMs for the subject site and the adjacent properties as far back as 1867. EDR's search of SFIMs revealed no coverage for the subject site and the adjacent properties. Please refer to Appendix G for a copy of the EDR, SFIM *Unmapped Property* Report.

6.2 Interviews

Krazan conducted an interview with the owner of the subject site. The interview is designed to provide pertinent information regarding potential environmental impacts associated with the subject site.

Subject Site Owner

Phase I ESA Owner Questionnaires were filled out by the four (4) or the five (5) owners of the subject site. The questionnaire is designed to provide pertinent information regarding potential environmental impacts associated with the subject site.

According to owners, to the best of their knowledge, no disposal of hazardous materials; no existing or former USTs; no hazardous materials spills; no buried materials; no monitoring or irrigation wells; no environmental liens, AULs, engineering or institutional controls, or any items of environmental concern are associated with the subject site.

Mr. Campbell did indicate knowledge of a current on-site UST and one (1) dry well but did not indicate the location of the dry well. Please refer to Appendix H for a copy of the Owner Questionnaires.

Previous Subject Site Owners/Occupants

An interview with a previous owner/occupant of the subject site was not reasonably ascertainable. The absence of such information obtained from an interview with the previous property owner constitutes a data gap

6.3 Agricultural Chemicals

Review of historical aerial photographs indicates that the subject site was in different stages of agricultural production from at least 1937 to at least 1973. Although the potential exists that environmentally persistent pesticides/herbicides were historically applied to the orchards grown on the subject site, 1) no material evidence of the use of environmentally persistent pesticides/herbicides was obtained during the course of this assessment, and 2) it is anticipated that any environmentally persistent pesticides/herbicides potentially located on site will be dislocated/diluted as a result of the rough grading and trenching operations in conjunction with proposed future redevelopment. Consequently, given the above-referenced factors and Krazan's experience in the subject site vicinity which generally indicates that the potential is low for elevated concentrations of environmentally persistent pesticides/herbicides related to agricultural cultivation to exist in the near-surface soils of common agricultural ground at concentrations which would require regulatory action, despite the absence of specific data, the potential for elevated concentrations of environmentally persistent pesticides/herbicides to currently exist in the near-surface soils of the subject site at concentrations which would require regulatory action appears to be low.

6.4 Regulatory Agency Interface

A review of regulatory agency records was conducted to help determine if hazardous materials have been handled, stored, or generated on the subject site and/or the adjacent properties and businesses.

Regulatory records are reviewed based on the following criteria: 1) properties with known soils and/or groundwater releases considered to represent the potential for impact to the subject site that are located within 1,760 feet of the subject site for constituents of concern impacts or 528 feet of the subject site for

petroleum hydrocarbon impacts; 2) properties that are adjacent or in proximity to the subject site included within the EDR regulatory database report or noted during the site reconnaissance to possibly handle, store, or generate hazardous materials. Applicable property records are discussed below.

Fresno County Environmental Health Department

The Fresno County Environmental Health Department (FCEHD) is the lead regulatory agency or Certified Unified Program Agency (CUPA) for hazardous materials handling facilities in Fresno County. CUPA files regarding potential hazardous materials records including USTs, leaking underground storage tanks (LUSTs), hazardous materials business plans (HMBPs), hazardous material releases, and/or environmental cleanup records for the subject site and adjacent properties were researched. No records of hazardous materials storage/waste, ASTs, USTs, LUSTs, or environmental cleanups are on file with the FCEHD for the subject site, adjacent or immediate vicinity properties.

Fresno County Fire Department

The Fresno County Fire Department (FCFD) has jurisdiction for the fire protection for the subject site and the immediate vicinity. The FCFD was contacted via email regarding potential records of hazardous materials storage, aboveground storage tanks, and hazardous material incidents/spills for the subject site. According to representatives of the FCFD, no records for the referenced properties are on file with the FCFD. Please refer to Appendix I for a copy of the FCFD records.

State of California Regional Water Quality Control Board - Geotracker

Krazan's review of the State of California Regional Water Quality Control Board (RWQCB) Geotracker database available via the RWQCB Internet Website indicated that no LUST sites, cleanup program sites, land disposal sites, or military sites are listed for the subject site, the adjacent properties, or properties located within the subject site vicinity. Additionally, no permitted UST sites were determined to be located on or adjacent to the subject site.

State of California Department of Toxic Substances Control - Envirostor

Krazan's review of the State of California Department of Toxic Substances Control (DTSC) Envirostor database available via the DTSC's Internet Website indicated that no State response sites, voluntary cleanup sites, or military evaluation sites are listed for the subject site, the adjacent properties, or properties located within 500 feet of the subject site.

Additionally, no Federal Superfund – National Priorities List (NPL) sites were determined to be located within a one-mile radius of the subject site.

State of California Geologic Energy Management Division - CalGEM

Krazan's review of the State of California Geologic Energy Management Division Online Mapping System (CalGEM) indicated that no plugged and abandoned or producing oil wells are located on or adjacent to the subject site.

National Pipeline Mapping System

Krazan's review of the National Pipeline Mapping System's public viewer indicated that no gas or liquid pipelines are located on or adjacent to the subject site.

Local Area Tribal Records

No Indian reservations, USTs on Indian land, or LUSTs on Indian land were reported on the subject site, adjacent properties, or vicinity properties in the EDR-provided government database report.

6.5 Regulatory Agency Lists Review

Several agencies have published documents that list businesses or properties which have handled hazardous materials or waste or may have experienced site contamination. The lists consulted in the course of our assessment were compiled by EDR and Krazan and represent reasonably ascertainable current listings. Krazan did not verify the locations and distances of every property listed by EDR. Krazan verified the location and distances of the properties Krazan deemed as having the potential to adversely impact the subject site. The actual location of the listed properties may differ from the EDR listing. Refer to the following Table VII for a summary of the listed properties considered to have the potential to impact the subject site located within the specified ASTM Search Radii. The actual distances of the listed properties (which are summarized below) are based on observations during Krazan's site reconnaissance. No EDR-listed unmapped (non geocoded) sites were determined to be located on or adjacent to the subject site. Please refer to Appendix J for a copy of the EDR, Radius Map Report.

TABLE VII
Summary of Findings

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

TABLE VII (continued)
Summary of Findings

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		1	1	NR	NR	NR	2
HIST UST	0.250		1	1	NR	NR	NR	2
CA FID UST	0.250		1	1	NR	NR	NR	2
CERS TANKS	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0

TABLE VII (continued)
Summary of Findings

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	1	NR	NR	NR	1
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		1	1	NR	NR	NR	2

TABLE VII (continued)
Summary of Findings

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
HWTS	TP		NR	NR	NR	NR	NR	0
MINES MRDS	0.001		0	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	4	5	0	0	0	9

The subject site was not listed in the EDR regulatory database report, however, the RCRA NonGen / NLR listing has the generator name Bob Campbell with the physical address of 6120 E. Shepherd Avenue which is located on the subject site. The adjacent property southeast of the subject site is listed at a SWEEPS UST, CA FID UST and HIST UST site. There is no material evidence that these listings represent an environmental concern in conjunction with the subject site.

The remaining properties within the specified search radius of the subject site which appeared on local, state, or federally published lists of sites that use or have had releases of hazardous materials or petroleum products are of sufficient distance and/or situated hydraulically cross- or downgradient from the subject site such that impact to the subject site via groundwater migration is unlikely. In general, potentially hazardous materials released from facilities located approximately hydraulically upgradient within subject site vicinity, or in a hydraulically cross-gradient direction in proximity to the site, may have a reasonable potential of migrating to the subject site via groundwater flow. This opinion is based on the assumption that non-vaporous hazardous materials generally do not migrate large distances laterally within the soil, but rather tend to migrate with groundwater in the general direction of groundwater flow. However, the potential for migration of volatile hazardous materials may include movement within soils, groundwater flow or potentially omni-directionally if present in a vaporous state.

Hazardous Materials Migration in Vapor

Hazardous materials or petroleum product vapors which may have the potential to migrate into the subsurface of the subject site may be caused by the release of vapors from contaminated soil or groundwater either on or in the vicinity of the subject site from current or historical uses of the subject site and/or adjacent or vicinity properties. Current or past land uses such as gasoline stations (using petroleum hydrocarbons), dry cleaning establishments (using chlorinated volatile organic compounds), former manufactured gas plant sites (using volatile and semi-volatile organic compounds), and former industrial sites such as those that had vapor degreasing or other parts-cleaning operations (using chlorinated volatile organic compounds) are of particular concern. Constituent of concern vapors are capable of migrating great distances omni-directionally along subsurface conduits such as pipelines, utility lines, sewer and stormwater lines, and building foundations.

Based on Krazan's observations and review of the EDR regulatory database report, no listings of concern were determined to be associated with the subject site, adjacent properties, or properties located within the subject site vicinity. However, the screening process for vapor migration in connection with the subject site is described in the ASTM E 2600-10 *Standard Guide for Vapor Encroachment Screening*

on Property Involved in Real Estate Transactions, an industry consensus methodology to assess vapor migration which is not included in the scope of work of this Phase I ESA.

No engineering control sites, sites with institutional controls, or sites with deed restrictions were listed for the subject site, adjacent sites or vicinity properties in the EDR Report.

7.0 DISCUSSION OF FINDINGS

TABLE VIII
Summary of Conclusions

Apparent Evidence of RECs From	Not Noted	Noted
Historical Uses		X
Current Uses	X	
Adjacent or Vicinity Property Uses	X	

Historical Uses

Based on Krazan's review of historical research of the subject site, a site reconnaissance including owner questionnaires, and contacts with the State and local regulatory agencies, there is evidence that RECs exist in connection with the subject site from historical uses.

Current Uses

Based on Krazan's site reconnaissance, contacts with local regulatory agencies, and an interview with the owners of the subject site, there is no evidence that RECs exist in connection with the current uses of the subject site.

Adjacent or Vicinity Property Uses

Based on Krazan's field observations, review of the EDR government database report, and consultation with local regulatory agencies, there is no evidence that RECs exist in connection with the subject site from adjacent or vicinity property uses.

7.1 Evaluation of Data Gaps/Data Failure

In accordance with ASTM E 1527-13 guidance, data gaps represent a lack of or inability to obtain information required by this practice despite good faith efforts by the environmental professional to gather such information. Data gaps may result from incompleteness in any of the activities required by this practice. Data failure represents the failure to achieve the historical research objectives of this

practice even after reviewing the standard historical sources that are reasonably ascertainable and likely to be useful. Data failure is one type of data gap. The following is a summary of data gaps encountered in the process of preparing this report including an observation as to the presumed significance of that data gap to the conclusions of this assessment:

- Absence of Final Title Report or Environmental Lien Search (Section 5.1)
  A Final Title Report or Environmental Lien Search were not provided by the Phase I ESA user; therefore, a data gap exists. Taken in consideration with the available information obtained in the course of preparing this report in conjunction with professional experience, there is no evidence to suggest that this data gap might alter the conclusions of this assessment. However, the contents of an Environmental Lien Search or Final Title Report are unknown.

- Absence of Interview with a (1) Current Owner and Previous Owner(s) (Section 6.1)
  A Phase I ESA interview with one current owner and previous owners of the subject site were not reasonably ascertainable. Consequently, the absence of information regarding the history and historical uses of the subject site obtained from an interview of one current owner and previous owners of the subject site constitutes a data gap. Taken in consideration with the available information obtained in the course of preparing this report in conjunction with professional experience, there is no evidence to suggest that this data gap might alter the conclusions of this assessment. However, the contents of an interview with one current owner or previous owners of the subject site are unknown.

8.0 CONCLUSIONS/OPINIONS

We have conducted a Phase I ESA of the subject site in conformance with the scope and limitations of the ASTM E 1527-13 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* guidance documents. Any deviations from this practice were previously described in this report. During the course of this assessment, Krazan identified evidence of recognized environmental conditions (RECs) in conjunction with the subject site as defined by ASTM E 1527-13. Krazan also identified potential areas of concern (PAOCs), site development issues and ASTM non-scope issues.

RECs

- During Krazan's February 2021 site reconnaissance, Mr. Campbell, the owner of the assessor's parcel number (APN) 557-031-37 property, indicated that a small underground storage tank (UST) was installed by a former property owner. This UST was reported by Mr. Campbell to be located near the northwest corner of the smaller barn/shed located north of the eastern rural residence on his property. No data related to the removal or environmental investigation of the reported UST was revealed in the course of this assessment. Consequently, the specific location and presence or absence of the reported UST and the related condition of the subject site subsurface in the area of the UST are unknown.

PAOCs

- During Krazan's February 2021 site reconnaissance, end-dump soil piles were observed along the southern boundary of the APN 557-012-28 property and in the southwestern portion of the APN 557-031-24 property. No odors, surface staining, stressed vegetation, or other obvious evidence of the presence of hazardous materials or hazardous waste was noted in association with the soil piles. The current owner of these parcels (Baihs-Dhillon) did not discuss these soil piles in the owner questionnaire. Given the absence of specific information concerning the origin or composition of the on-site soil piles, the presence or absence of potential significant concentrations of hazardous materials in the on-site soil piles is unknown.

- Based upon review of aerial photographs and the February 2021 site reconnaissance, Krazan identified two (2) former rural residences with associated structures that existed prior to underground storage tank (UST) regulations. Experience has shown that property owners in historical agricultural settings may have installed USTs in the vicinity of farm structures for their convenience which may go undetected in the absence of any regulatory or interview data. Consequently, the potential exists that current USTs may be located or may have been formerly located in the vicinity of these former homesteads. Consequently, the location and presence or absence of current and/or former USTs and the related condition of the subject site subsurface in the areas of current and/or former USTs are unknown.

Site Development Issues

- Based upon interview questionnaire responses from the subject site property owners' representatives, approximately seven (7) water wells and four (4) septic systems are associated with the subject site, the specific locations of which for all wells and septic systems are unknown. If the on-site water wells and septic systems are not to be used in the future, they should be properly assessed and abandoned/destroyed in accordance with state and local guidelines.

ASTM Non-Scope Issues

- At least six (6) structures occupy the subject site (formerly and current), the construction of which appears to have begun before 1937 and 1998. It is unknown if the on-site structures contain asbestos-containing materials (ACMs) or lead-based paint (LBP). An asbestos and LBP survey and sampling of the on-site structures was not included within the scope of this assessment. Based on the date of construction, there is a possibility that the on-site structures contain ACMs and LBP. Prior to the disturbance of any suspect ACMs or LBP at these

structures via demolition, a comprehensive asbestos and LBP survey is recommended. If such materials are identified and need to be disturbed, repaired or removed, a licensed abatement contractor should be consulted.

- Based upon Krazan's February 2021 site reconnaissance, evidence was not apparent to suggest that the site contained a wetland. However, according to the U. S. Fish & Wildlife Service (USFWS) National Wetlands Inventory available via the USFWS Internet website, it is reported that a designated wetland appears to be located within the central portion of the subject site. A copy of the USFWS National Wetlands Inventory Map showing the referenced designated wetland is included as Appendix A of this report. If further assessment of the referenced designated wetland is desired, Krazan recommends that a qualified biologist be consulted.

9.0 RELIANCE

This report was prepared solely for use by Client and should not be provided to any other person or entity without Krazan & Associates' prior written consent. No party other than Client may rely on this report without Krazan & Associates' express prior written consent. Reliance rights for third parties will only be in effect once requested by Client and authorized by Krazan & Associates with authorization granted by way of a Reliance Letter. The Reliance Letter will require that the relying party(ies) agree to be bound to the terms and conditions of the agreement between Client and Krazan & Associates as if originally issued to the relying party(ies), or as so stipulated in the Reliance Letter.

10.0 LIMITATIONS

The site reconnaissance and research of the subject site has been limited in scope. This type of assessment is undertaken with the calculated risk that the presence, full nature, and extent of contamination would not be revealed by visual observation alone. Although a thorough site reconnaissance was conducted in accordance with ASTM Guidelines and employing a professional standard of care, no warranty is given, either expressed or implied, that hazardous material contamination or buried structures, which would not have been disclosed through this investigation, do not exist at the subject site. Therefore, the data obtained are clear and accurate only to the degree implied by the sources and methods used.

The findings presented in this report were based upon field observations during a single property visit, review of available data, and discussions with local regulatory and advisory agencies. Observations describe only the conditions present at the time of this investigation. The data reviewed and observations

made are limited to accessible areas and currently available records searched. Krazan cannot guarantee the completeness or accuracy of the regulatory agency records reviewed. Additionally, in evaluating the property, Krazan has relied in good faith upon representations and information provided by individuals noted in the report with respect to present operations and existing property conditions, and the historical uses of the property. It must also be understood that changing circumstances in the property usage, proposed property usage, subject site zoning, and changes in the environmental status of the other nearby properties can alter the validity of conclusions and information contained in this report. Therefore, the data obtained are clear and accurate only to the degree implied by the sources and methods used.

This report is provided for the exclusive use of the client noted on the cover page and shall be subject to the terms and conditions in the applicable contract between the client and Krazan. Any third party use of this report, including use by Client's lender, shall also be subject to the terms and conditions governing the work in the contract between the client and Krazan. The unauthorized use of, reliance on, or release of the information contained in this report without the express written consent of Krazan is strictly prohibited and will be without risk or liability to Krazan. Conclusions and recommendations contained in this report are based on the evaluation of information made available during the course of this assessment. It is not warranted that such data cannot be superseded by future environmental, legal, geotechnical or technical developments. Consequently, given the possibility for unanticipated hazardous conditions to exist on a subject site which may not have been discovered, this Phase I ESA is not intended as the basis for a buyer or developer of real property to waive their rights of recovery based upon environmental unknowns. Parties that choose to waive rights of recovery prior to site development do so at their own risk.

Parties who seek to rely upon Phase I Environmental Site Assessment reports dated more than 180 days prior to the date of reliance do so at their own risk. This limitation in reliance is based on the potential for physical changes at the site, changes in circumstances, technological and professional advances, and guidance related to the continued viability of Environmental Site Assessment reports, user's responsibilities, and requirements for updating of components of the inquiry as stated in the ASTM Standard E 1527-13.

11.0 QUALIFICATIONS

This Phase I ESA was conducted under the supervision or responsible charge of Krazan's undersigned environmental assessor with oversight from the undersigned environmental professional. The work was

conducted in accordance with ASTM E 1527-13 guidance, generally accepted industry standards for environmental due diligence in place at the time of the preparation of this report, and Krazan's quality-control policies.

We declare that, to the best of our professional knowledge and belief, we meet the definition of environmental professional as defined in §312.10 of 40 CFR 312 and we have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property.

We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

Mark D. Edwards, PG 7714
Environmental Project Manager

Arthur C. Farkas, REA
Environmental Professional

MDE/ACF/mlt

REFERENCES

Aerial photographs obtained from Environmental Data Resources Inc. (EDR).

American Society for Testing and Materials (ASTM), *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment (ESA) Process*, ASTM Designation: E 1527-13.

ASTM, *Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions*, ASTM Designation E 2600-10.

Environmental Data Resources, Inc. (EDR), City Directory Abstract.

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Fresno County Building Department, (FCBD).

Fresno County Environmental Health Department (FCEHD).

Fresno County Fire Department (FCFD).

National Pipeline Mapping System – Public Viewer Website: https://pvnpms.phmsa.dot.gov/publicviewer/

Harris, Mr. Jeffrey, with Wilson Homes, the Phase I ESA User.

State of California Geologic Energy Management Division (CalGEM) Maps Website: http://www.conservation.ca.gov/calgem/Pages/WellFinder.aspx

State of California Department of Toxic Substances Control, Envirostor Website: http://www.envirostor.dtsc.ca.gov/public

State of California Regional Water Quality Control Board, Geotracker Website: http://geotracker.swrcb.ca.gov

State of California, Department of Water Resources, *Groundwater Information Center Interactive Map Application, Spring 2020*.

U.S. Environmental Protection Agency (EPA) *Map of Radon Zones*.

U.S. Geological Survey, 7.5 minute Clovis and Friant, topographic quadrangle maps, various dates.

GLOSSARY OF TERMS

Subject Site: The real property being investigated under this Phase I ESA.

Adjacent Properties: Properties which are contiguous with the subject site, or would be contiguous except for a street, road, or other public thoroughfare.

Subject Site Vicinity: Properties located within a 500-foot radius of the subject site.

Environmental Professional: A person meeting the education, training, and experience requirements as set forth in 40 CFR §312.10(b). The EP may be an independent contractor or an employee of the user.

User: The party seeking to use Practice E 1527 to complete an environmental site assessment of the subject site. A user may include, without limitation, a potential purchaser of the subject site, a potential tenant of the subject site, an owner of the subject site, a lender, or a property manager.

Recognized Environmental Condition (REC): In defining a standard of good commercial and customary practice for conducting an environmental site assessment of a parcel of property, the goal of the processes established by this practice is to identify recognized environmental conditions. The term recognized environmental conditions means the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. *De minimis* conditions are not recognized environmental conditions.

Controlled Recognized Environmental Condition (CREC): A recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls). For example, if a leaking underground storage tank has been cleaned up to a commercial use standard, but does not meet unrestricted residential cleanup criteria, this would be considered a CREC. The "control" is represented by the restriction that the property use remain commercial. A condition considered by the environmental professional to be a CREC shall be listed in the findings section of the Phase I ESA report and as an REC in the conclusions section. A condition identified as a CREC does not imply that the environmental professional has evaluated or confirmed the adequacy, implementation, or continued effectiveness of the required control that has been, or is intended to be, implemented.

Historical Recognized Environmental Condition (HREC): A past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls). Before calling the past release an HREC, the environmental professional must determine whether the past release is an REC at the time the Phase I ESA is conducted (for example, if there has been change in the regulatory criteria). If the EP considers the past release to be an REC at the time the Phase I ESA is conducted, the condition shall be included in the conclusions section of the report as an REC.

GLOSSARY OF TERMS (continued)

Potential Area of Concern (PAOC): A term adopted to provide an alternative designation to the REC and HREC for a range of environmental issues related to current subject site uses, historical subject site uses, or from adjacent and/or vicinity property uses. The PAOC is utilized to emphasize full disclosure and provide the User with conclusions and recommendations related to potential environmental issues in connection with the subject site based on Krazan's professional experience in cases where official documentation or other evidence may be absent in order to identify an REC or HREC, thereby aiding the User's considerations of environmental due diligence risk tolerance.

Migrate/migration: For the purposes of this practice, "migrate" and "migration" refer to the movement of hazardous substances or petroleum products in any form, including, for example, solid and liquid at the surface or subsurface, and vapor in the subsurface. Vapor migration in the subsurface is described in ASTM E 2600-10 guidance; however, nothing in the E 1527-13 practice should be construed to require application of the E 2600-10 standard to achieve compliance with AAI.

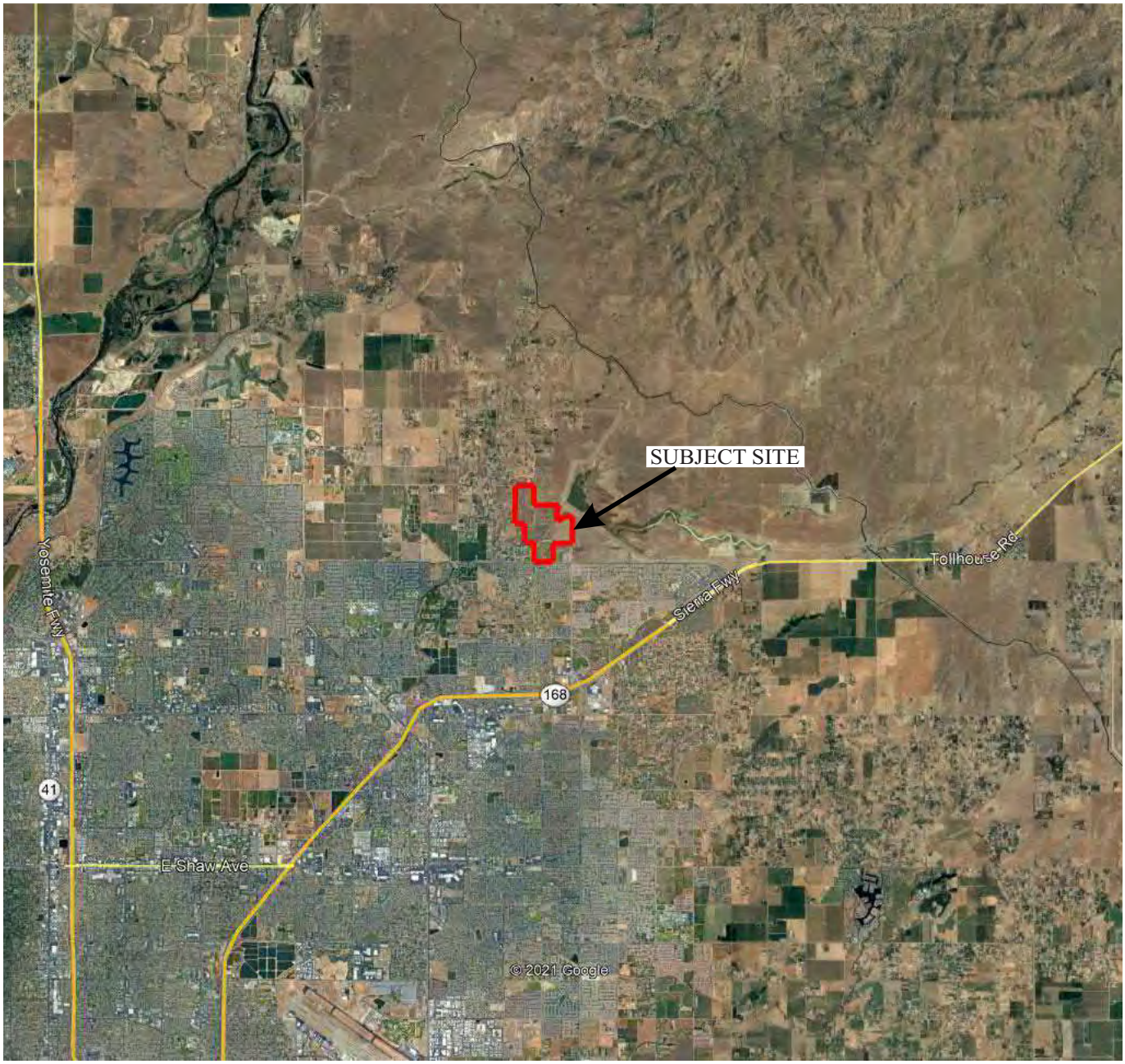
De minimis condition: A condition that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Condition determined to be *de minimis conditions* are not RECS or CRECs.

Data Gap: A lack of or inability to obtain information required by this practice despite good faith efforts by the Environmental Professional to gather such information. Data gaps may result from incompleteness in any of the activities required by this practice, including, but not limited to the site reconnaissance and interviews.

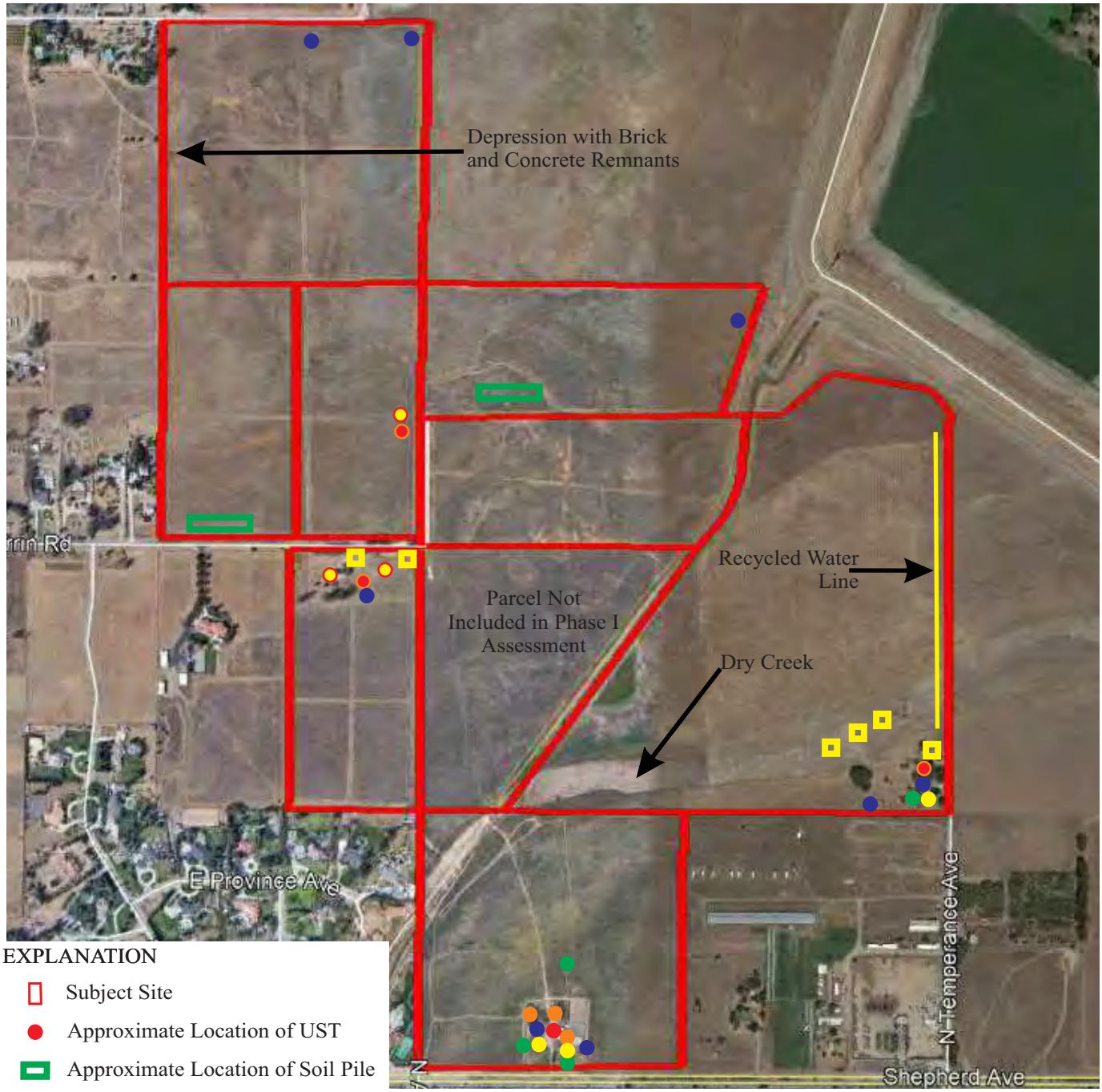
Data Failure: A failure to achieve the historical research objectives even after reviewing the standard historical sources that are reasonably ascertainable and likely to be useful. Data failure is one type of data gap.

GLOSSARY OF TERMS (continued)

AAI	All Appropriate Inquiries
AC	Asphalt Concrete
ACM	Asbestos-Containing Materials
AOC	Area of Concern
APN	Assessor's Parcel Number
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
AS	Air Sparging
AUL	Activity & Use Limitations
bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CESQG	Conditionally Exempt Small Quantity Generator
CFR	Code of Federal Regulations
CMU	Concrete Masonry Unit
COCs	Constituents of Concern
DEULs	Declaration of Environmental Use Restrictions
DOGGR	Division of Oil, Gas & Geothermal Resources (CA)
DTSC	Department of Toxic Substances Control (CA)
EC	Engineering Control
EDR	Environmental Data Resources, Inc.
EP	Environmental Professional
EPA	United States Environmental Protection Agency
ERP	Emergency Response Plan
ESA	Environmental Site Assessment
ESL	Environmental Screening Level
FOIA	Freedom of Information Act
GPR	Ground Penetrating Radar
HCCD	Haines Criss-Cross Directory
HFIM	Historical Fire Insurance Map
HMBP	Hazardous Materials Business Plan
HREC	Historical Recognized Environmental Condition
HVAC	Heating, Ventilation, Air Conditioning
IC	Institutional Control
LBP	Lead-Based Paint
LLP	Landowner Liability Protection
LQG	Large Quantity Generator
LUC	Land Use Control
LUST	Leaking Underground Storage Tank
MCL	Maximum Contaminant Level
µg/L	Micrograms Per Liter
mg/kg	Milligrams Per Kilogram
mg/L	Milligrams Per Liter
MSDS	Material Safety Data Sheet
MTBE	Methyl Tertiary Butyl Ether
MFR	Multi-Family Residential
ND	Nondetectable
NFA	No Further Action (letter)
NPDES	National Pollution Discharge Elimination System
NPL	National Priorities List
O&M	Operations & Maintenance Plan
PAOC	Potential Area of Concern
PCB	Polychlorinated Biphenyl
PCC	Portland Cement Concrete
PCE	Perchloroethylene
PEC	Potential Environmental Concern (TS)
PGD	Polk Guide Directory
PG&E	Pacific Gas & Electric
PHCs	Petroleum Hydrocarbon Constituents
PID	Photoionization Detector
ppb	Parts Per Billion
ppm	Parts Per Million
PRG	Preliminary Remediation Goal
PRP	Potentially Responsible Party
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
RP	Responsible Party
RWQCB	Regional Water Quality Control Board (CA)
SBA	Small Business Administration
SFR	Single-Family Residential
SPCC	Spill Prevention Control and Countermeasure Plan
SQG	Small Quantity Generator
SCE	Southern California Edison
SVE	Soil Vapor Extraction
SVOC	Semi-Volatile Organic Compound
SWRCB	State Water Resources Control Board
TCE	Trichloroethylene
TPH	Total Petroleum Hydrocarbons
TPH-D	Total Petroleum Hydrocarbons as Diesel
TPH-G	Total Petroleum Hydrocarbons as Gasoline
TPH-MO	Total Petroleum Hydrocarbons as Motor Oil
TS	Transaction Screen
USGS	United States Geological Survey
USFWS	United States Fish & Wildlife Service
UST	Underground Storage Tank
VEC	Vapor Encroachment Condition
VES	Vapor Encroachment Screening
VOCs	Volatile Organic Compounds



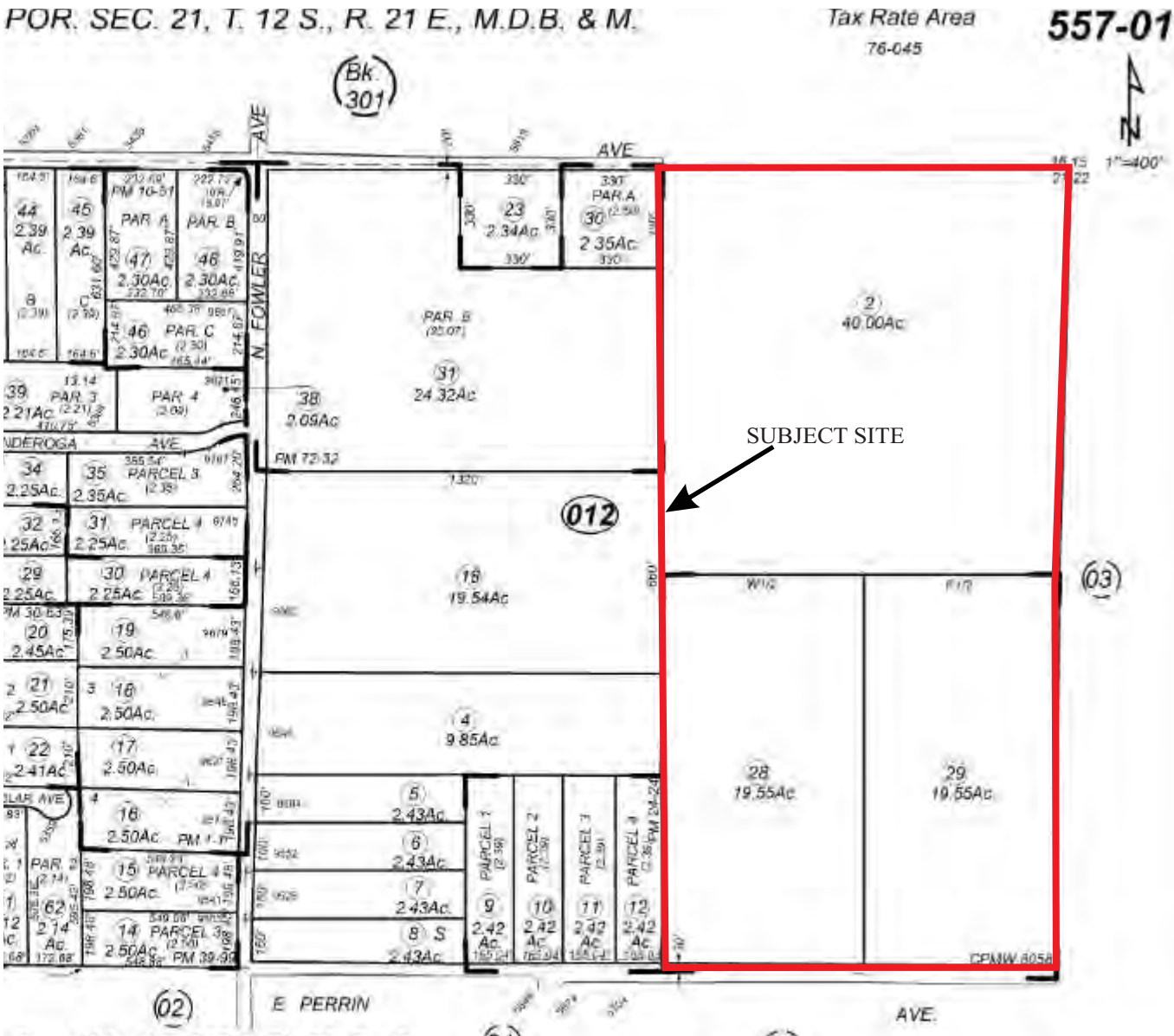
VICINITY MAP	Scale: NTS	Date: February 2021	Krazan
NORTH SHEPHERD PROPERTIES NORTH SIDE OF EAST SHEPHERD AVE. CLOVIS, CALIFORNIA	Drawn By: MDE	Approved By: MDE	SITE DEVELOPMENT ENGINEERS *With Offices Serving the Western United States*
	Project No. 014-21021	Figure: 1	



EXPLANATION

- Subject Site
- Approximate Location of UST
- Approximate Location of Soil Pile
- Approximate Location of Former Rural Residence
- Approximate Location of Former Structure
- Approximate Location of Water Well
- Approximate Location of Septic System
- Approximate Location of Trash Pile
- Approximate Location of Pole-Mounted Transformer
- Approximate Location of Barn/Shed

SITE MAP	Scale: NTS	Date: February 2021	Krazan
NORTH SHEPHERD PROPERTIES NORTH SIDE OF EAST SHEPHERD AVE. CLOVIS, CALIFORNIA	Drawn By: MDE	Approved By: MDE	SITE DEVELOPMENT ENGINEERS *With Offices Serving the Western United States*
	Project No. 014-21021	Figure: 2	



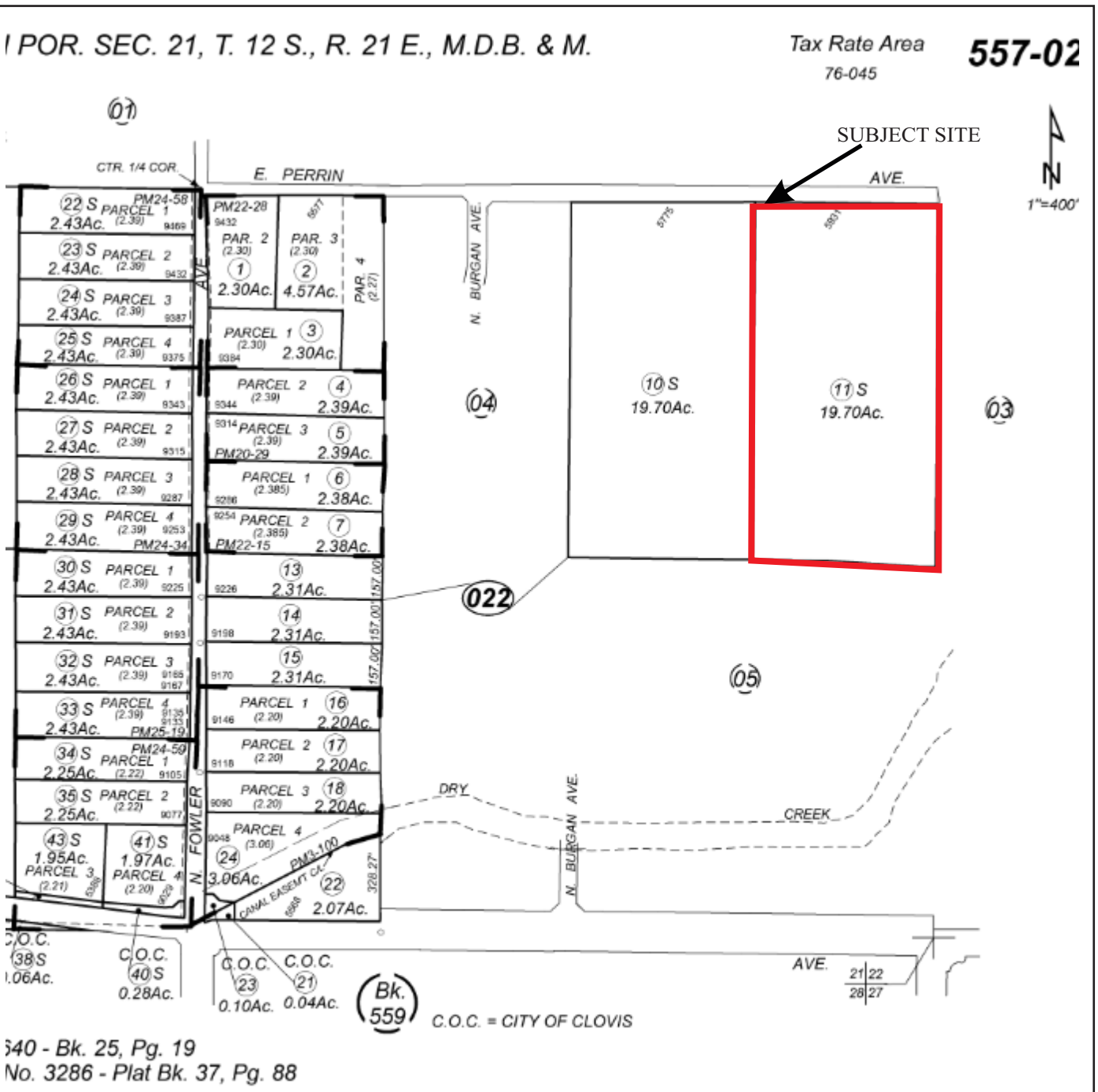
Parcel Map No. 3624 - Bk. 25, Pg. 6
Parcel Map No. 3623 - Bk. 25, Pg. 7
Parcel Map No. 3823 - Bk. 25, Pg. 30
Parcel Map No. 4079 - Bk. 28, Pg. 17
Parcel Map No. 4715 - Bk. 30, Pg. 63
Parcel Map No. 5156 - Bk. 39, Pgs. 99 & 100
Parcel Map No. 6327 - Bk. 40, Pg. 92
Parcel Map No. 8106 - Bk. 72, Pgs. 32-34

Cert. of Par. Map Waiver No. 8058, Doc. 147598. 10-26-09

Assessor's Map Bk. 557 - Pg. 01
County of Fresno, Calif.

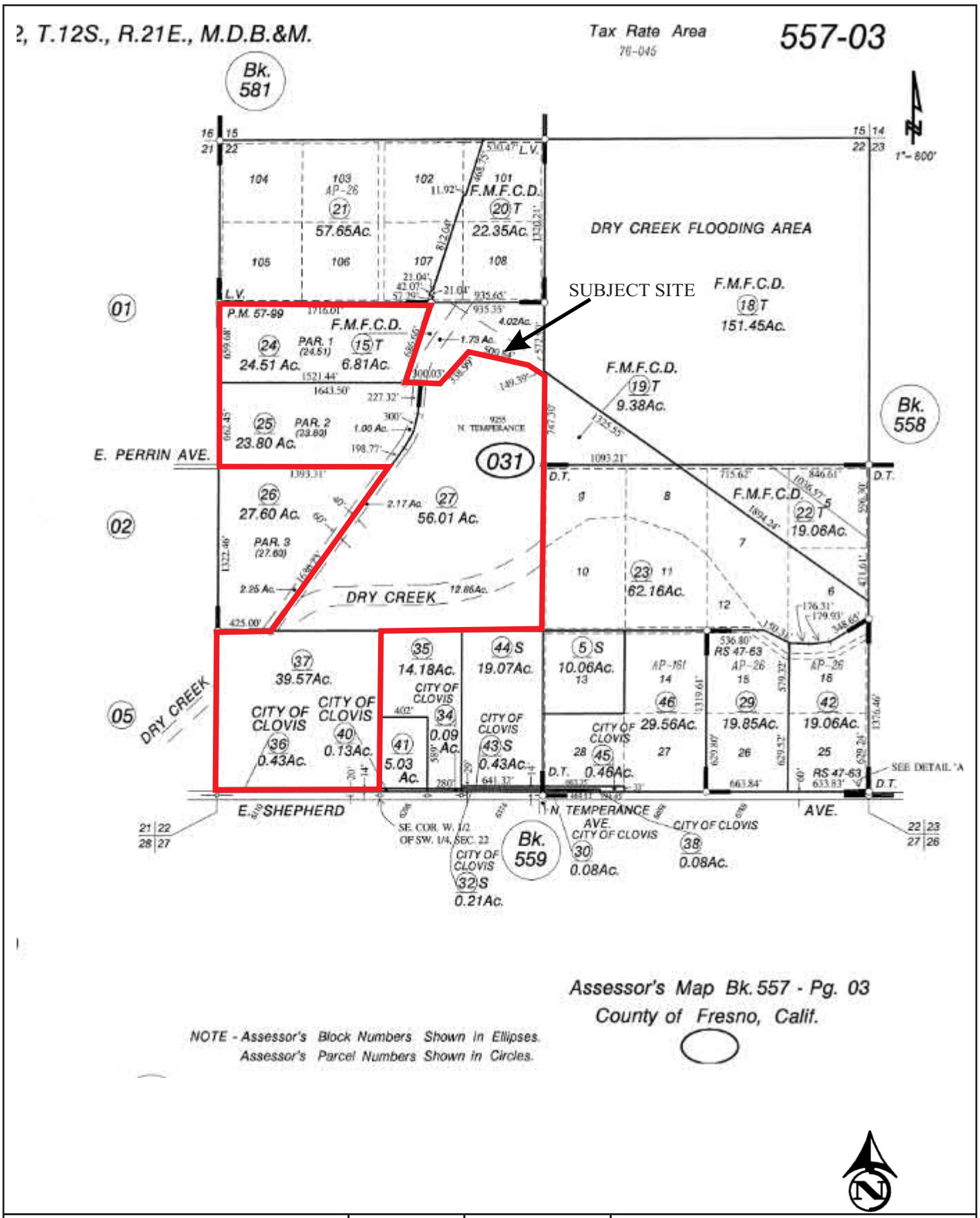
Note - Assessor's Block Numbers Shown in Ellipses
Assessor's Parcel Numbers Shown in Circles

ASSESSORS PARCEL MAP	Scale: NTS	Date: February 2021	Krazan
NORTH SHEPHERD PROPERTIES NORTH SIDE OF EAST SHEPHERD AVE. CLOVIS, CALIFORNIA	Drawn By: MDE	Approved By: MDE	SITE DEVELOPMENT ENGINEERS *With Offices Serving the Western United States*
	Project No. 014-21021	Figure: 3A	



540 - Bk. 25, Pg. 19
No. 3286 - Plat Bk. 37, Pg. 88

ASSESSORS PARCEL MAP	Scale: NTS	Date: February 2021	Krazan
NORTH SHEPHERD PROPERTIES NORTH SIDE OF EAST SHEPHERD AVE. CLOVIS, CALIFORNIA	Drawn By: MDE	Approved By: MDE	SITE DEVELOPMENT ENGINEERS *With Offices Serving the Western United States*
	Project No. 014-21021	Figure: 3B	



ASSESSORS PARCEL MAP	Scale: NTS	Date: February 2021	Krazan
NORTH SHEPHERD PROPERTIES NORTH SIDE OF EAST SHEPHERD AVE. CLOVIS, CALIFORNIA	Drawn By: MDE	Approved By: MDE	SITE DEVELOPMENT ENGINEERS *With Offices Serving the Western United States*
	Project No. 014-21021	Figure: 3C	

Photo 1: Southeastern facing view from the northwest corner of the subject site.

Photo 2: Water well located in the northern-central portion of APN 557-012-02.

Photo 3: Abandoned water well located in the northeastern corner of APN 557-012-02.

Photo 4: Depression located in the central-western portion of APN 557-012-02.

Photo 5: Brick and concrete remnants at the bottom of the depression located on APN 557-012-02.

Photo 6: Western facing view of a former rural residence located at 5931 E. Perrin Avenue in the northern portion of APN 557-022-11S.

Photo 7: Eastern facing view of a former rural residence located at in the northeast corner of APN 557-022-11S.

Photo 8: Steel casing, possible abandoned water well located on APN 557-022-11S.

Photo 9: Trash pile located in the northern portion of APN 557-022-11S.

Photo 10: Northern facing view of soil piles located in the southwestern portion of APN 0557-031-24.

Photo 11: Water well and storage tank located in the northeastern corner of APN 557-031-24.

Photo 12: Rural residence and associated parking structure located at 9255 N. Temperance Avenue in the southeastern corner of APN 557-031-27.

Photo 13: Northern facing view of a recycled water bollard marker. A second marker is visible near the center of the photograph.

Photo 14: City of Clovis recycled water manhole cover.

Photo 15: Domestic water well associated with 9255 N. Temperance Avenue.

Photo 16: Septic outlet located on the backside of 9255 N. Temperance Avenue.

Photo 17: Open and abandoned agricultural water well located in the southeastern portion of APN 557-031-27.

Photo 18: Brick and concrete remnants located in the southeastern portion of APN 557-031-27.

Photo 19: Used tires in the former Dry Creek channel located in the southeastern portion of APN 557-031-27.

Photo 20: Remnant cistern associated with agricultural irrigation system located on APN 557-031-027.

Photo 21: Western facing view of the western rural residence located on APN 557-031-37.

Photo 22: Eastern facing view of the eastern rural residence located on APN 557-031-37.

Photo 23: Agricultural water well and pool pump equipment located on APN 557-031-37.

Photo 24: Domestic water well and shed located on APN 557-031-37.

Photo 25: Large barn structure located on APN 557-031-37.

Photo 26: Smaller shed structures located on APN 557-031-37.

Photo 27: Smaller barn structure located on APN 557-031-37. It was reported by the owner that the UST is located near the power pole.

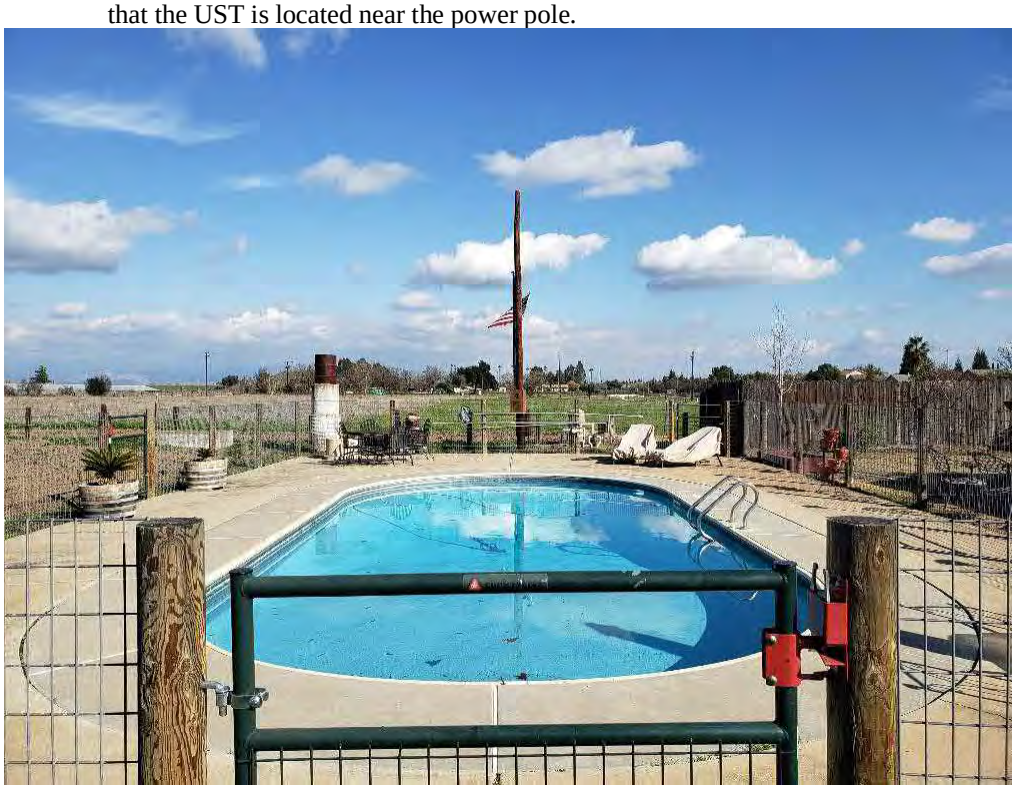


Photo 28: Eastern facing view of the swimming pool located on APN 557-031-37.

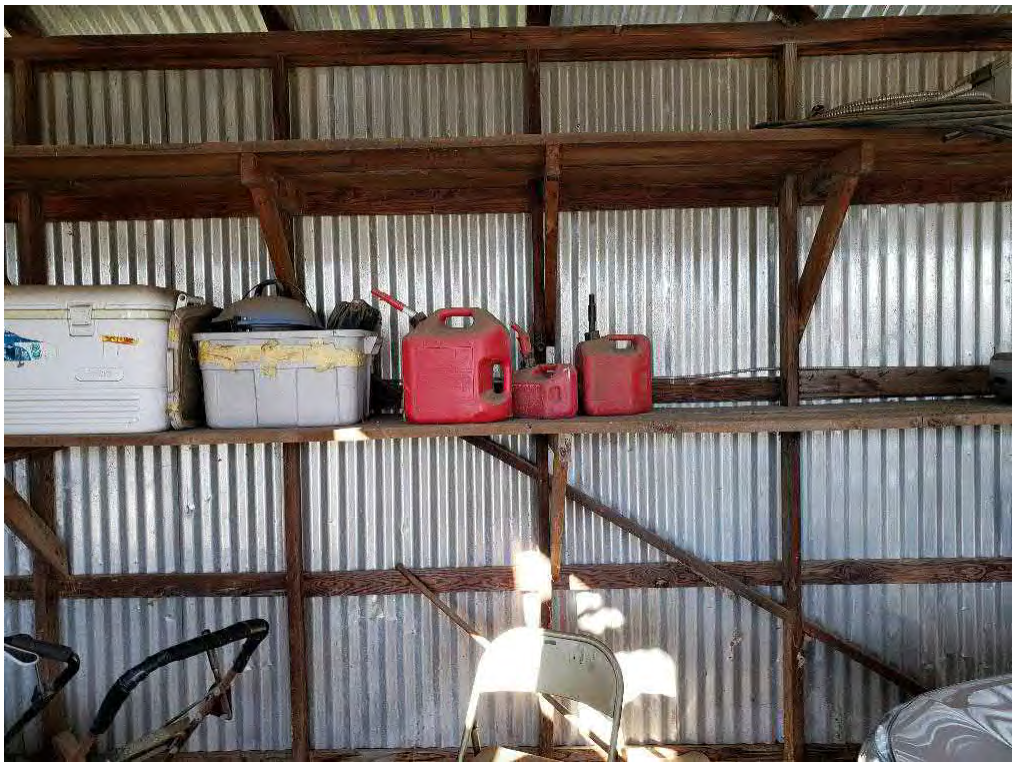


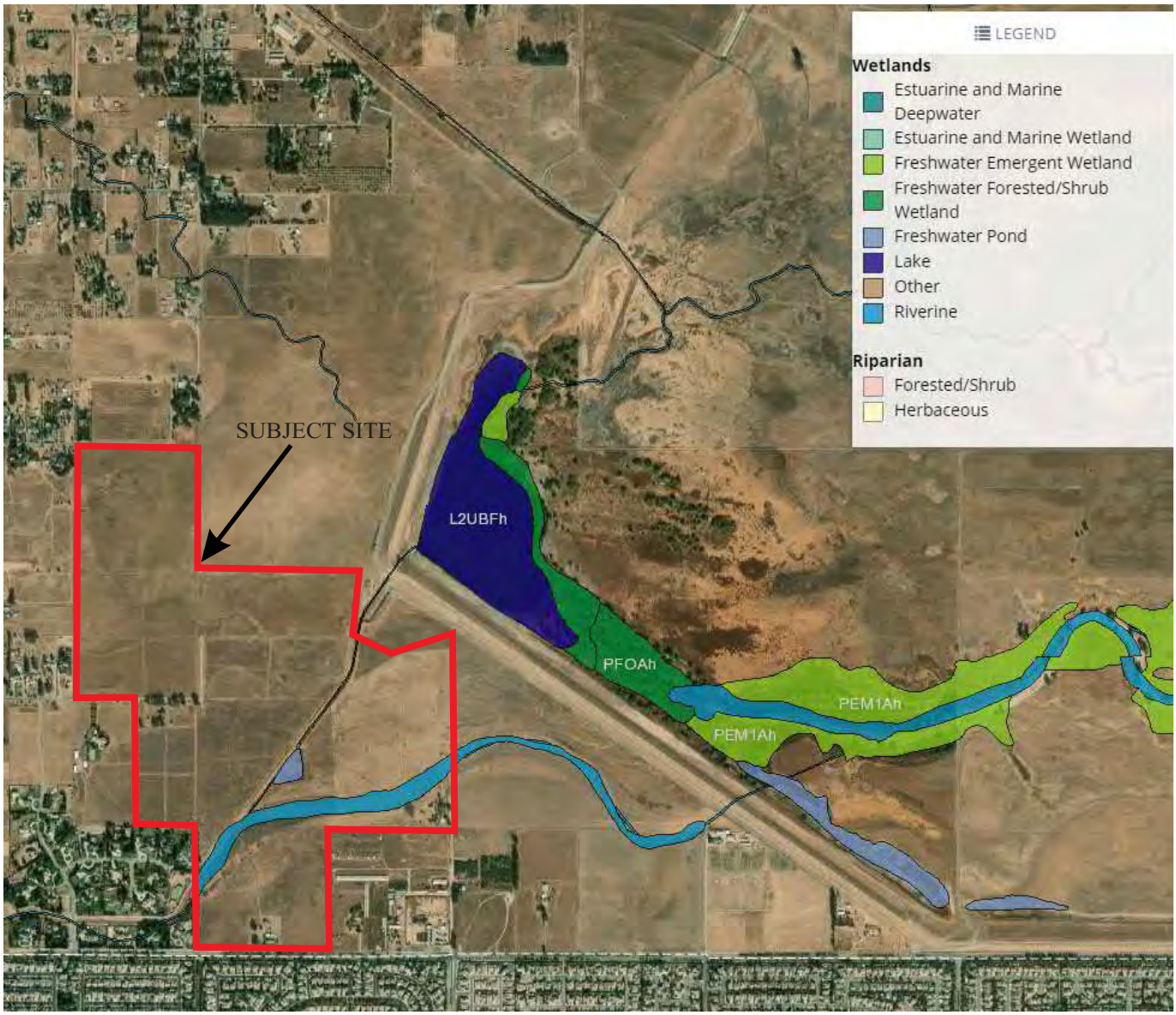
Photo 29: Small gasoline containers located inside the smaller barn structure located on APN 557-031-37.

Photo 30: Small gasoline containers and used oil containers located inside the larger barn structure located on APN 557-031-37..

Photo 31: Paint containers located inside a smaller shed structure located on APN 557-031-37..

Photo 32: Remnant steel water line associated with agricultural irrigation system located on APN 557-031-037.

Appendix A



NATIONAL WETLANDS MAP	Scale: NTS	Date: February 2021	Krazan
NORTH SHEPHERD PROPERTIES NORTH SIDE OF EAST SHEPHERD AVE. CLOVIS, CALIFORNIA	Drawn By: MDE	Approved By: MDE	SITE DEVELOPMENT ENGINEERS *With Offices Serving the Western United States*
	Project No. 014-21021	Figure: n/a	

Appendix B

Phase I ESA User Questionnaire
Wilson Homes North Shepherd Properties
Clovis, California

Respondent Information:

Name: Jeffrey Harris
Date: 2-18-2021

Organization: Wilson Homes
Phone: 559/224-7550

Introduction

"In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfield Revitalization Act of 2001 (the 'Brownfields Amendments'), the user must provide the following information (if available) to the environmental professional. Failure to provide this information could result in a determination that 'all appropriate inquiry' is not completed"- American Society for Testing and Materials (ASTM) E1527-13 Appendix X3: User Questionnaire

1. Are you aware of any environmental cleanup liens against the subject site that are filed or recorded under federal, tribal, state, or local law?

No.

2. Are you aware of any activity use limitations (AULs) such as engineering controls, land use restrictions, or institutional controls that are in place at the subject site and/or have been filed or recorded in a registry under federal, tribal, state, or local law?

No.

3. As the user of the Phase I Environmental Site Assessment (ESA), do you have any specialized knowledge or experience related to the subject site or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the subject site or an adjacent property so that you would have specialized knowledge of the chemicals and processes used by this type of business?

No.

4. Does the purchase price being paid for the subject site reasonably reflect the fair market value of the subject site? Yes No

A. If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the subject site?

5. Are you aware of commonly known or reasonably ascertainable information about the subject site that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example:

A. Do you know the past uses of the subject site? If so, briefly explain.

No.

B. Do you know of specific chemicals that are present or once were present at the subject site? If so, briefly explain.

No.

C. Do you know of spills or other chemical releases that have taken place at the subject site? If so, briefly explain.

No.

D. Do you know of any environmental cleanups that have taken place at the subject site? If so, briefly explain.

No.

6. As the user of the Phase I ESA, based on your knowledge and experience related to the subject site, are there any obvious indicators that point to the presence or likely presence of contamination at the subject site?

No.

7. What is the reason for preparation of this Phase I ESA? (Property purchase/sale; bank loan; proposed development; etc.)

Property Purchases

I, the user of this Phase I ESA (or authorized representative of the User), do hereby attest that I have carefully considered the questions herein and have presented answers to the best of my knowledge and ability based upon the Responsibilities of the User as required within ASTM E1527-13 guidance.

Name Jeffrey Harris Date 2/18/2021
(Please Print)

Signature

Appendix C

Shepherd North Properties

6110 E. Shepherd Ave

Clovis, CA 93619

Inquiry Number: 6366686.8

February 17, 2021

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

02/17/21

Site Name:

Shepherd North Properties
6110 E. Shepherd Ave
Clovis, CA 93619
EDR Inquiry # 6366686.8

Client Name:

Krazan & Associates, Inc.
215 West Dakota
Clovis, CA 93612
Contact: Mark Edwards

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	*Scale*	*Details*	*Source*
2016	1"=750'	Flight Year: 2016	USDA/NAIP
2012	1"=750'	Flight Year: 2012	USDA/NAIP
2009	1"=750'	Flight Year: 2009	USDA/NAIP
2005	1"=750'	Flight Year: 2005	USDA/NAIP
1998	1"=750'	Acquisition Date: January 01, 1998	USGS/DOQQ
1987	1"=750'	Flight Date: June 17, 1987	USDA
1984	1"=750'	Flight Date: June 09, 1984	USDA
1979	1"=750'	Flight Date: September 04, 1979	USDA
1973	1"=750'	Flight Date: May 08, 1973	USDA
1967	1"=750'	Flight Date: May 03, 1967	USDA
1962	1"=750'	Flight Date: August 07, 1962	USGS
1957	1"=750'	Flight Date: August 15, 1957	USDA
1950	1"=750'	Flight Date: January 31, 1950	USDA
1946	1"=750'	Flight Date: April 22, 1946	USGS
1937	1"=750'	Flight Date: October 05, 1937	USDA

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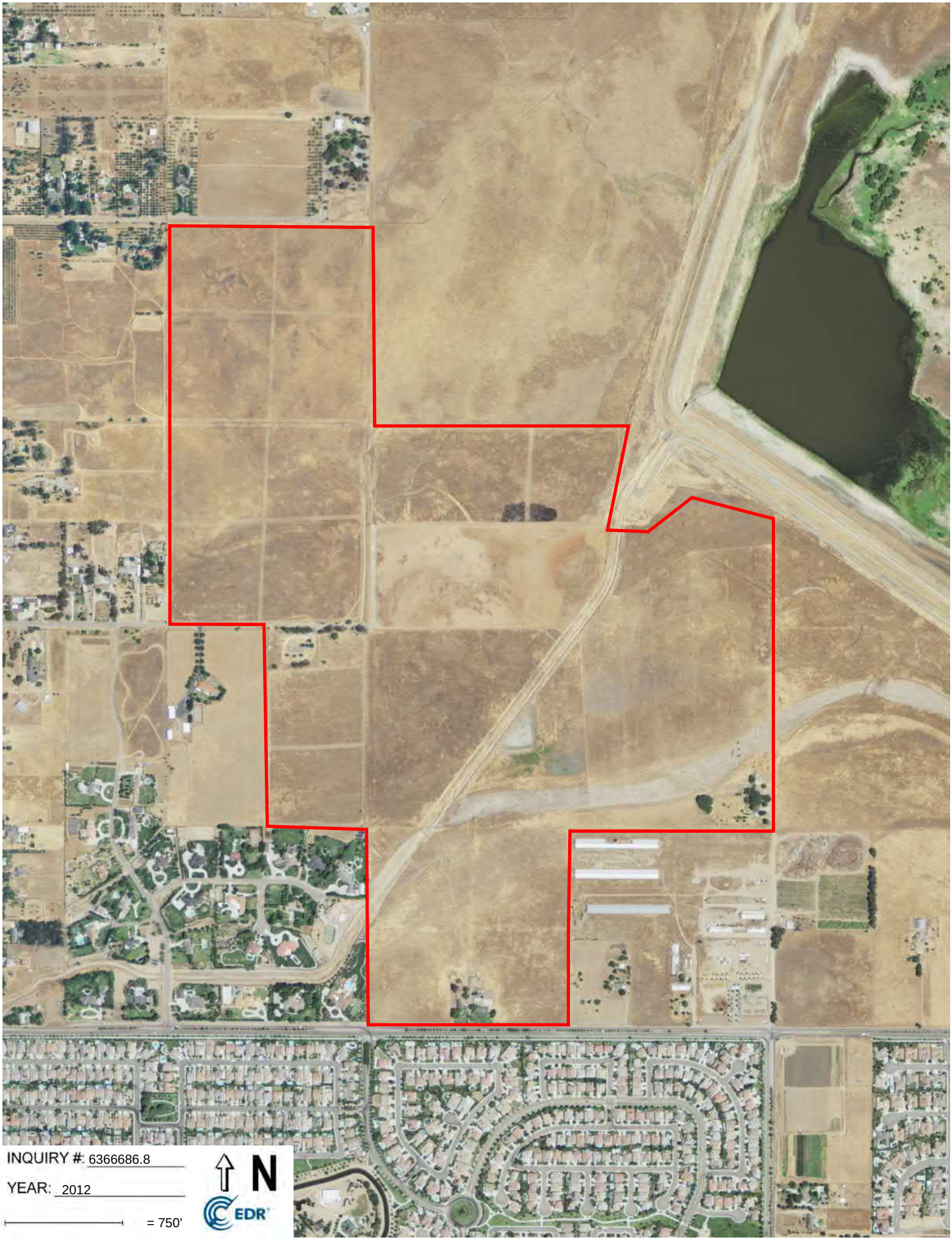
EDR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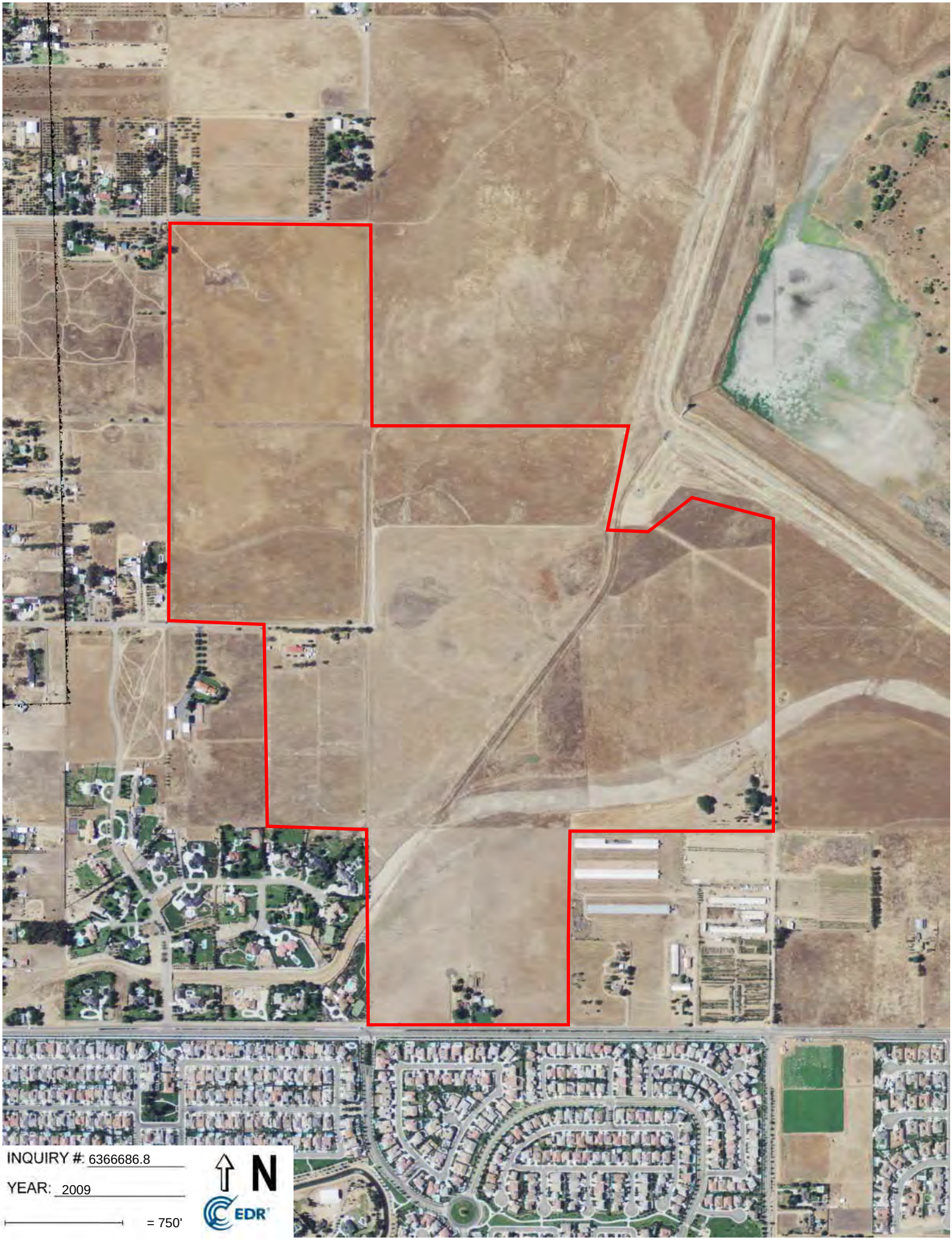
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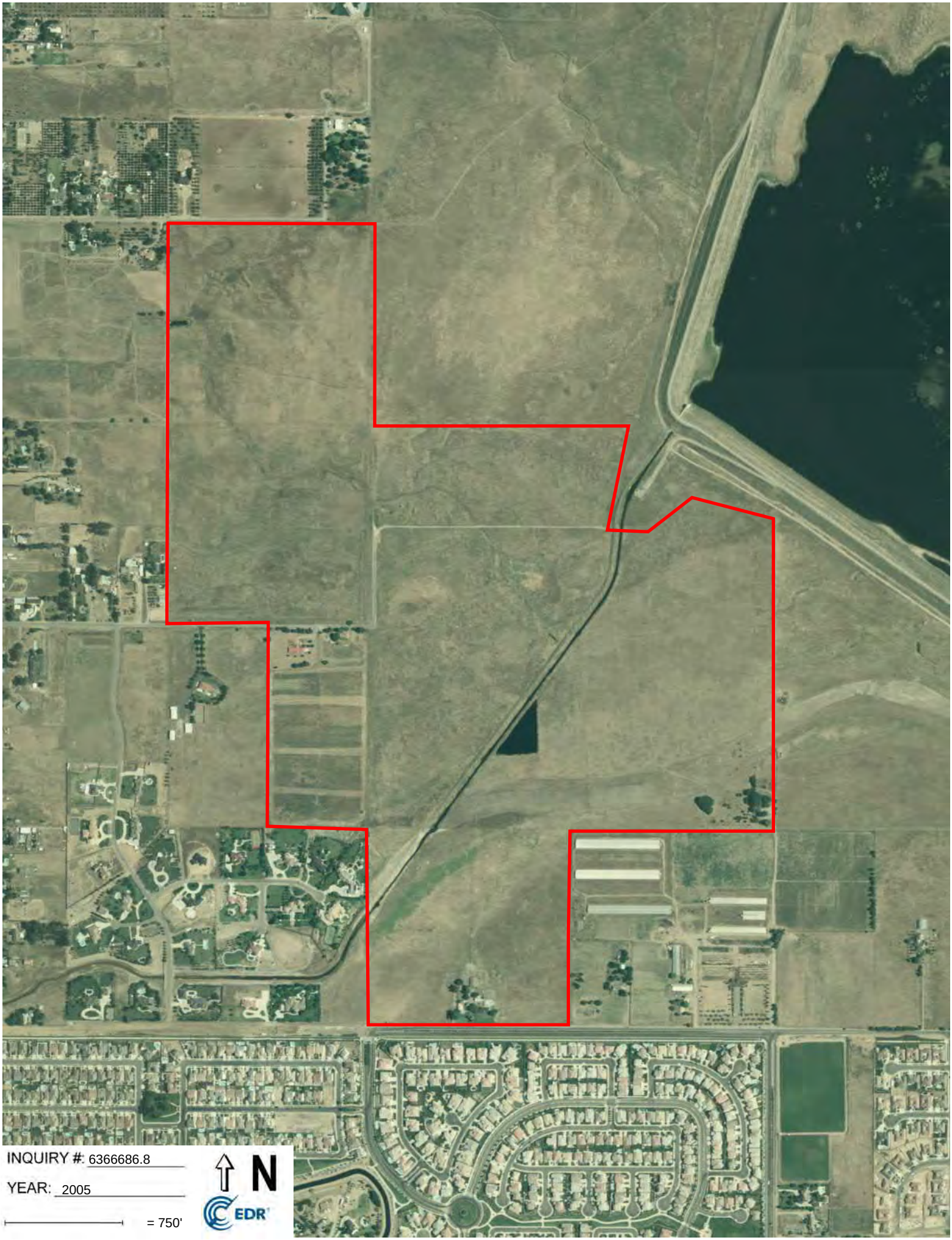
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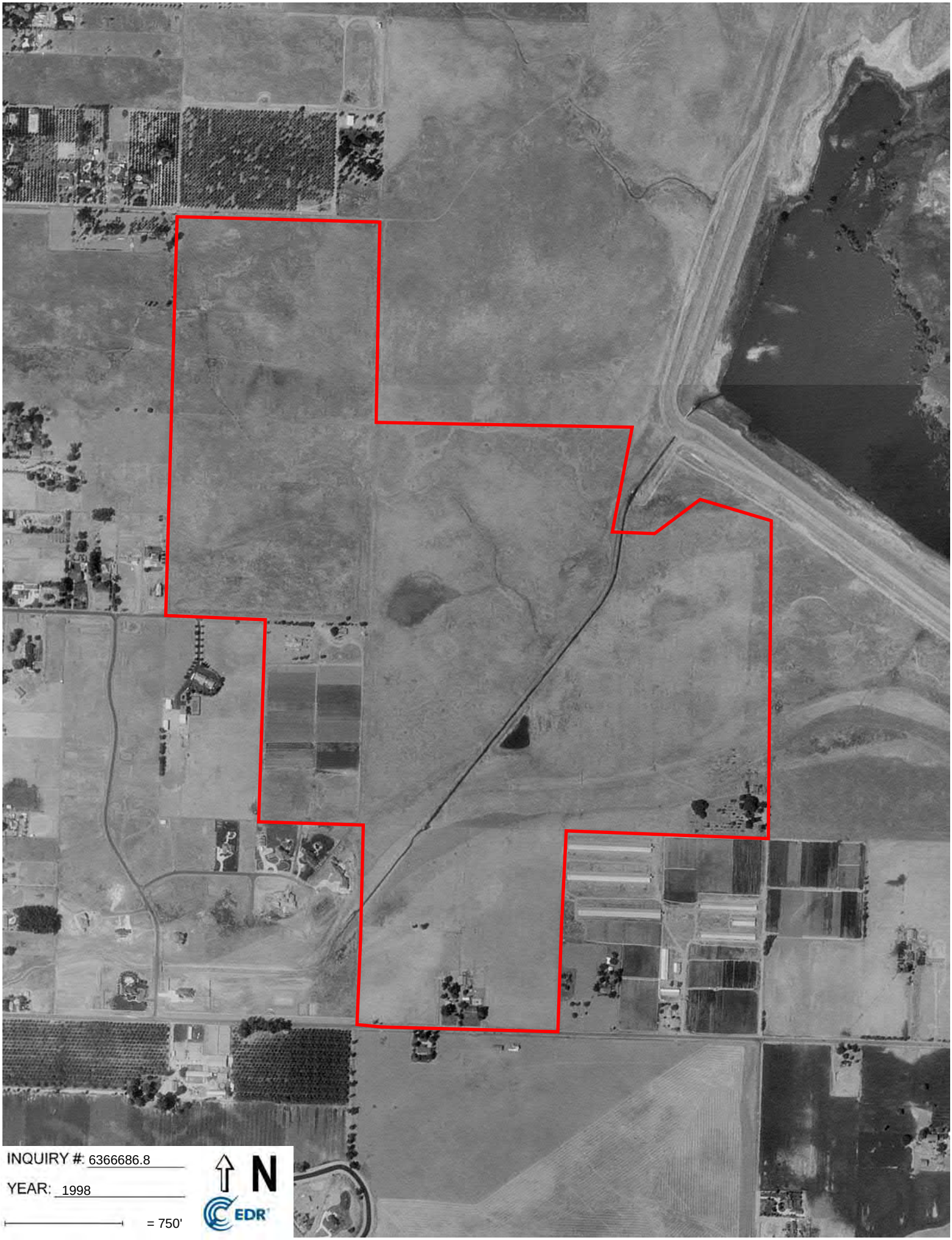
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YEAR: 1984
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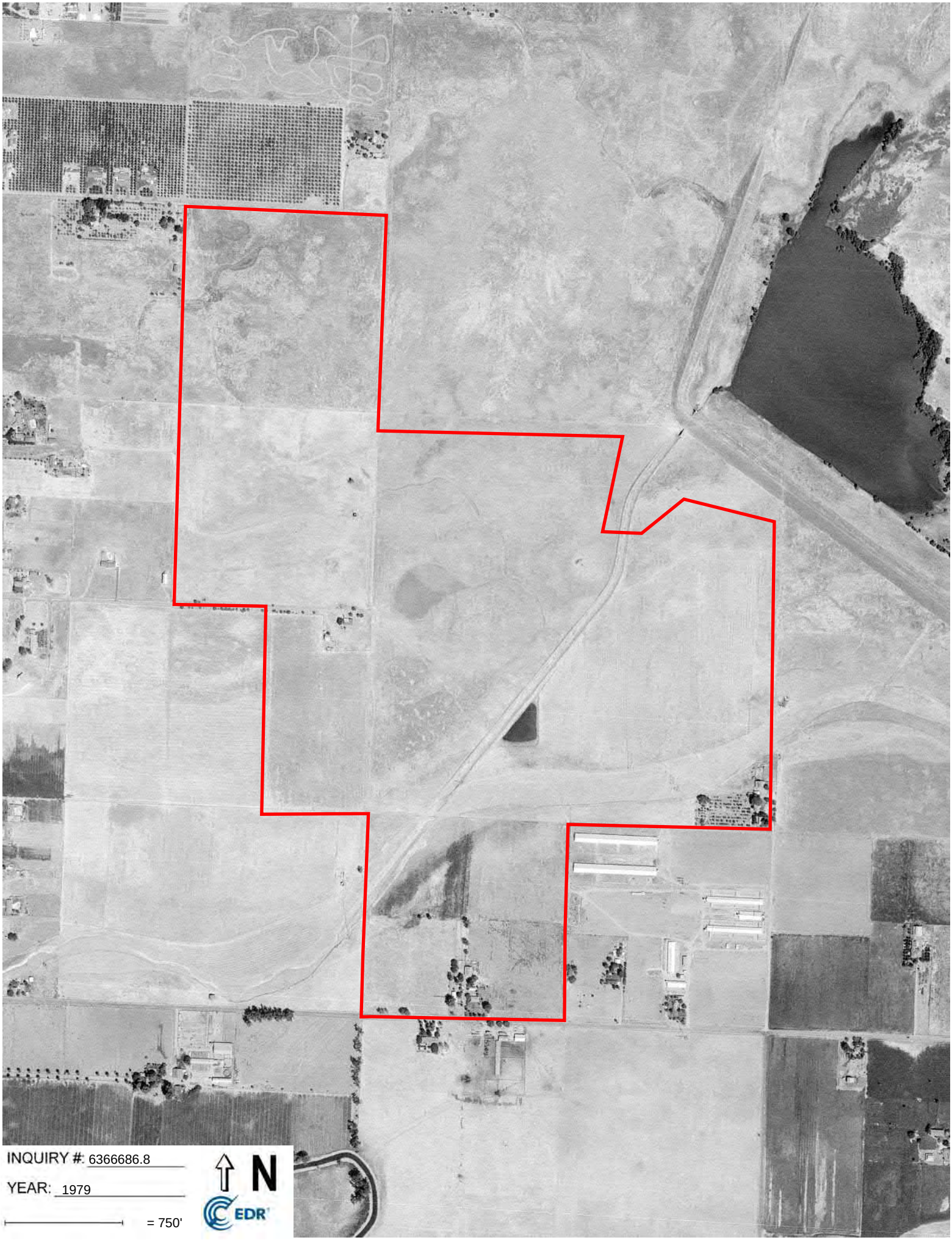
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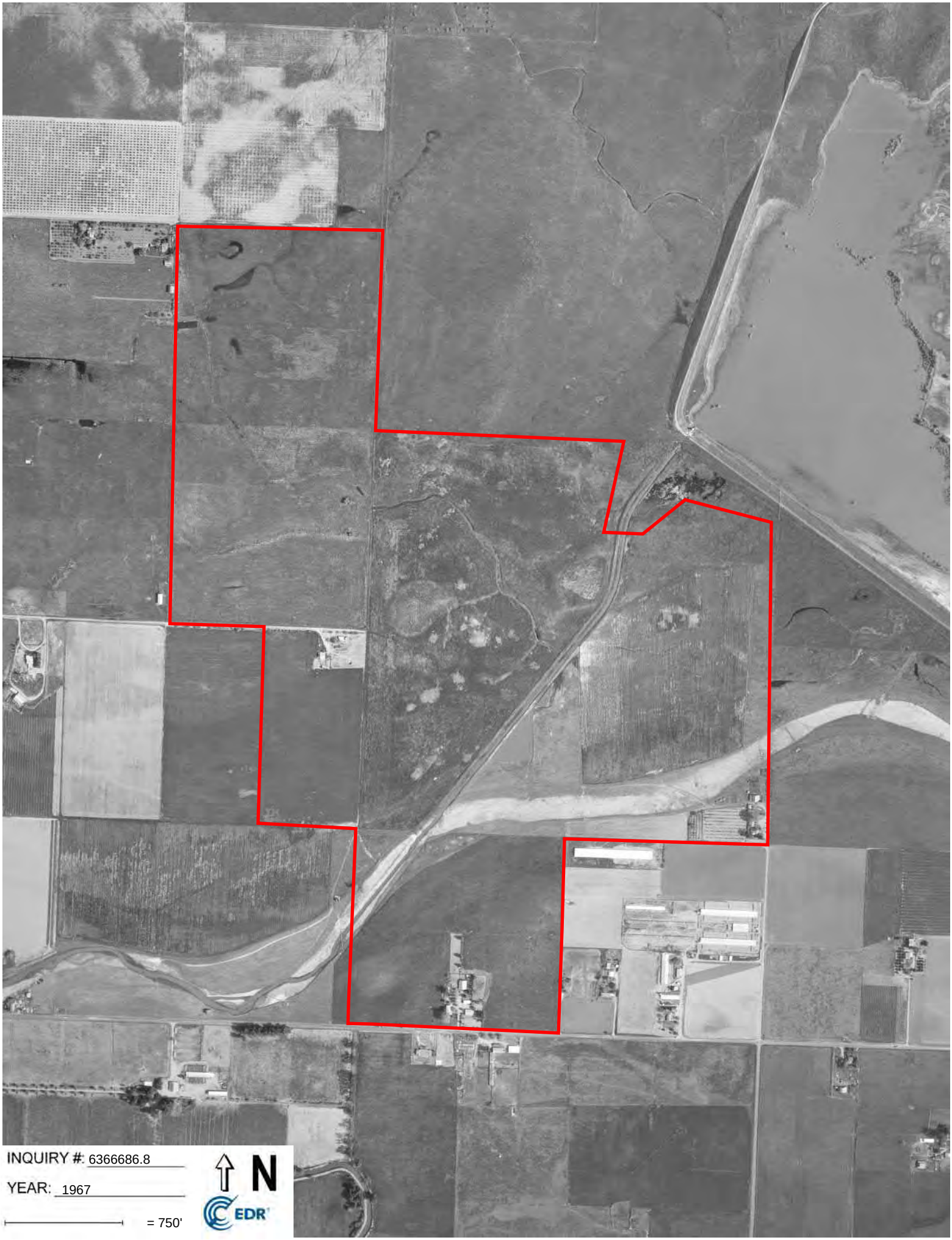
EDR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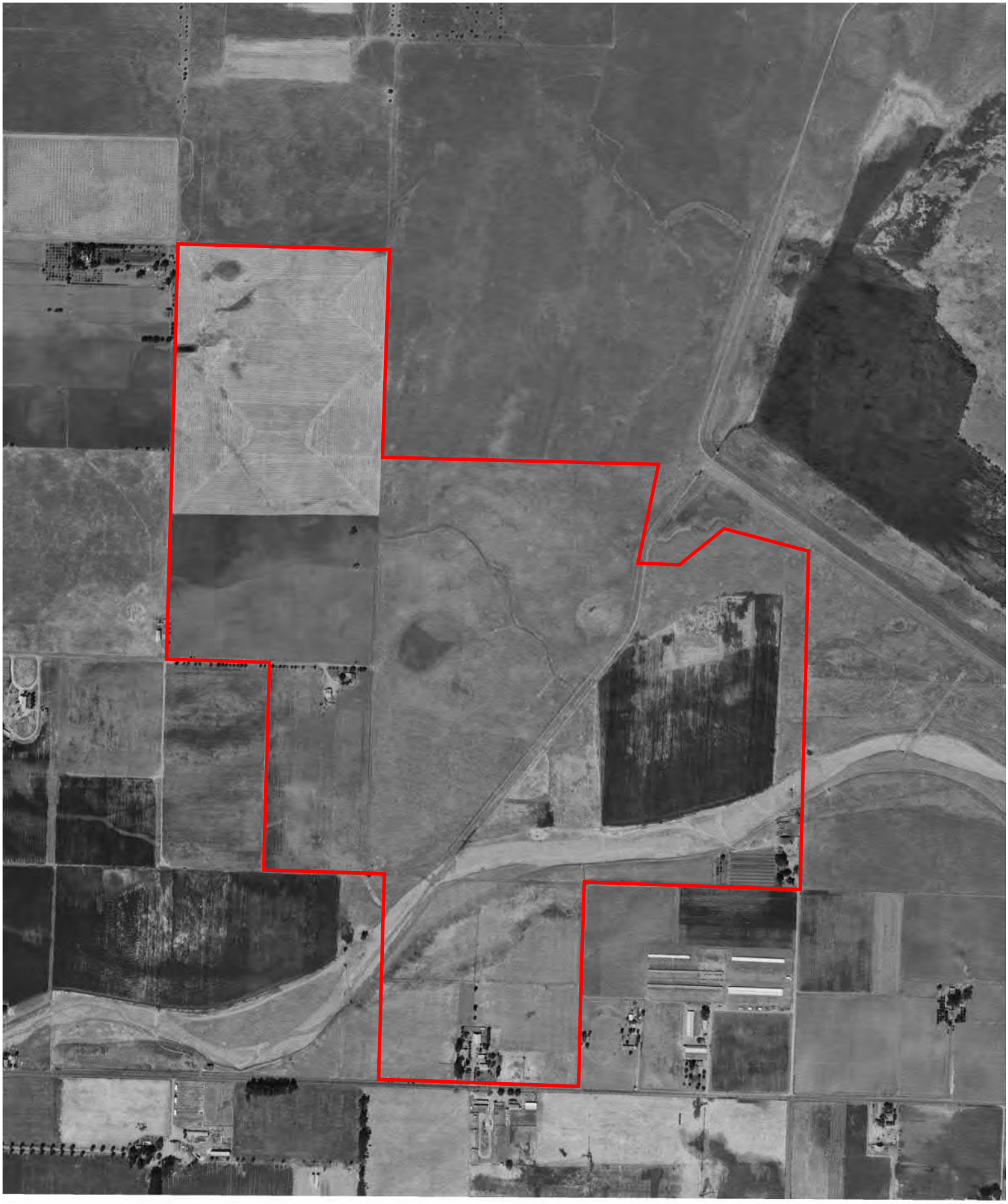

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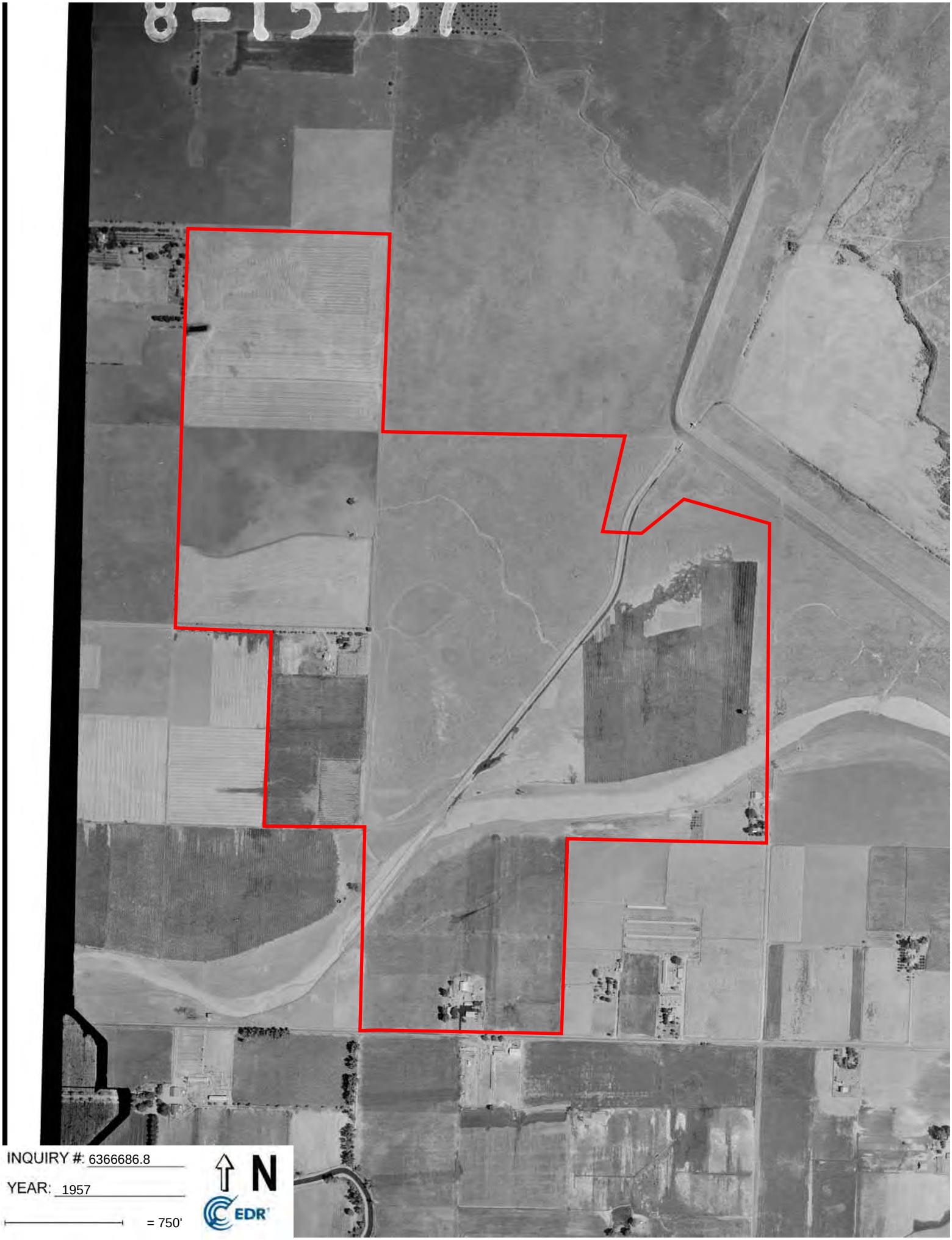
EDR



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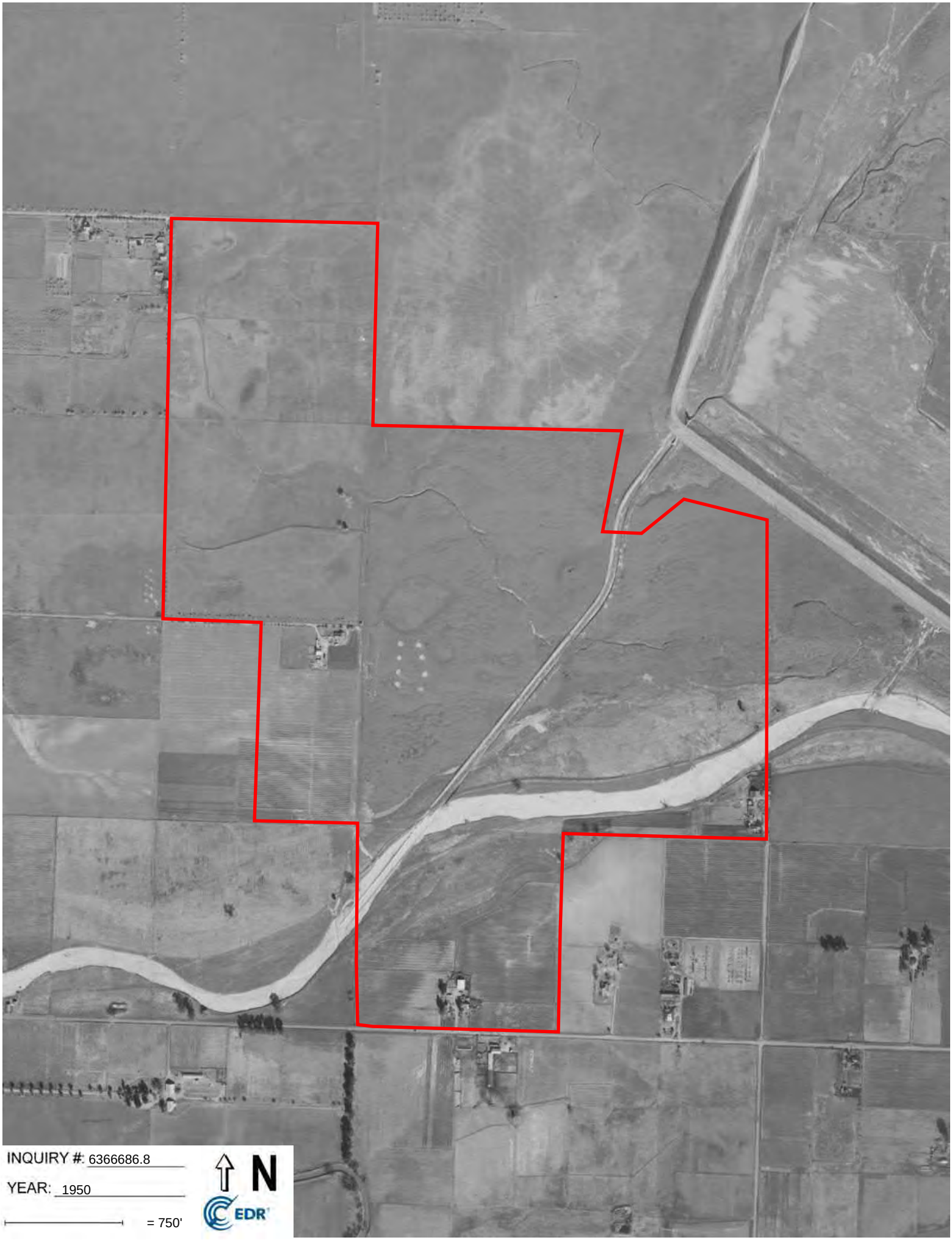
EDR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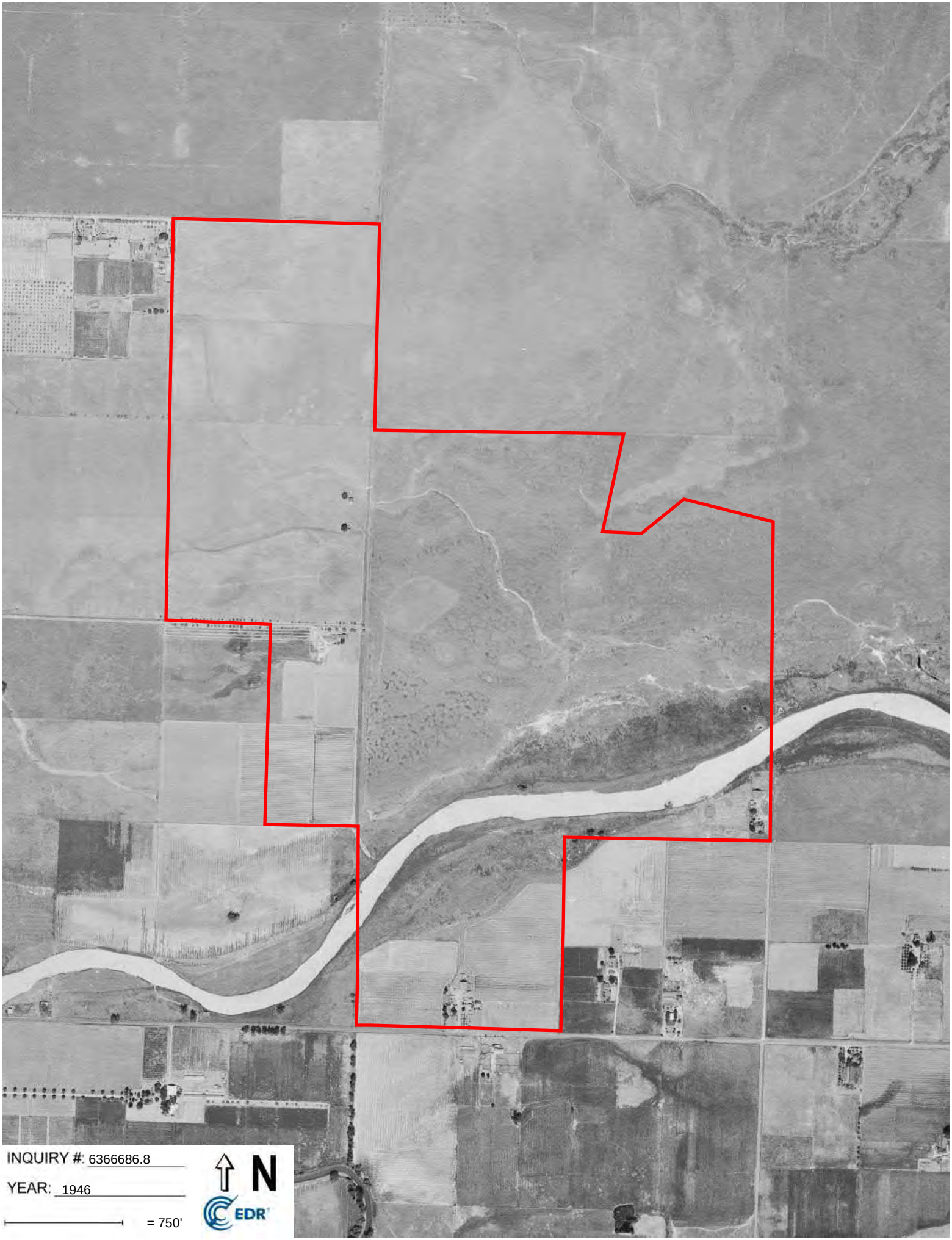
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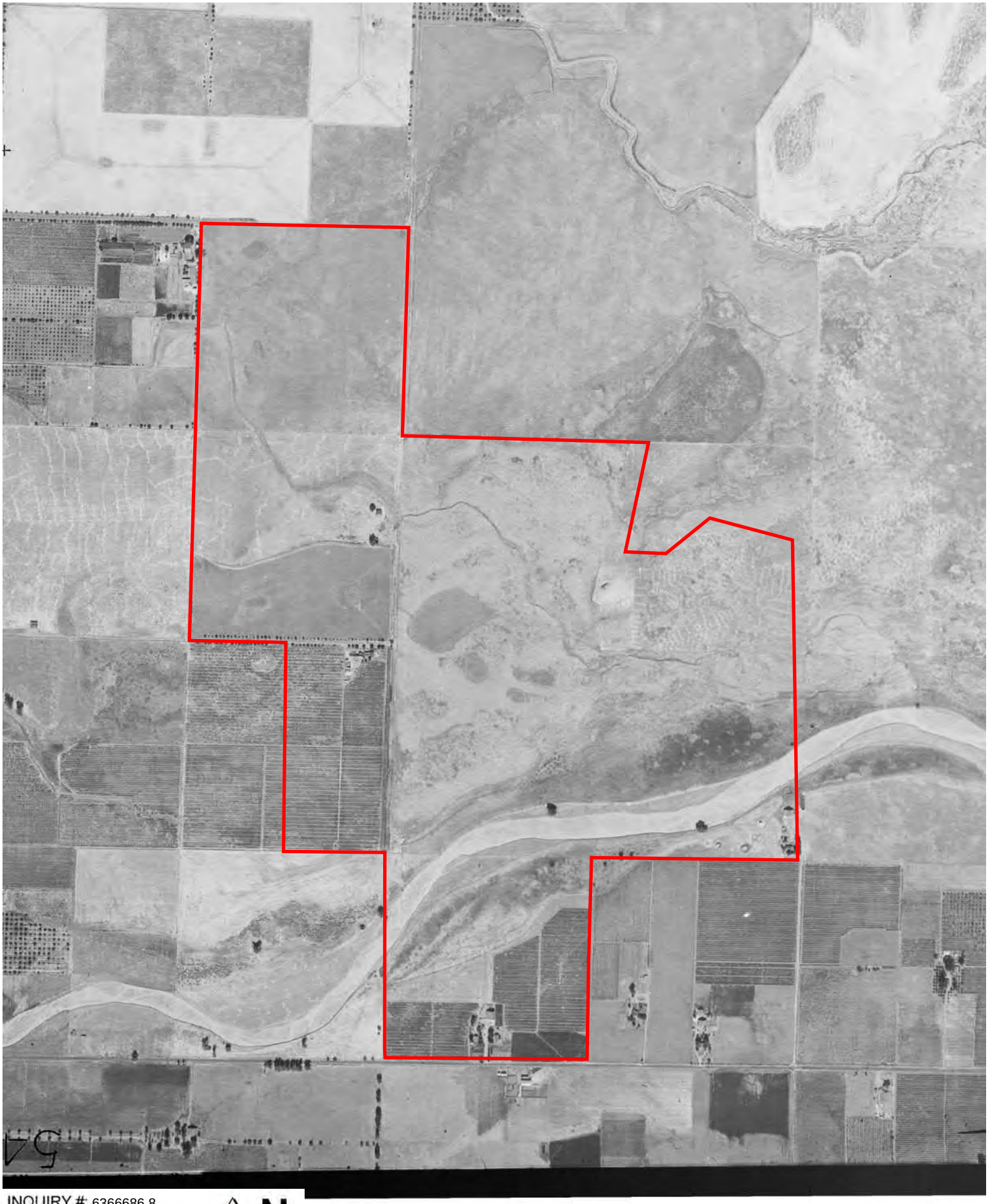

INQUIRY #: 6366686.8

YEAR: 1937

= 750'

N

EDR

Appendix D

Shepherd North Properties

6110 E. Shepherd Ave

Clovis, CA 93619

Inquiry Number: 6366686.4

February 12, 2021

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

02/12/21

Site Name:	Client Name:
Shepherd North Properties	Krazan & Associates, Inc.
6110 E. Shepherd Ave	215 West Dakota
Clovis, CA 93619	Clovis, CA 93612
EDR Inquiry # 6366686.4	Contact: Mark Edwards

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Krazan & Associates, Inc. were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:		***Coordinates:***	
P.O.#	014-21021 - mde	**Latitude:**	36.868358 36° 52' 6" North
Project:	Shepherd North Properties	**Longitude:**	-119.672717 -119° 40' 22" West
		UTM Zone:	Zone 11 North
		UTM X Meters:	261758.40
		UTM Y Meters:	4083604.36
		Elevation:	397.52' above sea level

Maps Provided:

2012
2000
1981
1972
1964
1947
1946
1922, 1923

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2012 Source Sheets

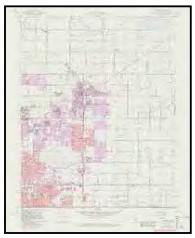
Clovis
2012
7.5-minute, 24000

Friant
2012
7.5-minute, 24000

2000 Source Sheets

Friant
2000
7.5-minute, 24000
Aerial Photo Revised 2000

1981 Source Sheets



Clovis
1981
7.5-minute, 24000
Aerial Photo Revised 1978

1972 Source Sheets

Clovis
1972
7.5-minute, 24000
Aerial Photo Revised 1972

Topo Sheet Key

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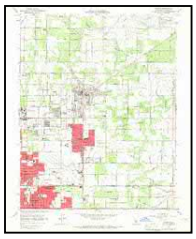


Clovis
1964
7.5-minute, 24000
Aerial Photo Revised 1962

Friant
1964
7.5-minute, 24000
Aerial Photo Revised 1962

1947 Source Sheets

Clovis
1947
7.5-minute, 24000

Friant
1947
7.5-minute, 24000

1946 Source Sheets

Friant
1946
7.5-minute, 24000

Clovis
1946
7.5-minute, 24000

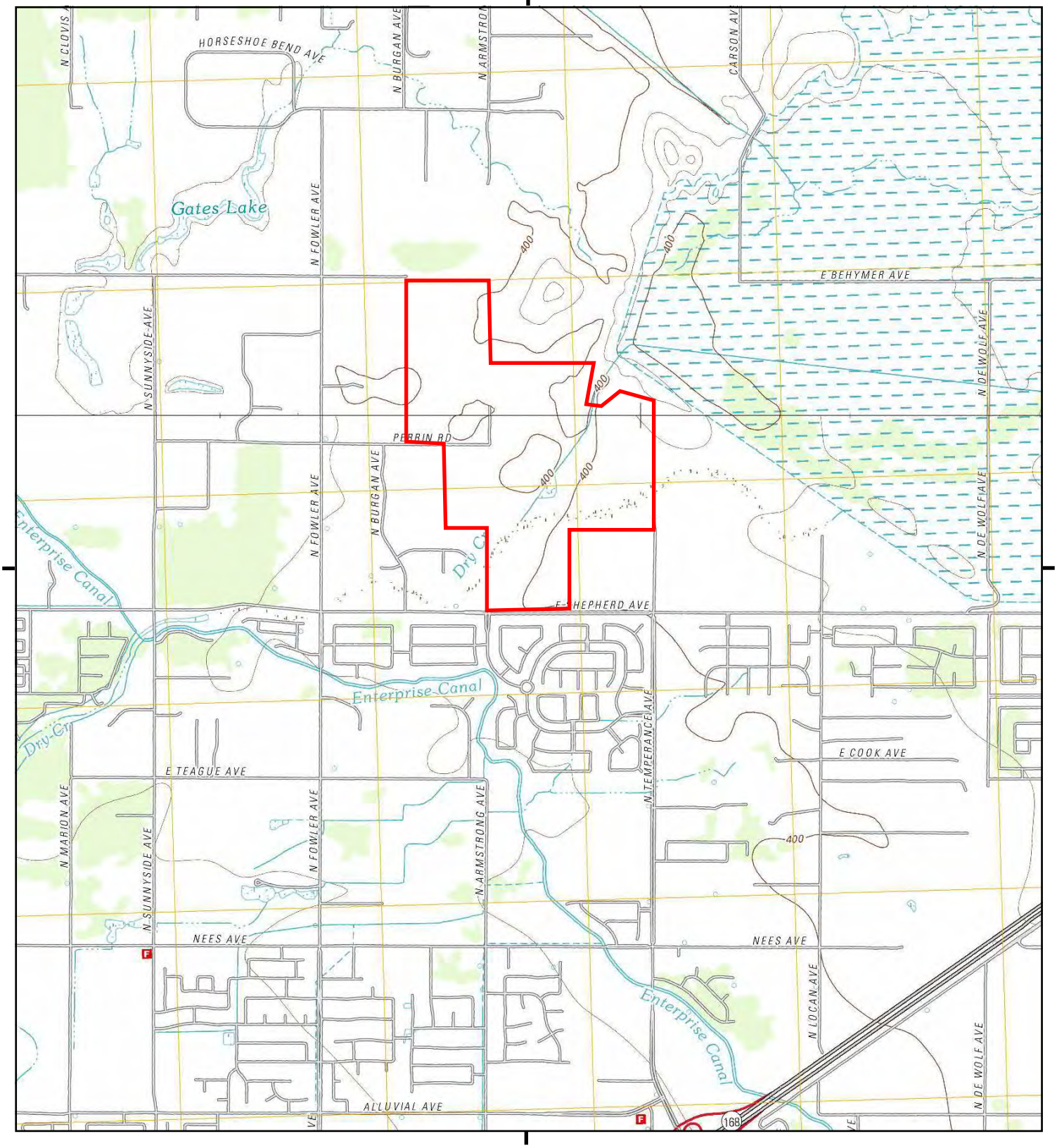
1922, 1923 Source Sheets

Friant
1922
7.5-minute, 31680

Clovis
1923
7.5-minute, 31680

Historical Topo Map

2012



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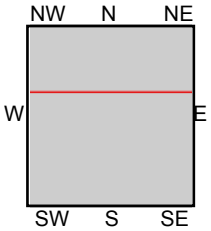


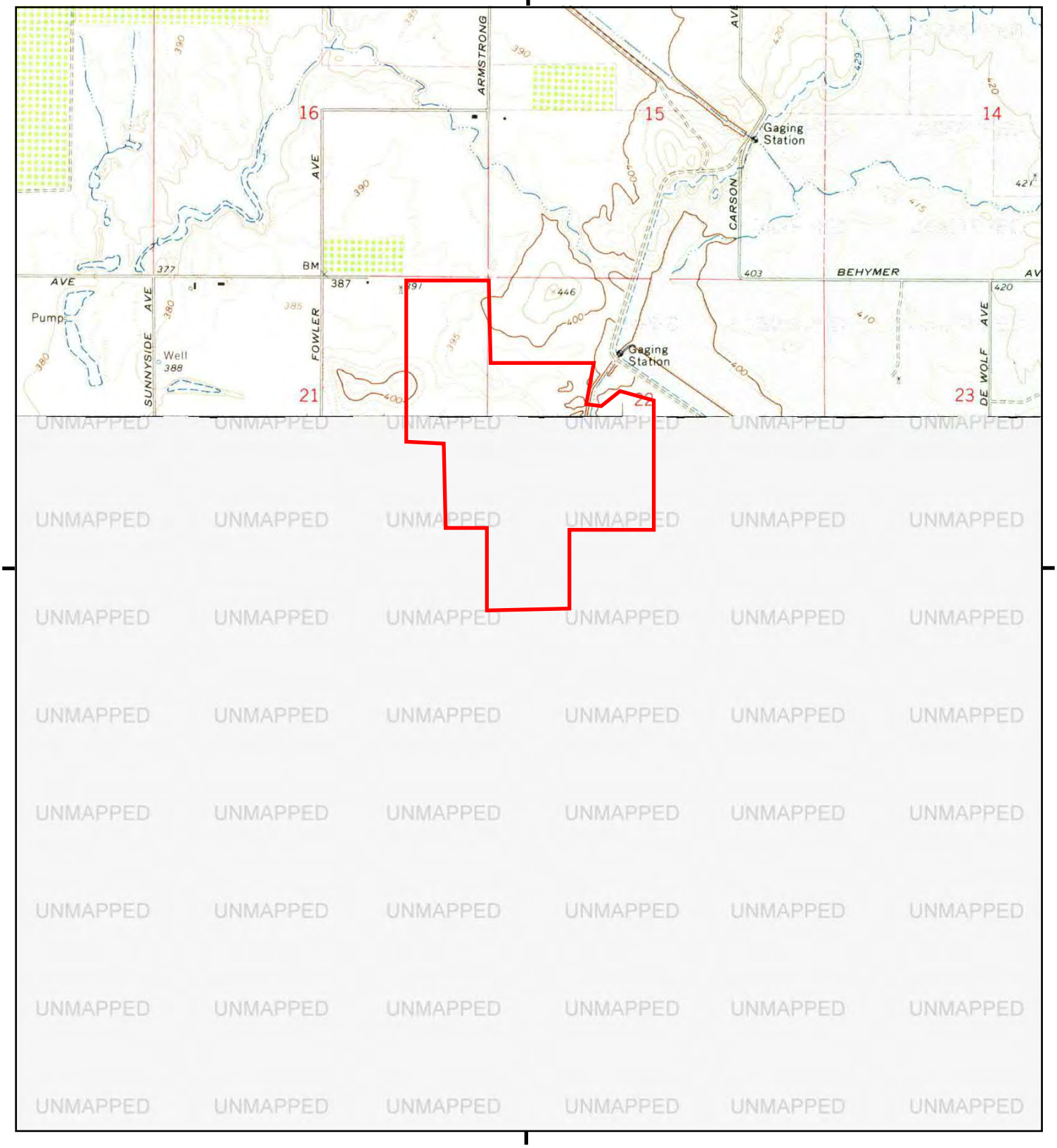
TP, Clovis, 2012, 7.5-minute
N, Friant, 2012, 7.5-minute

SITE NAME: Shepherd North Properties
ADDRESS: 6110 E. Shepherd Ave
Clovis, CA 93619
CLIENT: Krazan & Associates, Inc.

N

Historical Topo Map

2000



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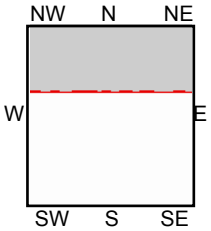


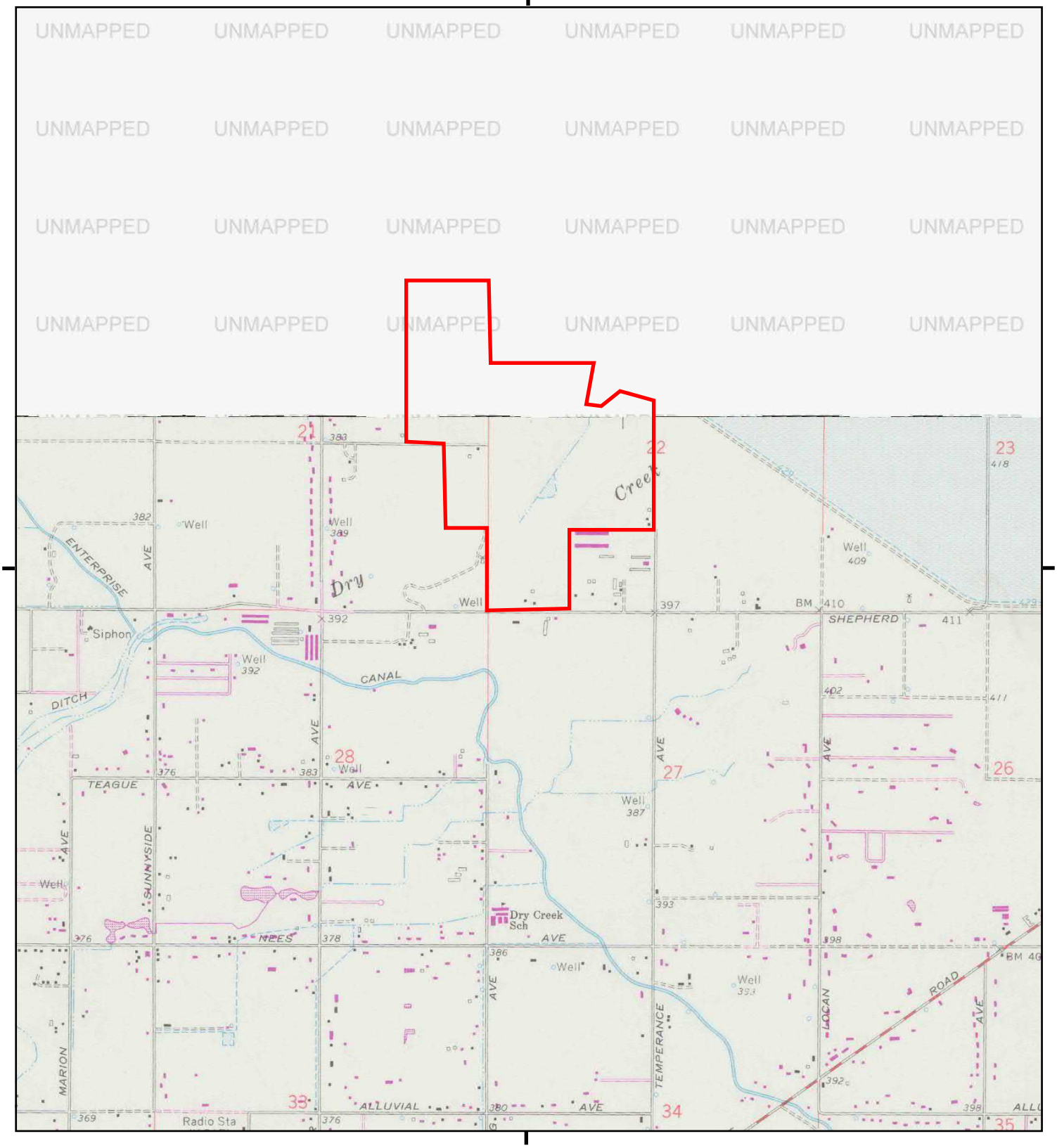
N, Friant, 2000, 7.5-minute

SITE NAME: Shepherd North Properties
ADDRESS: 6110 E. Shepherd Ave
Clovis, CA 93619
CLIENT: Krazan & Associates, Inc.

N

Historical Topo Map

1981



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NW N NE
W E
SW S SE

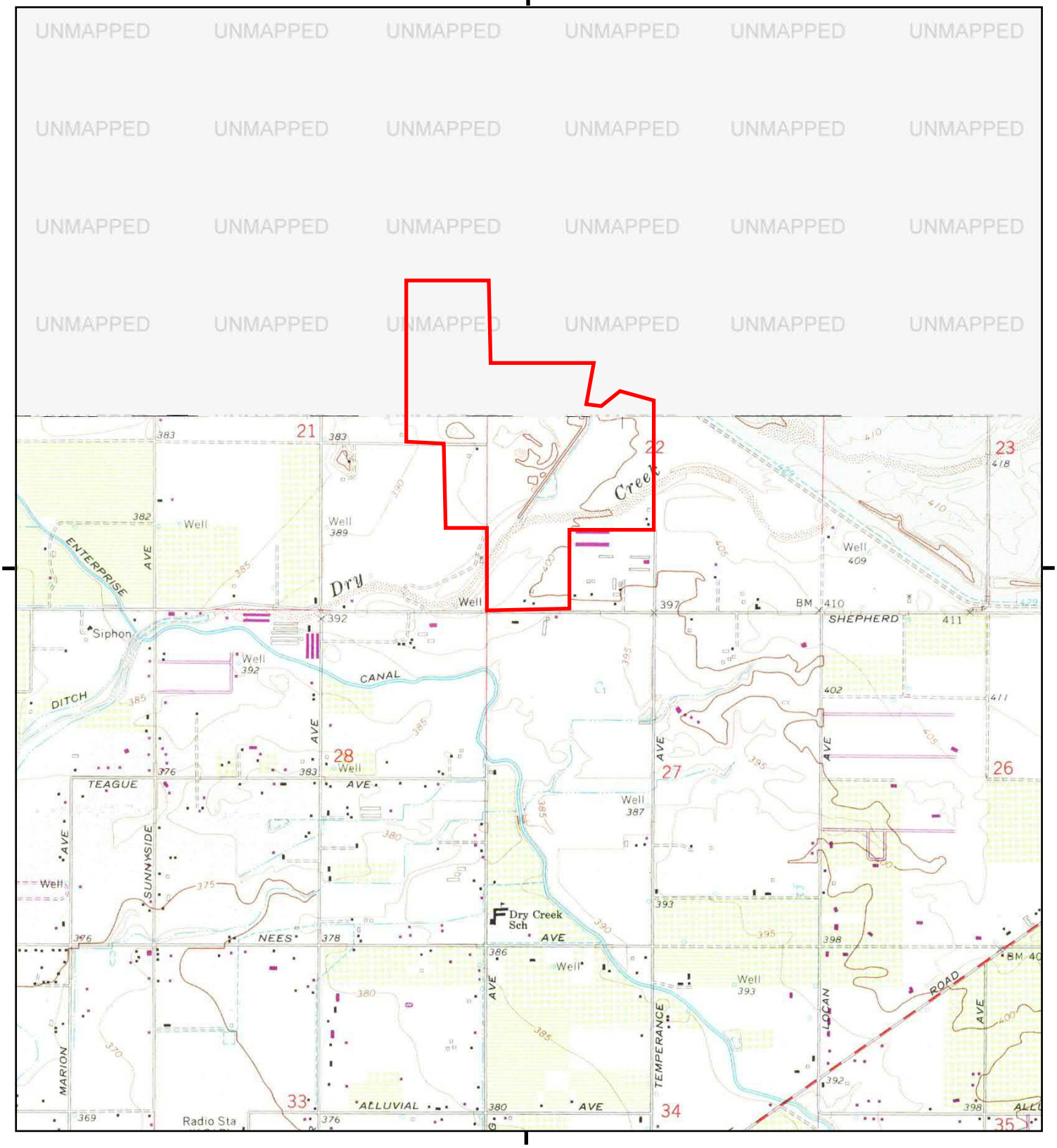
TP, Clovis, 1981, 7.5-minute

SITE NAME: Shepherd North Properties
ADDRESS: 6110 E. Shepherd Ave
Clovis, CA 93619
CLIENT: Krazan & Associates, Inc.

N

Historical Topo Map

1972



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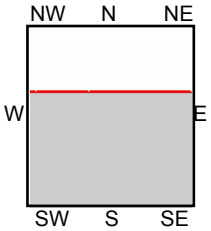


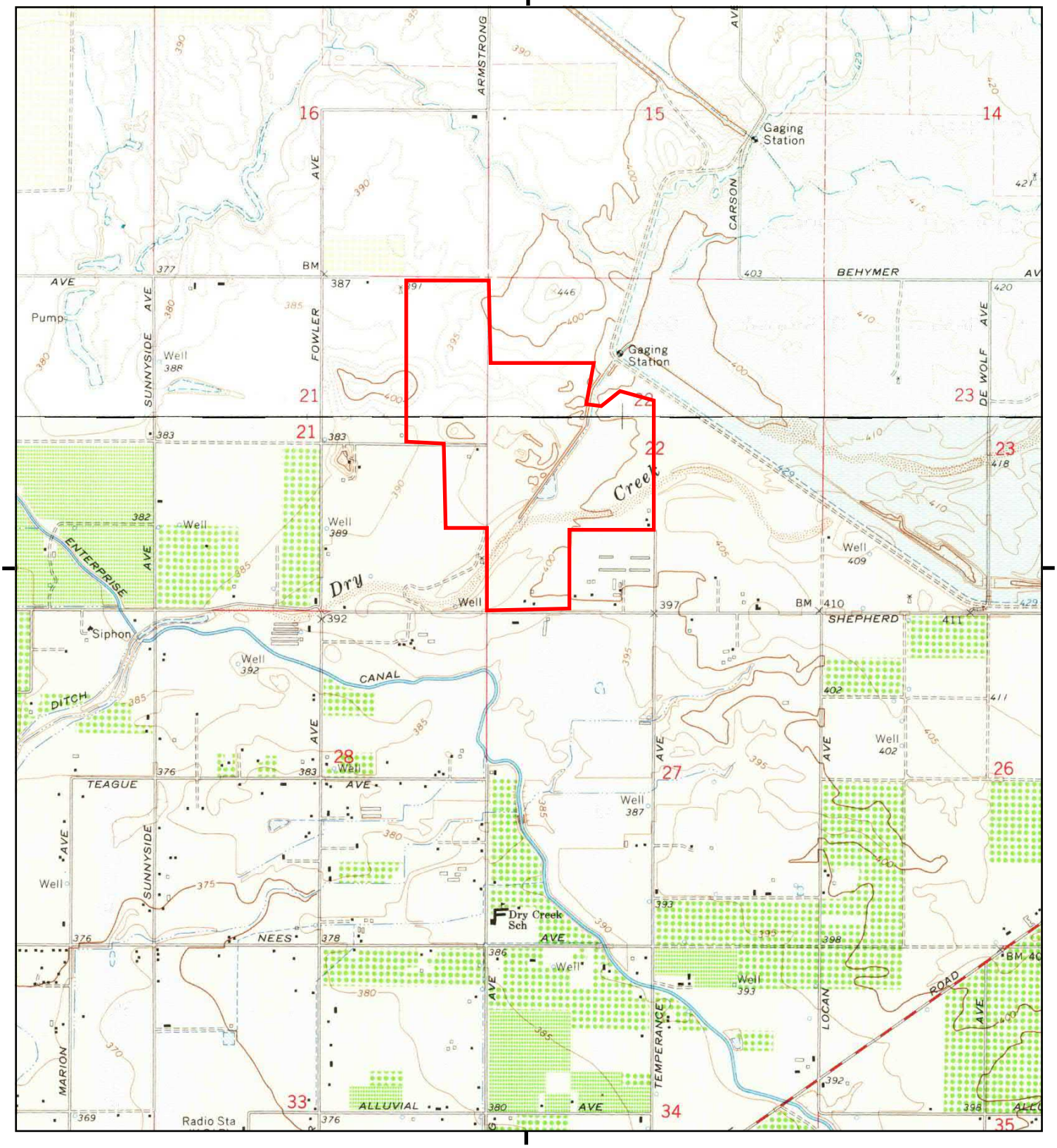
TP, Clovis, 1972, 7.5-minute

SITE NAME: Shepherd North Properties
ADDRESS: 6110 E. Shepherd Ave
Clovis, CA 93619
CLIENT: Krazan & Associates, Inc.

N

Historical Topo Map

1964



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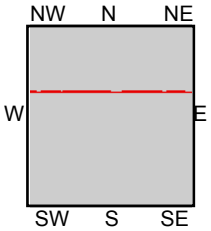

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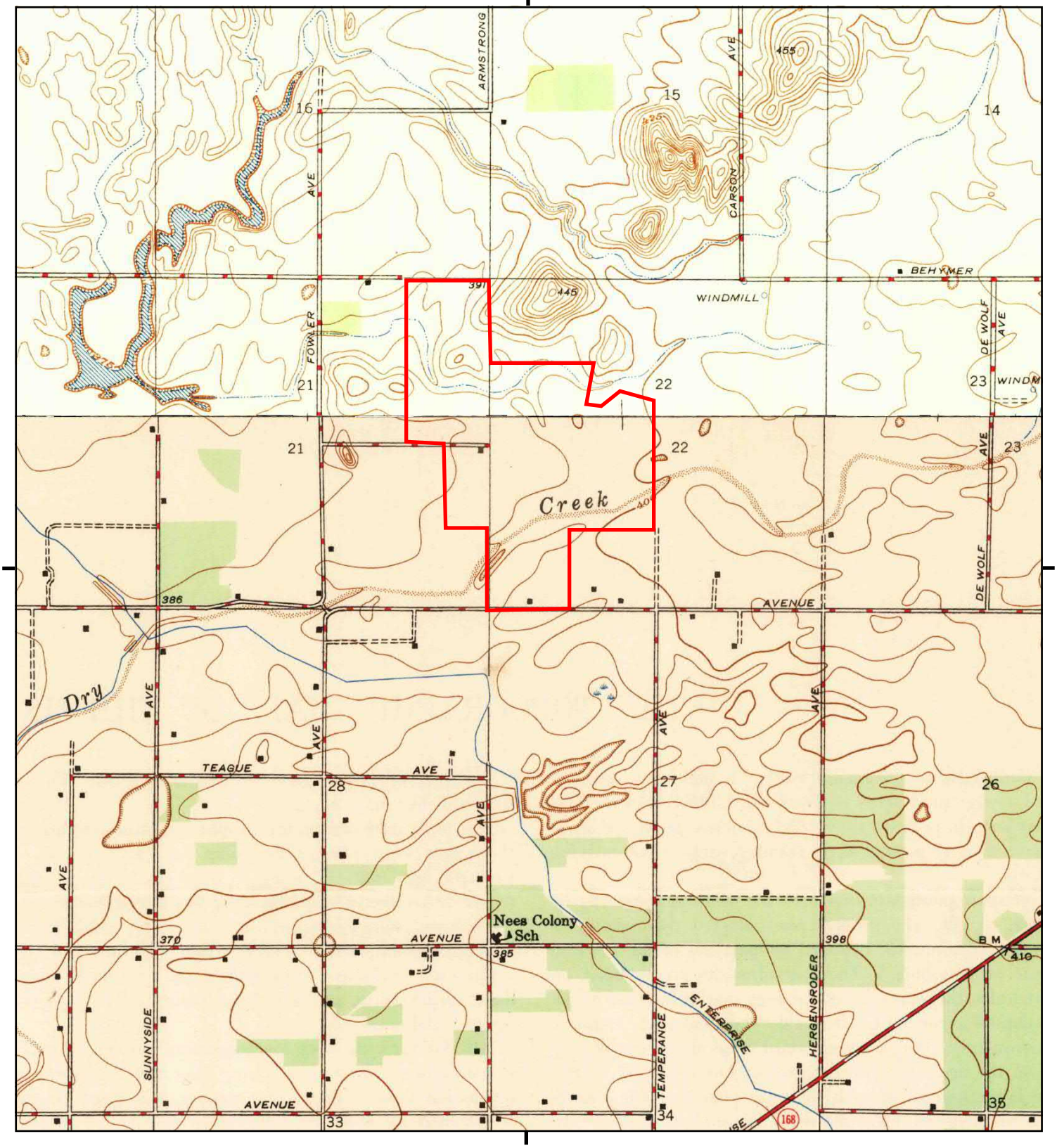
N, Friant, 1964, 7.5-minute

SITE NAME: Shepherd North Properties
ADDRESS: 6110 E. Shepherd Ave
Clovis, CA 93619
CLIENT: Krazan & Associates, Inc.

N

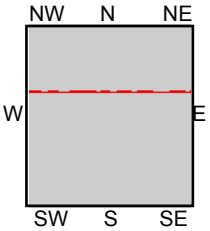
Historical Topo Map

1947



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5



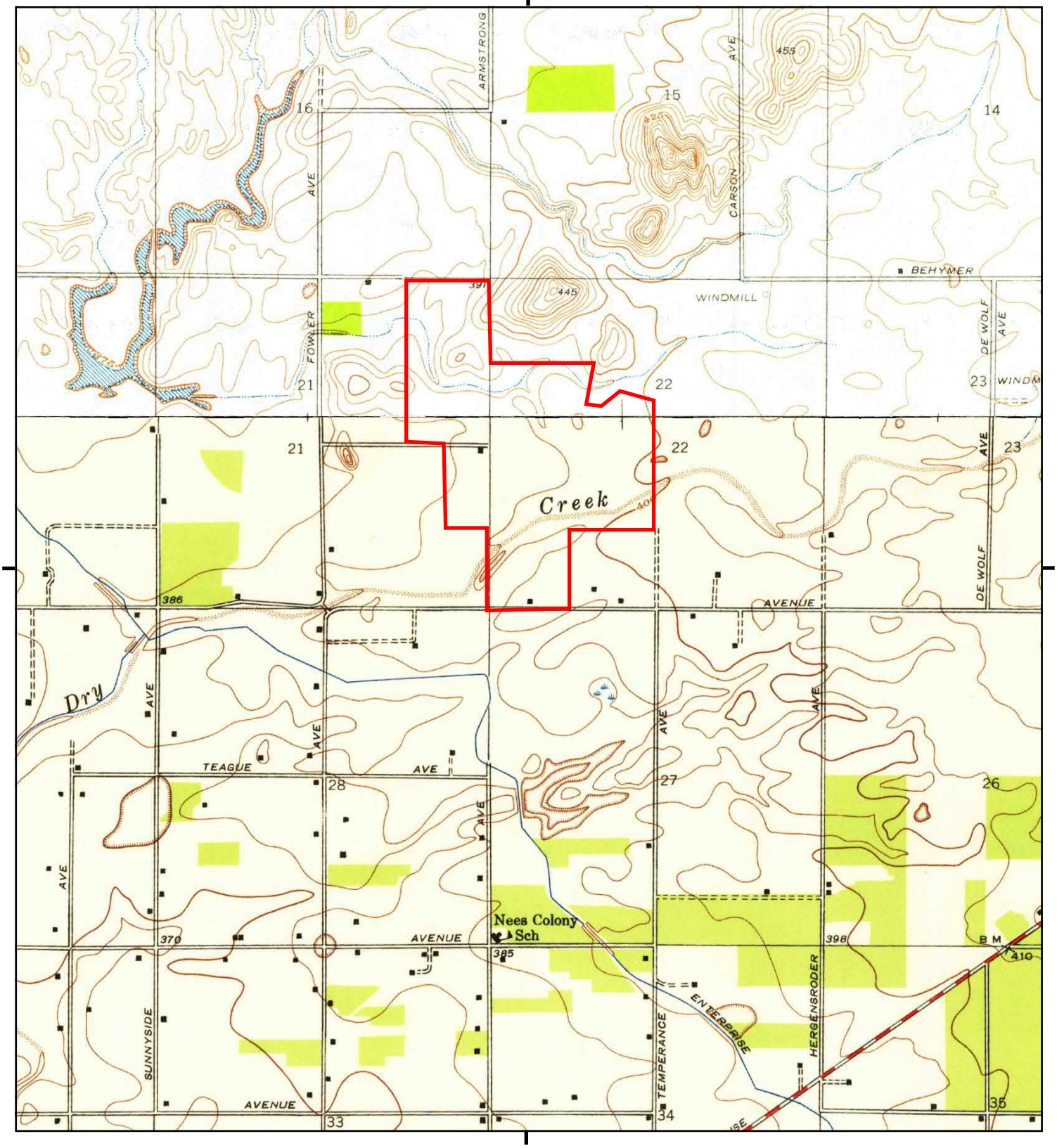
TP, Clovis, 1947, 7.5-minute
N, Friant, 1947, 7.5-minute

SITE NAME: Shepherd North Properties
ADDRESS: 6110 E. Shepherd Ave
Clovis, CA 93619
CLIENT: Krazan & Associates, Inc.

N

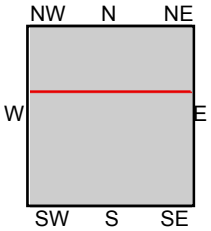
Historical Topo Map

1946



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5



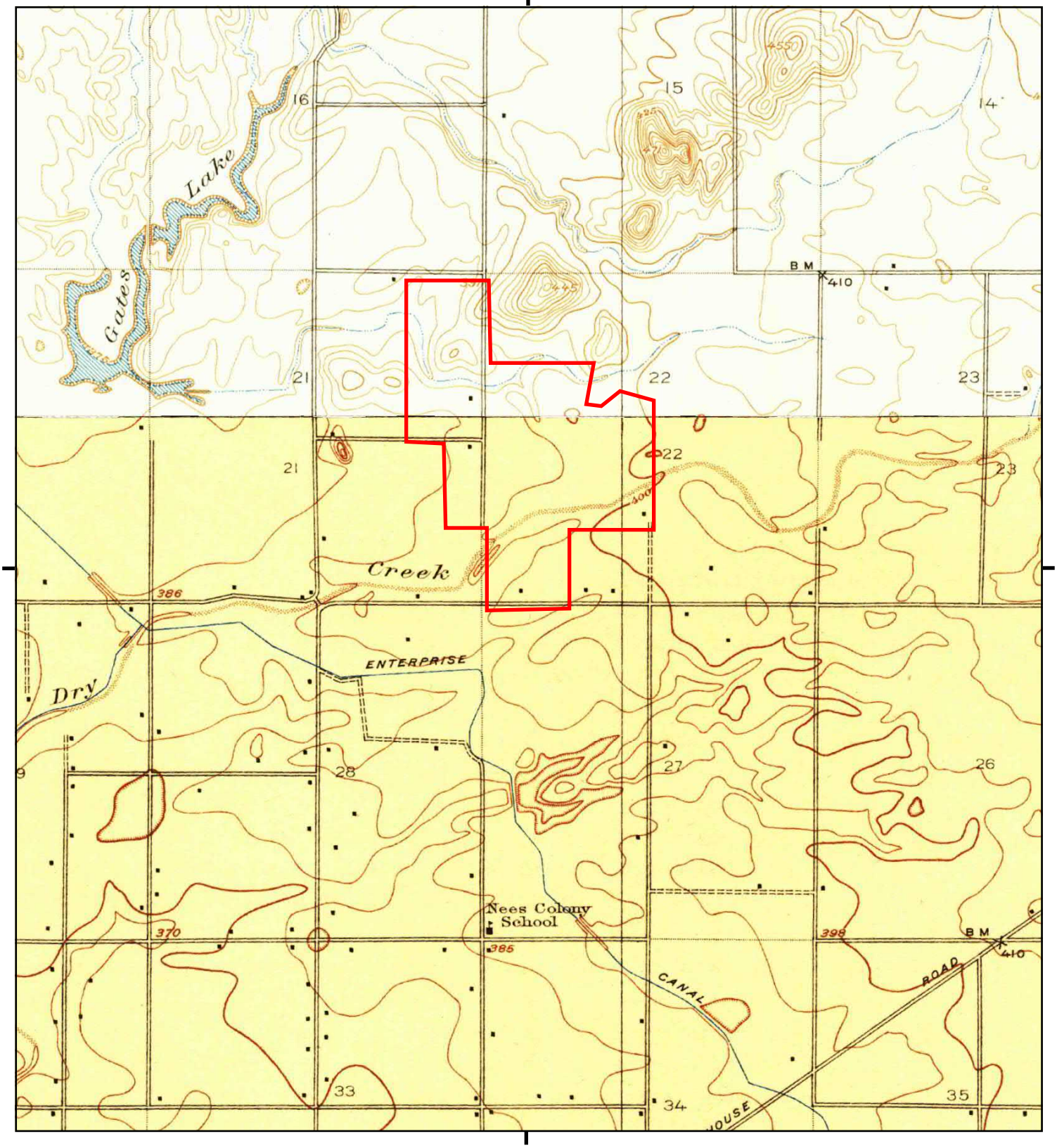
TP, Clovis, 1946, 7.5-minute
N, Friant, 1946, 7.5-minute

SITE NAME: Shepherd North Properties
ADDRESS: 6110 E. Shepherd Ave
Clovis, CA 93619
CLIENT: Krazan & Associates, Inc.

N

Historical Topo Map

1922, 1923



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Clovis, 1923, 7.5-minute
N, Friant, 1922, 7.5-minute

SITE NAME: Shepherd North Properties
ADDRESS: 6110 E. Shepherd Ave
Clovis, CA 93619
CLIENT: Krazan & Associates, Inc.

N

Appendix E

Record Details

Name :	5931 PERRIN AVE	**Type:**	Construction Permit - Single Family Dwelling - Demolition
Status :	Closed	**Date:**	2012-05-03
Expiry Date :	2012-10-30		
Description :	DEMO 2ND SFR NOT SEPTIC VIOLATION # 11-101428	**Condition:**	

Property Detail

Linked Address(s)

5931 PERRIN AVE , CLOVIS CA - **APN: 55702211S**

Search By:

Property Permit Advanced

Search for a permit by entering property address or APN number.
Address Format Sample: 2220 Tulare St Fresno
APN Format Sample: 46821410T

Address (search)

55703124

Back Search

Select

CA , [APN: 55703124]

Property Map

Selected Property on the map

Results found

No results found on searched property.

Search By:

Property Permit Advanced

Search for a permit by entering property address or APN number.
Address Format Sample: 2220 Tulare St Fresno
APN Format Sample: 46821410T

Address (search)

55703125

Back Search

Select

CA , [APN: 55703125]

Property Map

Selected Property on the map

Results found

No results found on searched property.

Search By:

Property Permit Advanced

Search for a permit by entering property address or APN number.
Address Format Sample: 2220 Tulare St Fresno
APN Format Sample: 46821410T

Address (search)

55703127

Back Search

Select

9255 N TEMPERANCE , CLOVIS CA , 93611 [APN: 55703127]

Property Map

Selected Property on the map

Results found

No results found on searched property.

Search By:

Property Permit Advanced

Search for a permit by entering property address or APN number.
Address Format Sample: 2220 Tulare St Fresno
APN Format Sample: 46821410T

Address (search)

55703137

Back Search

Select

6110 E SHEPHERD , CLOVIS CA , 93611 [APN: 55703137]

Property Map

Selected Property on the map

Results found

Application #	Agency	Type	Status	Application Date	APN	Actions
12-100243	Public Works	Construction Permit - Single Family Dwelling - Re-Roof	Closed	Jan 13, 12	55703137	Detail

1 total

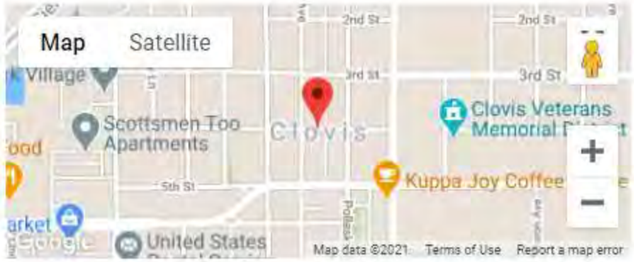
Record Details

Name :	6110 SHEPHERD	**Type:**	Construction Permit - Single Family Dwelling - Re-Roof
Status :	Closed	**Date:**	2012-01-13
Expiry Date :	2012-07-15		
Description :	REROOF EXIST SFR	**Condition:**	

Property Detail

Linked Address(s)

6110 SHEPHERD , CLOVIS CA - **APN: 55703137**



Search By:

Property Permit Advanced

Search for a permit by entering property address or APN number.
Address Format Sample: 2220 Tulare St Fresno
APN Format Sample: 46821410T

Address (search)

55701202

Back Search

Select

CA , [APN: 55701202]

Property Map

Selected Property on the map

Results found

No results found on searched property.

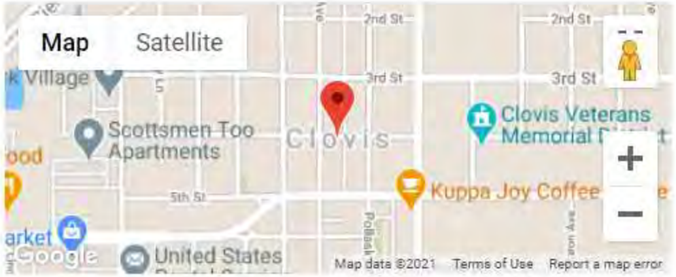
Record Details

Name :	SEC 21 - 12/21	**Type:**	Land Use - Other - As Described - Miscellaneous
Status :	Pre-Application	**Date:**	2016-07-05
Expiry Date :			
Description :	REZONE AND GENERAL PLAN AMENDMENT TO CHANGE PROPERTY TO CM - COMMERCIAL AND LIGHT MANUFACTURING TO ALLOW FOR PERSONAL STORAGE BUSINESS	**Condition:**	

Property Detail

Linked Address(s)

SEC 21 - 12/21 , CLOVIS CA - **APN: 55701228**



Search By:

Property Permit Advanced

Search for a permit by entering property address or APN number.
Address Format Sample: 2220 Tulare St Fresno
APN Format Sample: 46821410T

Address (search)

55701229

Back Search

Select

CA , [APN: 55701229]

Property Map

Selected Property on the map

Results found

No results found on searched property.

Search By:

Property Permit Advanced

Search for a permit by entering property address or APN number.
Address Format Sample: 2220 Tulare St Fresno
APN Format Sample: 46821410T

Address (search)

55702211S

Back Search

Select

5931 E PERRIN AVE, CLOVIS CA , 93611 [APN: 55702211S]

Property Map

Selected Property on the map

Results found

Application #	Agency	Type	Status	Application Date	APN	Actions
11-101428	Public Works	Violation - Zoning Violation - Land Use	Closed	Apr 05, 11	55702211S	Detail
11-103158	Public Works	Construction Permit - Single Family Dwelling - Demolition	Closed	Jul 05, 11	55702211S	Detail
12-102062	Public Works	Construction Permit - Single Family Dwelling - Demolition	Closed	May 03, 12	55702211S	Detail

3 total

Record Details

Name :	5931 PERRIN AVE	**Type:**	Violation - Zoning Violation - Land Use
Status :	Closed	**Date:**	2011-04-05
Expiry Date :			
Description :	BURNED AND UNSAFE RESIDENCE.	**Condition:**	

Property Detail

Linked Address(s)

5931 PERRIN AVE , CLOVIS CA - **APN: 55702211S**

Record Details

Name :	5931 PERRIN AVE	**Type:**	Construction Permit - Single Family Dwelling - Demolition
Status :	Closed	**Date:**	2011-07-05
Expiry Date :	2012-01-01		
Description :	DEMOLITION OF ONE RESIDENCE	**Condition:**	

Property Detail

Linked Address(s)

5931 PERRIN AVE , CLOVIS CA - **APN: 55702211S**

Appendix F

Shepherd North Properties
6110 E. Shepherd Ave
Clovis, CA 93619

Inquiry Number: 6366686.5
February 13, 2021

The EDR-City Directory Abstract

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Executive Summary

Findings

City Directory Images

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Abstract is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Abstract includes a search and abstract of available city directory data. For each address, the directory lists the name of the corresponding occupant at five year intervals.

Business directories including city, cross reference and telephone directories were reviewed, if available, at approximately five year intervals for the years spanning 1922 through 2017. This report compiles information gathered in this review by geocoding the latitude and longitude of properties identified and gathering information about properties within 660 feet of the target property.

A summary of the information obtained is provided in the text of this report.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

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Data by infoUSA®

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RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Year	Source	TP	Adjoining	Text Abstract	Source Image
2017	Cole Information Services	X	X	X	-
2014	Cole Information Services	X	X	X	-
2009	Cole Information Services	X	X	X	-
2004	Cole Information Services	-	X	X	-
	Cole Information Services	X	X	X	-
2002	R.L. Polk & Co Publishers	-	X	X	-
	R.L. Polk & Co Publishers	X	X	X	-
1999	Cole Information Services	-	X	X	-
	Cole Information Services	X	X	X	-
1996	R.L. Polk & Co Publishers	-	X	X	-
1994	Cole Information Services	-	X	X	-
	Cole Information Services	X	X	X	-

EXECUTIVE SUMMARY

Year	Source	TP	Adjoining	Text Abstract	Source Image
1990	R.L. Polk & Co Publishers	-	-	-	-
1986	R.L. Polk & Co Publishers	-	-	-	-
1980	R.L. Polk & Co Publishers	-	-	-	-
1975	R.L. Polk & Co Publishers	-	-	-	-
1970	R.L. Polk & Co Publisher	-	-	-	-
1965	R.L. Polk & Co Publisher	-	-	-	-
1962	Pacific Telephone	-	-	-	-
1958	R.L. Polk & Co Publishers	-	-	-	-
1952	R.L. Polk & Co Publishers	-	-	-	-
1947	R.L. Polk & Co Publishers	-	-	-	-
1942	R.L. Polk & Co Publishers	-	-	-	-
1937	R.L. Polk & Co Publishers	-	-	-	-
1932	R.L. Polk & Co Publishers	-	-	-	-
1927	R.L. Polk & Co Publishers	-	-	-	-
1922	Polk: Husted Directory Co.	-	-	-	-

EXECUTIVE SUMMARY

SELECTED ADDRESSES

The following addresses were selected by the client, for EDR to research. An "X" indicates where information was identified.

Address	***Type***	***Findings***
5869 E. Behymer Ave	Client Entered	
5931 E. Perrin Ave	Client Entered	
9255 N. Temperance Ave	Client Entered	X

FINDINGS

TARGET PROPERTY INFORMATION

ADDRESS

6110 E. Shepherd Ave
Clovis, CA 93619

FINDINGS DETAIL

Target Property research detail.

E SHEPHERD AVE

6110 E SHEPHERD AVE

Year	Uses	Source
2017	KERRI PETERSON	Cole Information Services
2014	OCCUPANT UNKNOWN	Cole Information Services
2009	OCCUPANT UNKNOWN	Cole Information Services
2002	Baradat Matt J	R.L. Polk & Co Publishers

E. Behymer Ave

5869 E. Behymer Ave

Year	Uses	Source

E. Perrin Ave

5931 E. Perrin Ave

Year	Uses	Source

N TEMPERANCE AVE

9255 N TEMPERANCE AVE

Year	Uses	Source
2017	NEREIDA LEYVA	Cole Information Services
2014	NEREIDA LEYVA	Cole Information Services
2009	MARIA VASQUEZ	Cole Information Services
2004	STEVE ABRAUGH	Cole Information Services
1999	MARIA VASQUEZ	Cole Information Services

FINDINGS

N. Temperance Ave

9255 N. Temperance Ave

Year	*Uses*	*Source*
2002	Abraugh Tami L 81 A	R.L. Polk & Co Publishers
	BUSINESSES 6 HOUSEHOLDS	R.L. Polk & Co Publishers

PERRIN RD

5931 PERRIN RD

Year	*Uses*	*Source*
2004	GE VUE	Cole Information Services
1994	XIONG, M	Cole Information Services

FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

E SHEPHERD AVE

6083 E SHEPHERD AVE

Year	Uses	Source
2002	Not Verified	R.L. Polk & Co Publishers

6117 E SHEPHERD AVE

Year	Uses	Source
2002	b Johampton Rolanda	R.L. Polk & Co Publishers

6120 E SHEPHERD AVE

Year	Uses	Source
2017	CAMERON CAMPBELL	Cole Information Services
2014	CAMERON CAMPBELL	Cole Information Services
2009	ERIC CAMPBELL	Cole Information Services
2004	ERIC CAMPBELL	Cole Information Services
2002	Campbell Bob G B	R.L. Polk & Co Publishers
1996	Campbell Bob 9524 R	R.L. Polk & Co Publishers
1994	CAMPBELL, BOB	Cole Information Services

6298 E SHEPHERD AVE

Year	Uses	Source
2017	SHANNON WILLIQUETTE	Cole Information Services
2014	DAVID SWAN	Cole Information Services
2009	DAVID SWAN	Cole Information Services
2004	JUNE FULLER	Cole Information Services
2002	Fuller June C 1 S+ A	R.L. Polk & Co Publishers
1999	DAVID SWAN	Cole Information Services
1994	FULLER, ROBERT	Cole Information Services

FINDINGS

ADJOINING PROPERTY: ADDRESSES NOT IDENTIFIED IN RESEARCH SOURCE

The following Adjoining Property addresses were researched for this report, and the addresses were not identified in research source.

Address Researched	Address Not Identified in Research Source
6083 E SHEPHERD AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
6117 E SHEPHERD AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
6120 E SHEPHERD AVE	2017, 2014, 2009, 2004, 1999, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
6120 E SHEPHERD AVE	2002, 1999, 1996, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
6298 E SHEPHERD AVE	2017, 2014, 2009, 2004, 1999, 1996, 1994, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922
6298 E SHEPHERD AVE	2002, 1996, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922

TARGET PROPERTY: ADDRESS NOT IDENTIFIED IN RESEARCH SOURCE

The following Target Property addresses were researched for this report, and the addresses were not identified in the research source.

Address Researched	Address Not Identified in Research Source
6110 E. Shepherd Ave	1996, 1990, 1986, 1980, 1975, 1970, 1965, 1962, 1958, 1952, 1947, 1942, 1937, 1932, 1927, 1922

TP/ADJ	YEAR	STREET NO	STREET NAME	OCCUPANT NAME
TP	2017	9255	N TEMPERANCE AVE	NEREIDA LEYVA
TP	2017	6110	E SHEPHERD AVE	KERRI PETERSON
TP	2014	9255	N TEMPERANCE AVE	NEREIDA LEYVA
TP	2014	6110	E SHEPHERD AVE	OCCUPANT UNKNOWN
TP	2009	9255	N TEMPERANCE AVE	MARIA VASQUEZ
TP	2009	6110	E SHEPHERD AVE	OCCUPANT UNKNOWN
TP	2004	9255	N TEMPERANCE AVE	STEVE ABRAUGH
TP	2004	5931	PERRIN RD	GE VUE
TP	2002	9255	N. Temperance Ave	Abraugh Tami L 81 A
TP	2002	9255	N. Temperance Ave	BUSINESSES 6 HOUSEHOLDS
TP	2002	6110	E SHEPHERD AVE	Baradat Matt J
TP	1999	9255	N TEMPERANCE AVE	MARIA VASQUEZ
TP	1994	5931	PERRIN RD	XIONG, M
TP		5931	E. Perrin Ave	
TP		5869	E. Behymer Ave	
ADJ	2017	6298	E SHEPHERD AVE	SHANNON WILLIQUETTE
ADJ	2017	6120	E SHEPHERD AVE	CAMERON CAMPBELL
ADJ	2014	6298	E SHEPHERD AVE	DAVID SWAN
ADJ	2014	6120	E SHEPHERD AVE	CAMERON CAMPBELL
ADJ	2009	6298	E SHEPHERD AVE	DAVID SWAN
ADJ	2009	6120	E SHEPHERD AVE	ERIC CAMPBELL
ADJ	2004	6298	E SHEPHERD AVE	JUNE FULLER
ADJ	2004	6120	E SHEPHERD AVE	ERIC CAMPBELL
ADJ	2002	6298	E SHEPHERD AVE	Fuller June C 1 S+ A
ADJ	2002	6120	E SHEPHERD AVE	Campbell Bob G B
ADJ	2002	6117	E SHEPHERD AVE	b Johampton Rolanda
ADJ	2002	6083	E SHEPHERD AVE	Not Verified
ADJ	1999	6298	E SHEPHERD AVE	DAVID SWAN
ADJ	1996	6120	E SHEPHERD AVE	Campbell Bob 9524 R
ADJ	1994	6298	E SHEPHERD AVE	FULLER, ROBERT
ADJ	1994	6120	E SHEPHERD AVE	CAMPBELL, BOB

PUBLISHER
Cole Information Services
Cole Information Services
Cole Information Services
Cole Information Services
Cole Information Services
Cole Information Services
Cole Information Services
Cole Information Services
R.L. Polk & Co Publishers
R.L. Polk & Co Publishers
R.L. Polk & Co Publishers
Cole Information Services
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R.L. Polk & Co Publishers
R.L. Polk & Co Publishers
Cole Information Services
R.L. Polk & Co Publishers
Cole Information Services
Cole Information Services

Appendix G

Shepherd North Properties

6110 E. Shepherd Ave

Clovis, CA 93619

Inquiry Number: 6366686.3

February 12, 2021

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

02/12/21

Site Name:	Client Name:
Shepherd North Properties	Krazan & Associates, Inc.
6110 E. Shepherd Ave	215 West Dakota
Clovis, CA 93619	Clovis, CA 93612
EDR Inquiry # 6366686.3	Contact: Mark Edwards

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Krazan & Associates, Inc. were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # E7D3-4970-ADAD

PO # 014-21021 - mde

Project Shepherd North Properties

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: E7D3-4970-ADAD

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✔ Library of Congress
- ✔ University Publications of America
- ✔ EDR Private Collection

The Sanborn Library LLC Since 1866™

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Appendix H

Krazan

& ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

Phase I ESA Owner Questionnaire
Wilson Homes North Shepherd Properties
Clovis, California

Respondent Information:

Name: GURPAL BAINS Company: _____

Date: 2/13/21 Phone: 559-960-5042.

Site Address: APN 557-012-28
557-012-29
557-031-24
557-012-02.

How are you associated with the subject site?
OWNER

How long have you been associated with the subject site?
15 YEARS

Do you have any commonly known, reasonably ascertainable, or specialized knowledge or experience related to the subject site or nearby properties?
NO

What is the subject site currently used for?
VACANT LAND

Are there structures on the subject site? NO How Many?

Do you know of historical uses of the subject site? NO
GRAZING

Do you know of any previous structures on the subject site? NO

Does any maintenance, repair, or manufacturing activities take place at the subject site (currently or historically)? NO

Do you know of any chemicals or hazardous materials being used, stored or discharged on the subject site? (list any chemicals / hazardous materials) NO

Are agricultural chemicals (pesticides/herbicides) stored, applied, or mixed/formulated on the subject site? (please provide approximate storage/mixing locations) NO

Are you aware of the historical use of persistent pesticides/herbicides (such as DDT) at the subject site? NO

Is hazardous waste generated at the subject site? Hauled off-site? By whom? N\A

Any hazardous waste treatment or disposal at the subject site? NO

Do you have any current or past knowledge of the presence or underground or aboveground storage tanks being located on the subject site? (if yes, please provide info including no., size, contents, and locations)
NO

Do you have any current or past knowledge of subsurface automotive repair related features (i.e. sumps, oil/water clarifiers, automotive hydraulic hoists etc)?
NO

Are you aware of any environmental cleanups or hazardous materials releases/spills at the subject site?
NO

Do you know of any Institutional Controls (Env. Cleanup Liens) or Engineering Controls (slurry walls or vapor barriers) filed or recorded against the subject site?

Municipal Utility Providers at the subject site:

Potable Water: Yes (No) Provided by whom?

Sewer: Yes (No) Provided by whom?

Electricity (Yes) No Provided by whom? PGE

Natural Gas: Yes (No) Provided by whom?

Solid Waste (garbage): Yes (No) Provided by whom?

Has fuel oil been utilized at the subject site for heating purposes? NO

Are there currently or were there historically any septic systems? Yes (No)
If yes, how many?_____

Are there currently or were there historically any water wells located on the subject site? Yes No
If yes, how many?_____ Don't Know

Are there currently or were there historically any dry wells located on the subject site? Yes (No)

Are there currently or were there historically any monitoring wells located on the subject site? Yes (No)

Do you know of any buried materials such as garbage dumps or burn pits on the subject site?
NO

Are there any drainage or disposal ponds located on the subject site?
NO

Are you aware of, or have you been notified of, any contamination issues to soil or groundwater either at the subject site or in the vicinity of the subject site?
NO

What is the purpose of the Phase I?

If purchase price has been established, does it reasonably reflect fair market value?
YES

Are there any proposed changes in the uses of the subject site?
YES

Knowledge of Previous Owner(s) and Phone Number? N/A

GURPAL BAINS 2/13/21
Name: Date:

(Please Print)

Signature:

Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

Phase I ESA Owner Questionnaire
Wilson Homes North Shepherd Properties
Clovis, California

Respondent Information:

Name: Bob Campbell Company: Retired
Date: 2-13-2021 Phone: 255-

Site Address: 6120 E Shepherd - 6110 E Shepherd Ave Clovis CA. 93619

How are you associated with the subject site? Co-owner

How long have you been associated with the subject site? 48 years, Approx.

Do you have any commonly known, reasonably ascertainable, or specialized knowledge or experience related to the subject site or nearby properties? No

What is the subject site currently used for? Residence, Pasture

Are there structures on the subject site? Yes How Many? 4

Do you know of historical uses of the subject site? No

Do you know of any previous structures on the subject site? No

Does any maintenance, repair, or manufacturing activities take place at the subject site (currently or historically)?
We currently maintain + repair Sm. Tractor and Lawn Equipment.

Do you know of any chemicals or hazardous materials being used, stored or discharged on the subject site? (list any chemicals / hazardous materials)
Weed control, round-up, - Paint supplies

Are agricultural chemicals (pesticides/herbicides) stored, applied, or mixed/formulated on the subject site? (please provide approximate storage/mixing locations)
No

Are you aware of the historical use of persistent pesticides/herbicides (such as DDT) at the subject site?
No

Is hazardous waste generated at the subject site? Hauled off-site? By whom? Paint

Any hazardous waste treatment or disposal at the subject site? No

Do you have any current or past knowledge of the presence or underground or aboveground storage tanks being located on the subject site? (if yes, please provide info including no., size, contents, and locations)
Yes, Sm. GAS TANK underground Behind garage Near Telephone pole.

Do you have any current or past knowledge of subsurface automotive repair related features (i.e. sumps, oil/water clarifiers, automotive hydraulic hoists etc)?
No.

Are you aware of any environmental cleanups or hazardous materials releases/spills at the subject site?
No.

Do you know of any Institutional Controls (Env. Cleanup Liens) or Engineering Controls (slurry walls or vapor barriers) filed or recorded against the subject site? No.

Municipal Utility Providers at the subject site:

Potable Water: Yes No Provided by whom? Yes, well (PRIVATE) ?

Sewer: Yes No Provided by whom? Yes - septic TANK "

Electricity: Yes No Provided by whom? Yes - P.G&E.

Natural Gas: Yes No Provided by whom? No.

Solid Waste (garbage): Yes No Provided by whom? Yes PONDEROSA solid WASTE

Has fuel oil been utilized at the subject site for heating purposes? No

Are there currently or were there historically any septic systems? Yes No
If yes, how many? Yes - 3

Are there currently or were there historically any water wells located on the subject site? Yes No
If yes, how many? Yes - 2

Are there currently or were there historically any dry wells located on the subject site? (Yes) No

Are there currently or were there historically any monitoring wells located on the subject site? Yes (No)

Do you know of any buried materials such as garbage dumps or burn pits on the subject site? No.

Are there any drainage or disposal ponds located on the subject site? No.

Are you aware of, or have you been notified of, any contamination issues to soil or groundwater either at the subject site or in the vicinity of the subject site? No.

What is the purpose of the Phase I?

If purchase price has been established, does it reasonably reflect fair market value?

Are there any proposed changes in the uses of the subject site?

Knowledge of Previous Owner(s) and Phone Number? George Green - Deceased

Name: Bob G. Campbell (Please Print) Date: 2-16-2021

Signature: Bob G Campbell

Krazan & ASSOCIATES, INC.

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CONSTRUCTION TESTING & INSPECTION

Phase I ESA Owner Questionnaire
Wilson Homes North Shepherd Properties
Clovis, California

Respondent Information:

Name: bahadar s johal
Company:
Date: 02/12/2021
Phone: 5592880322

Site Address: 5931 e perrin ave ,clovis ca 93619

How are you associated with the subject site? owner

How long have you been associated with the subject site? 14 years

Do you have any commonly known, reasonably ascertainable, or specialized knowledge or experience related to the subject site or nearby properties? no

What is the subject site currently used for? Vacant land

Are there structures on the subject site? no How Many? 0

Do you know of historical uses of the subject site? agriculture

Do you know of any previous structures on the subject site? house

Does any maintenance, repair, or manufacturing activities take place at the subject site (currently or historically)?
no

Do you know of any chemicals or hazardous materials being used, stored or discharged on the subject site? (list any chemicals / hazardous materials)
no

Are agricultural chemicals (pesticides/herbicides) stored, applied, or mixed/formulated on the subject site? (please provide approximate storage/mixing locations)
no

Are you aware of the historical use of persistent pesticides/herbicides (such as DDT) at the subject site?
no

Is hazardous waste generated at the subject site? Hauled off-site? By whom? none

Any hazardous waste treatment or disposal at the subject site? no

Do you have any current or past knowledge of the presence or underground or aboveground storage tanks being located on the subject site? (if yes, please provide info including no., size, contents, and locations)
no

Do you have any current or past knowledge of subsurface automotive repair related features (i.e. sumps, oil/water clarifiers, automotive hydraulic hoists etc)?
no

Are you aware of any environmental cleanups or hazardous materials releases/spills at the subject site?
no

Do you know of any Institutional Controls (Env. Cleanup Liens) or Engineering Controls (slurry walls or vapor barriers) filed or recorded against the subject site? *no*

Municipal Utility Providers at the subject site:

Potable Water: Yes (No) Provided by whom? no

Sewer: Yes (No) Provided by whom? no

Electricity: Yes (No) Provided by whom? no

Natural Gas: Yes (No) Provided by whom? no

Solid Waste (garbage): Yes (No) Provided by whom? no

Has fuel oil been utilized at the subject site for heating purposes? no

Are there currently or were there historically any septic systems? (Yes) No
If yes, how many? yes ONE

Are there currently or were there historically any water wells located on the subject site? (Yes) No
If yes, how many? yes one

Are there currently or were there historically any dry wells located on the subject site? Yes No

Are there currently or were there historically any monitoring wells located on the subject site? Yes No

Do you know of any buried materials such as garbage dumps or burn pits on the subject site?

Are there any drainage or disposal ponds located on the subject site? No

Are you aware of, or have you been notified of, any contamination issues to soil or groundwater either at the subject site or in the vicinity of the subject site? NO

What is the purpose of the Phase I?

If purchase price has been established, does it reasonably reflect fair market value?

Are there any proposed changes in the uses of the subject site?

Knowledge of Previous Owner(s) and Phone Number? No

Name:bahadar s johal
(Please Print)

Date:02/12/2021

Signature: B. S. J

& ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

Phase I ESA Owner Questionnaire
Wilson Homes North Shepherd Properties
Clovis, California

Respondent Information:

Name: GARO & NANCY KALFAYAN
Company:
Date: 2/12/2021
Phone: 559-273-4663

Site Address: APN 557-031-25

How are you associated with the subject site? OWNERS

How long have you been associated with the subject site? 20+ YEARS

Do you have any commonly known, reasonably ascertainable, or specialized knowledge or experience related to the subject site or nearby properties?

What is the subject site currently used for? NO USE, RAW LAND

Are there structures on the subject site? NO How Many? Ø

Do you know of historical uses of the subject site? NO

Do you know of any previous structures on the subject site? NO

Does any maintenance, repair, or manufacturing activities take place at the subject site (currently or historically)? NO

Do you know of any chemicals or hazardous materials being used, stored or discharged on the subject site? (list any chemicals / hazardous materials) NO

Are agricultural chemicals (pesticides/herbicides) stored, applied, or mixed/formulated on the subject site? (please provide approximate storage/mixing locations) NO

Are you aware of the historical use of persistent pesticides/herbicides (such as DDT) at the subject site? NO

Is hazardous waste generated at the subject site? Hauled off-site? By whom? NO

Any hazardous waste treatment or disposal at the subject site? NO

Do you have any current or past knowledge of the presence or underground or aboveground storage tanks being located on the subject site? (if yes, please provide info including no., size, contents, and locations)

NO

Do you have any current or past knowledge of subsurface automotive repair related features (i.e. sumps, oil/water clarifiers, automotive hydraulic hoists etc)?

NO

Are you aware of any environmental cleanups or hazardous materials releases/spills at the subject site?

NO

Do you know of any Institutional Controls (Env. Cleanup Liens) or Engineering Controls (slurry walls or vapor barriers) filed or recorded against the subject site? NO

Municipal Utility Providers at the subject site:

Potable Water: Yes (No) Provided by whom?_____

Sewer: Yes (No) Provided by whom?_____

Electricity: Yes (No) Provided by whom?_____

Natural Gas: Yes (No) Provided by whom?_____

Solid Waste (garbage): Yes (No) Provided by whom?_____

Has fuel oil been utilized at the subject site for heating purposes? NO

Are there currently or were there historically any septic systems? Yes (No)
If yes, how many?_____

Are there currently or were there historically any water wells located on the subject site? Yes (No)
If yes, how many?_____

Are there currently or were there historically any dry wells located on the subject site? Yes (No)

Are there currently or were there historically any monitoring wells located on the subject site? Yes (No)

Do you know of any buried materials such as garbage dumps or burn pits on the subject site?

NO

Are there any drainage or disposal ponds located on the subject site? NO

Are you aware of, or have you been notified of, any contamination issues to soil or groundwater either at the subject site or in the vicinity of the subject site? NO

What is the purpose of the Phase I?_____

If purchase price has been established, does it reasonably reflect fair market value?_____

Are there any proposed changes in the uses of the subject site?_____

*Knowledge of Previous Owner(s) and Phone Number?*_____

Name: GARO KALFAYAN / NANCY KALFAYAN Date: 2/12/2021
(Please Print)

Signature:

Appendix I

FRESNO COUNTY FIRE

PROTECTION DISTRICT

210 South Academy Avenue
Sanger, California 93657
Telephone: (559) 493-4300
Fax: (559) 875-8473
www.fresnocountyfire.org

February 17, 2021

Mark Edwards
Krazan & Associates
215 W. Dakota
Clovis, CA 93612

RE: Property Environmental History Research for the following;

1. APN 557 012 02
2. APN 557 012 28
3. APN 557 012 29
4. APN 557 022 11S, 5931 E Perrin, Clovis, CA
5. APN 557 031 24
6. APN 557 031 25
7. APN 557 031 27, 9255 N Temperance, Clovis, CA
8. APN 557 031 37, 6110 E Shepherd, Clovis, CA

Dear Mr. Edwards,

I have researched our past and present records relating to hazardous material handling, hazardous waste disposal, UST's/AST's, pipelines, permits, emergency incidents and the status of any environmental compliance issues with the above referenced properties. I found **no** incident related to these properties.

Please feel free to contact me at (559) 493-4323 with any questions, comments, or concerns.

Sincerely,

DUSTIN HAIL
Fire Chief

By, *Larry E Brown*

Larry E. Brown
Fire Inspector
Fire Protection and Planning

Appendix J

Shepherd North Properties
6110 E. Shepherd Ave
Clovis, CA 93619

Inquiry Number: 6366686.2s
February 12, 2021

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION	PAGE
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	9
Orphan Summary	15
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-18
Physical Setting Source Map Findings	A-20
Physical Setting Source Records Searched	PSGR-1

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

6110 E. SHEPHERD AVE
CLOVIS, CA 93619

COORDINATES

Latitude (North):	36.8683580 - 36˚ 52' 6.08''
Longitude (West):	119.6727170 - 119˚ 40' 21.78''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	261752.6
UTM Y (Meters):	4083401.5
Elevation:	398 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5603160 CLOVIS, CA
Version Date:	2012
North Map:	5603174 FRIANT, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140618, 20140619
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
6110 E. SHEPHERD AVE
CLOVIS, CA 93619

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	AT&T MOBILITY - DRY	5750 E BEHYMER AVE	CUPA Listings	Lower	69, 0.013, NNW
A2	GASOLINE TANK	6374 E SHEPHERD	SWEEPS UST, CA FID UST	Higher	635, 0.120, East
A3	GASOLINE TANK	6374 E SHEPHERD	HIST UST	Higher	635, 0.120, East
4	DON CARTER METAL STA	5578 E PERRIN AVE	CUPA Listings	Lower	968, 0.183, NW
B5	HENRY CARTER	6658 E SHEPHERD	SWEEPS UST, CA FID UST	Higher	1071, 0.203, East
B6	HENRY CARTER	6658 E SHEPHERD	HIST UST	Higher	1071, 0.203, East
7	BOB CAMPBELL	6120 E SHEPHERD AVE	RCRA NonGen / NLR	Higher	1253, 0.237, ESE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ..... National Priority List
Proposed NPL ..... Proposed National Priority List Sites
NPL LIENS ..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ..... National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ..... Federal Facility Site Information listing
SEMS ..... Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ..... Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ..... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ..... RCRA - Large Quantity Generators
RCRA-SQG ..... RCRA - Small Quantity Generators
RCRA-VSQG ..... RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ..... Land Use Control Information System

EXECUTIVE SUMMARY

US ENG CONTROLS..... Engineering Controls Sites List
US INST CONTROLS..... Institutional Controls Sites List

Federal ERNS list

ERNS..... Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE..... State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR..... EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF..... Solid Waste Information System

State and tribal leaking storage tank lists

LUST..... Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land
CPS-SLIC..... Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST..... Underground Storage Tank Listing
UST..... Active UST Facilities
AST..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST..... Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

VCP..... Voluntary Cleanup Program Properties
INDIAN VCP..... Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS..... Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT..... Waste Management Unit Database
SWRCY..... Recycler Database
HAULERS..... Registered Waste Tire Haulers Listing
INDIAN ODI..... Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9..... Torres Martinez Reservation Illegal Dump Site Locations

ODI	Open Dump Inventory
IHS OPEN DUMPS	Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL	Delisted National Clandestine Laboratory Register
HIST Cal-Sites	Historical Calsites Database
SCH	School Property Evaluation Program
CDL	Clandestine Drug Labs
CERS HAZ WASTE	CERS HAZ WASTE
Toxic Pits	Toxic Pits Cleanup Act Sites
US CDL	National Clandestine Laboratory Register
PFAS	PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

CERS TANKS	California Environmental Reporting System (CERS) Tanks

Local Land Records

LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information
DEED	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database

EXECUTIVE SUMMARY

RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
ECHO	Enforcement & Compliance History Information
UXO	Unexploded Ordnance Sites
DOCKET HWC	Hazardous Waste Compliance Docket Listing
FUELS PROGRAM	EPA Fuels Program Registered Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
ICE	ICE
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
UIC GEO	UIC GEO (GEOTRACKER)
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
PROJECT	PROJECT (GEOTRACKER)
WDR	Waste Discharge Requirements Listing
CIWQS	California Integrated Water Quality System
CERS	CERS
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)
HWTS	Hazardous Waste Tracking System
MINES MRDS	Mineral Resources Data System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants

EXECUTIVE SUMMARY

EDR Hist Auto..... EDR Exclusive Historical Auto Stations
EDR Hist Cleaner..... EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF..... Recovered Government Archive Solid Waste Facilities List
RGA LUST..... Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Registered Storage Tanks

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there are 2 SWEEPS UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
GASOLINE TANK Status: A Tank Status: A Comp Number: 31919	***6374 E SHEPHERD***	***E 0 - 1/8 (0.120 mi.)***	***A2***	***9***
HENRY CARTER Status: A Tank Status: A Comp Number: 58563	***6658 E SHEPHERD***	***E 1/8 - 1/4 (0.203 mi.)***	***B5***	***11***

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there are 2 HIST UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
GASOLINE TANK Facility Id: 00000031919	6374 E SHEPHERD	E 0 - 1/8 (0.120 mi.)	A3	10
HENRY CARTER Facility Id: 00000058563	6658 E SHEPHERD	E 1/8 - 1/4 (0.203 mi.)	B6	11

CA FID UST: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, and dated 10/31/1994 has revealed that there are 2 CA FID UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
GASOLINE TANK Facility Id: 10006342 Status: A	***6374 E SHEPHERD***	***E 0 - 1/8 (0.120 mi.)***	***A2***	***9***
HENRY CARTER Facility Id: 10008227 Status: A	***6658 E SHEPHERD***	***E 1/8 - 1/4 (0.203 mi.)***	***B5***	***11***

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 12/14/2020 has revealed that there is 1 RCRA NonGen / NLR site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BOB CAMPBELL	6120 E SHEPHERD AVE	ESE 1/8 - 1/4 (0.237 mi.)	7	12

CUPA Listings: A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

A review of the CUPA Listings list, as provided by EDR, has revealed that there are 2 CUPA Listings sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
AT&T MOBILITY - DRY Database: CUPA FRESNO, Date of Government Version: 10/02/2020	5750 E BEHYMER AVE	NNW 0 - 1/8 (0.013 mi.)	1	9

EXECUTIVE SUMMARY

Facility Id: FA0276915

DON CARTER METAL STA	5578 E PERRIN AVE	NW 1/8 - 1/4 (0.183 mi.)	4	10

Database: CUPA FRESNO, Date of Government Version: 10/02/2020
Facility Id: FA0272102

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
	CDL

OVERVIEW MAP - 6366686.2S

0 1/4 1/2 1 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Shepherd North Properties	CLIENT: Krazan & Associates, Inc.
ADDRESS: 6110 E. Shepherd Ave Clovis CA 93619	CONTACT: Mark Edwards
LAT/LONG: 36.868358 / 119.672717	INQUIRY #: 6366686.2s
	DATE: February 12, 2021 2:32 pm

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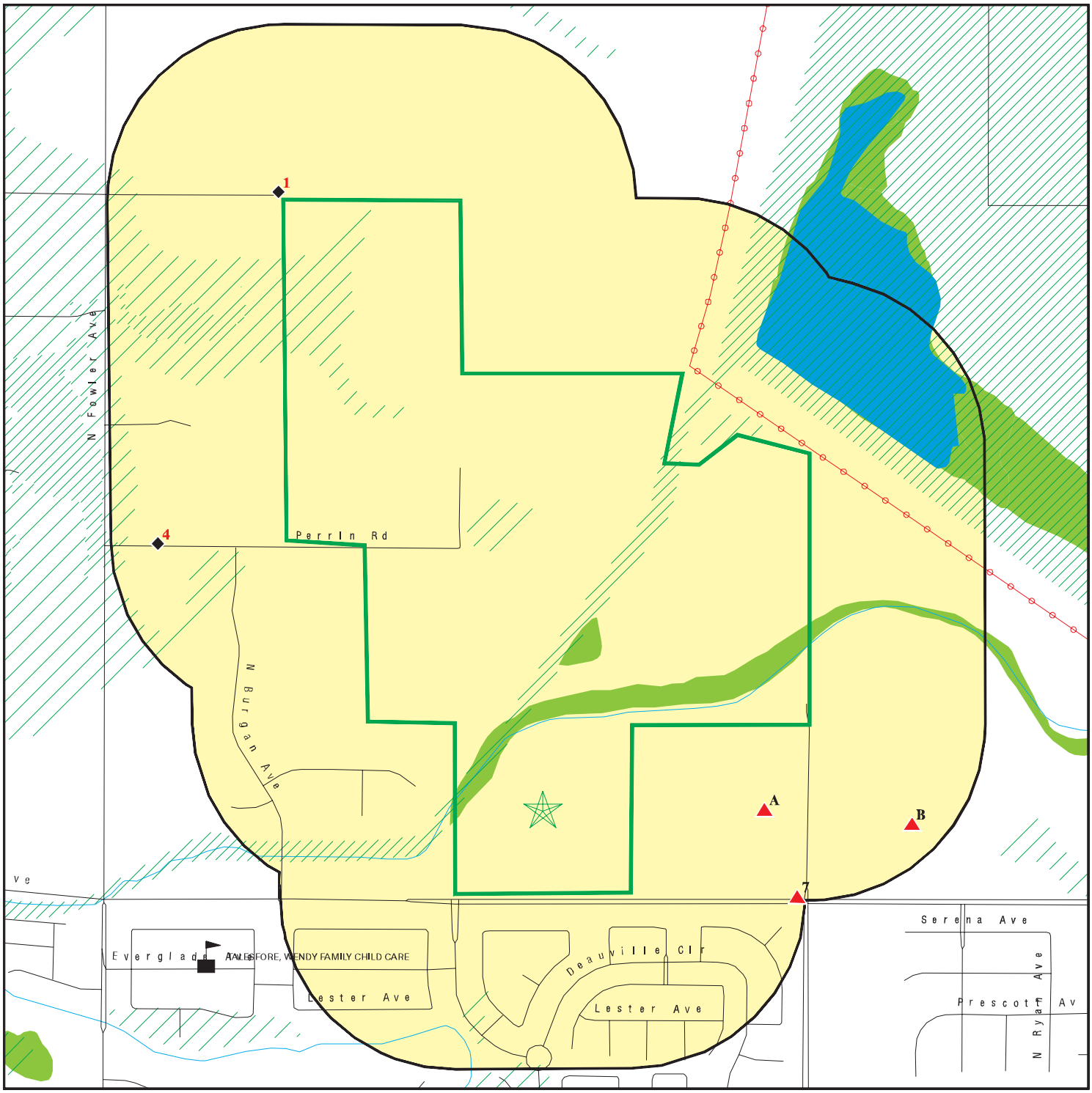
DETAIL MAP - 6366686.2S



0 1/8 1/4 1/2 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Shepherd North Properties	CLIENT: Krazan & Associates, Inc.
ADDRESS: 6110 E. Shepherd Ave Clovis CA 93619	CONTACT: Mark Edwards INQUIRY #: 6366686.2s
LAT/LONG: 36.868358 / 119.672717	DATE: February 12, 2021 2:33 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		1	1	NR	NR	NR	2
HIST UST	0.250		1	1	NR	NR	NR	2
CA FID UST	0.250		1	1	NR	NR	NR	2
CERS TANKS	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	1	NR	NR	NR	1
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		1	1	NR	NR	NR	2

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
HWTS	TP		NR	NR	NR	NR	NR	0
MINES MRDS	0.001		0	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	4	5	0	0	0	9

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1 NNW < 1/8 0.013 mi. 69 ft. | **AT&T MOBILITY - DRY CREEK - CLOVIS (9588)**
5750 E BEHYMER AVE
CLOVIS, CA 93611 | **CUPA Listings** | **S106352959**
N/A

Relative: Lower
Actual: 393 ft.

CUPA FRESNO:

Name:	AT&T MOBILITY - DRY CREEK - CLOVIS (9588)
Address:	5750 E BEHYMER AVE
City,State,Zip:	CLOVIS, CA 93611
Region:	FRESNO
Cross Street:	Not reported
Facility ID:	FA0276915
APM Number:	58116049S
Program Element:	SMALL HAZARDOUS MATERIALS HANDLER

A2 East < 1/8 0.120 mi. 635 ft. | **GASOLINE TANK**
6374 E SHEPHERD
CLOVIS, CA 93612 | **SWEEPS UST**
CA FID UST | **S101630089**
N/A

Site 1 of 2 in cluster A

Relative: Higher
Actual: 404 ft.

SWEEPS UST:

Name:	GASOLINE TANK
Address:	6374 E SHEPHERD
City:	CLOVIS
Status:	Active
Comp Number:	31919
Number:	9
Board Of Equalization:	Not reported
Referral Date:	07-01-85
Action Date:	Not reported
Created Date:	02-29-88
Owner Tank Id:	#1
SWRCB Tank Id:	10-000-031919-000001
Tank Status:	A
Capacity:	500
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	REG UNLEADED
Number Of Tanks:	1

CA FID UST:

Facility ID:	10006342
Regulated By:	UTNKA
Regulated ID:	00031919
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	2094399693
Mail To:	Not reported
Mailing Address:	2766 W STUART
Mailing Address 2:	Not reported
Mailing City,St,Zip:	CLOVIS 93612
Contact:	Not reported
Contact Phone:	Not reported
DUNs Number:	Not reported
NPDES Number:	Not reported
EPA ID:	Not reported

GASOLINE TANK (Continued) **S101630089**

Comments: Not reported
Status: Active

A3 East < 1/8 0.120 mi. 635 ft. **GASOLINE TANK 6374 E SHEPHERD CLOVIS, CA 93612** **HIST UST** **U001587595 N/A**

Site 2 of 2 in cluster A

Relative: Higher
Actual: 404 ft.

HIST UST:

Name:	GASOLINE TANK
Address:	6374 E SHEPHERD
City,State,Zip:	CLOVIS, CA 93612
File Number:	00024BDC
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/00024BDC.pdf
Region:	STATE
Facility ID:	00000031919
Facility Type:	Other
Other Type:	TURKEY FARM
Contact Name:	RAY AVILA
Telephone:	2094399693
Owner Name:	MARK MAIKOVICH
Owner Address:	2766 W STUART
Owner City,St,Zip:	FRESNO, CA 93711
Total Tanks:	0001
Tank Num:	001
Container Num:	#1
Year Installed:	Not reported
Tank Capacity:	00000500
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	Not reported
Leak Detection:	Stock Inventor, None

Click here for Geo Tracker PDF:

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4 NW 1/8-1/4 0.183 mi. 968 ft. **DON CARTER METAL STAMPING 5578 E PERRIN AVE CLOVIS, CA 93612** **CUPA Listings** **S104870688 N/A**

Relative: Lower
Actual: 396 ft.

CUPA FRESNO:

Name:	DON CARTER METAL STAMPING
Address:	5578 E PERRIN AVE
City,State,Zip:	CLOVIS, CA 93612
Region:	FRESNO
Cross Street:	Not reported
Facility ID:	FA0272102
APM Number:	55701208S
Program Element:	HAZ MAT DISCLOSURE/CLOSED SITE

B5
East
1/8-1/4
0.203 mi.
1071 ft.

HENRY CARTER
6658 E SHEPHERD
CLOVIS, CA 93612

SWEEPS UST **S101621075**
CA FID UST **N/A**

Site 1 of 2 in cluster B

Relative:
Higher

Actual:
403 ft.

SWEEPS UST:

Name:	HENRY CARTER
Address:	6658 E SHEPHERD
City:	CLOVIS
Status:	Active
Comp Number:	58563
Number:	9
Board Of Equalization:	Not reported
Referral Date:	07-01-85
Action Date:	Not reported
Created Date:	02-29-88
Owner Tank Id:	1-HUPA
SWRCB Tank Id:	10-000-058563-000001
Tank Status:	A
Capacity:	350
Active Date:	07-01-85
Tank Use:	M.V. FUEL
STG:	P
Content:	REG UNLEADED
Number Of Tanks:	1

CA FID UST:

Facility ID:	10008227
Regulated By:	UTNKA
Regulated ID:	00058563
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	2092983475
Mail To:	Not reported
Mailing Address:	6658 E SHEPHERD
Mailing Address 2:	Not reported
Mailing City,St,Zip:	CLOVIS 93612
Contact:	Not reported
Contact Phone:	Not reported
DUNs Number:	Not reported
NPDES Number:	Not reported
EPA ID:	Not reported
Comments:	Not reported
Status:	Active

B6
East
1/8-1/4
0.203 mi.
1071 ft.

HENRY CARTER
6658 E SHEPHERD
CLOVIS, CA 93612

HIST UST **U001587602**
N/A

Site 2 of 2 in cluster B

Relative:
Higher

Actual:
403 ft.

HIST UST:

Name:	HENRY CARTER
Address:	6658 E SHEPHERD
City,State,Zip:	CLOVIS, CA 93612
File Number:	0002448D
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002448D.pdf
Region:	STATE

HENRY CARTER (Continued) **U001587602**

Facility ID:	00000058563
Facility Type:	Other
Other Type:	FARM
Contact Name:	HENRY CARTER
Telephone:	2092983475
Owner Name:	HENRY H. & PAGEAN CARTER
Owner Address:	6658 E. SHEPHERD
Owner City,St,Zip:	CLOVIS, CA 93612
Total Tanks:	0001
Tank Num:	001
Container Num:	1-HUPA
Year Installed:	1964
Tank Capacity:	00000350
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	Not reported
Leak Detection:	Visual, Stock Inventor

Click here for Geo Tracker PDF:

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7 **BOB CAMPBELL** **RCRA NonGen / NLR** **1026169024**
ESE **6120 E SHEPHERD AVE** **CAC003069072**
1/8-1/4 **CLOVIS, CA 93619**
0.237 mi.
1253 ft.

Relative:
Higher

Actual:
401 ft.

RCRA NonGen / NLR:

Date Form Received by Agency:		2020-06-02 00:00:00.0
Handler Name:	BOB CAMPBELL	
Handler Address:		6120 E SHEPHERD AVE
Handler City,State,Zip:		CLOVIS, CA 93619
EPA ID:		CAC003069072
Contact Name:		TODD HATCH
Contact Address:		6120 E SHEPHERD AVE
Contact City,State,Zip:		CLOVIS, CA 93619
Contact Telephone:		559-974-2018
Contact Fax:		Not reported
Contact Email:		TODD_HATCH@YAHOO.COM
Contact Title:		Not reported
EPA Region:		09
Land Type:		Not reported
Federal Waste Generator Description:		Not a generator, verified
Non-Notifier:		Not reported
Biennial Report Cycle:		Not reported
Accessibility:		Not reported
Active Site Indicator:		Not reported
State District Owner:		Not reported
State District:		Not reported
Mailing Address:		6120 E SHEPHERD AVE
Mailing City,State,Zip:		CLOVIS, CA 93619
Owner Name:		BOB CAMPBELL
Owner Type:		Other
Operator Name:		TODD HATCH
Operator Type:		Other
Short-Term Generator Activity:		No
Importer Activity:		No
Mixed Waste Generator:		No

BOB CAMPBELL (Continued) **1026169024**

Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	No
Universal Waste Destination Facility:	No
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2020-06-08 20:36:43.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Owner
Owner/Operator Name:	BOB CAMPBELL

BOB CAMPBELL (Continued) **1026169024**

Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	6120 E SHEPHERD AVE
Owner/Operator City,State,Zip:	CLOVIS, CA 93619
Owner/Operator Telephone:	559-974-2018
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name:	TODD HATCH
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	6120 E SHEPHERD AVE
Owner/Operator City,State,Zip:	CLOVIS, CA 93619
Owner/Operator Telephone:	559-974-2018
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	2020-06-02 00:00:00.0
Handler Name: BOB CAMPBELL	
Federal Waste Generator Description:	Not a generator, verified
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

List of NAICS Codes and Descriptions:

NAICS Code:	56299
NAICS Description:	ALL OTHER WASTE MANAGEMENT SERVICES

Facility Has Received Notices of Violations:

Violations:	No Violations Found

Evaluation Action Summary:

Evaluations:	No Evaluations Found

Count: 1 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
FRESNO COUNTY	S107526622		1/4 MI N OF CENTRAL & TEMPERAN		CDL

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/30/2020
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 02/09/2021
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 01/14/2021
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/30/2020
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 02/09/2021
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 01/14/2021
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/30/2020
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 02/09/2021
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 01/14/2021
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 04/03/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 12/23/2020
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 20

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 01/14/2021
Next Scheduled EDR Contact: 04/26/2021
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 20

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 01/14/2021
Next Scheduled EDR Contact: 04/26/2021
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report
CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/14/2020
Date Data Arrived at EDR: 12/17/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 5

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/14/2020
Date Data Arrived at EDR: 12/17/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 5

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/14/2020
Date Data Arrived at EDR: 12/17/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 5

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/14/2020
Date Data Arrived at EDR: 12/17/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 5

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/14/2020
Date Data Arrived at EDR: 12/17/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 5

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 11/11/2020
Date Data Arrived at EDR: 11/17/2020
Date Made Active in Reports: 02/09/2021
Number of Days to Update: 84

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 02/08/2021
Next Scheduled EDR Contact: 05/24/2021
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/18/2020
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/18/2020
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/05/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/14/2020
Date Data Arrived at EDR: 12/15/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 7

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 12/15/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 10/26/2020
Date Data Arrived at EDR: 10/26/2020
Date Made Active in Reports: 01/13/2021
Number of Days to Update: 79

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/26/2021
Next Scheduled EDR Contact: 05/10/2021
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 10/26/2020
Date Data Arrived at EDR: 10/26/2020
Date Made Active in Reports: 01/13/2021
Number of Days to Update: 79

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/26/2021
Next Scheduled EDR Contact: 05/10/2021
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 11/09/2020
Date Data Arrived at EDR: 11/10/2020
Date Made Active in Reports: 01/14/2021
Number of Days to Update: 65

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 02/09/2021
Next Scheduled EDR Contact: 05/24/2021
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)
Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land

A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/29/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/26/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 78

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/15/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: No Update Planned

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 07/21/2020
Date Data Arrived at EDR: 09/03/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 83

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 01/04/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases
UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 09/03/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 12/03/2020
Number of Days to Update: 86

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)
Military ust sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 12/09/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/03/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 12/15/2020
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/29/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 85

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/26/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 78

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 12/16/2020
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 12/15/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 10/26/2020
Date Data Arrived at EDR: 10/26/2020
Date Made Active in Reports: 01/13/2021
Number of Days to Update: 79

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/26/2021
Next Scheduled EDR Contact: 05/10/2021
Data Release Frequency: Quarterly

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 09/21/2020
Date Data Arrived at EDR: 09/22/2020
Date Made Active in Reports: 12/11/2020
Number of Days to Update: 80

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 09/14/2020
Date Data Arrived at EDR: 09/15/2020
Date Made Active in Reports: 12/10/2020
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 12/11/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 01/25/2021
Next Scheduled EDR Contact: 05/10/2021
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 11/23/2020
Date Data Arrived at EDR: 11/23/2020
Date Made Active in Reports: 02/08/2021
Number of Days to Update: 77

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 02/08/2021
Next Scheduled EDR Contact: 05/24/2021
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 01/25/2021
Next Scheduled EDR Contact: 05/10/2021
Data Release Frequency: Varies

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 01/19/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 01/29/2021
Next Scheduled EDR Contact: 05/10/2021
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 03/18/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 10/26/2020
Date Data Arrived at EDR: 10/26/2020
Date Made Active in Reports: 01/13/2021
Number of Days to Update: 79

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/26/2021
Next Scheduled EDR Contact: 05/10/2021
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 06/30/2019
Date Data Arrived at EDR: 05/28/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 01/19/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Varies

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 10/19/2020
Date Data Arrived at EDR: 10/19/2020
Date Made Active in Reports: 01/07/2021
Number of Days to Update: 80

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 01/20/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 03/18/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 12/01/2020
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 05/20/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/06/2020
Number of Days to Update: 78

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing
Aboveground storage tank sites

Date of Government Version: 11/05/2020
Date Data Arrived at EDR: 11/06/2020
Date Made Active in Reports: 01/26/2021
Number of Days to Update: 81

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 02/01/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Varies

CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 10/19/2020
Date Data Arrived at EDR: 10/19/2020
Date Made Active in Reports: 01/07/2021
Number of Days to Update: 80

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 01/20/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Quarterly

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 11/24/2020
Date Data Arrived at EDR: 11/30/2020
Date Made Active in Reports: 02/10/2021
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 20

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 01/14/2021
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 08/31/2020
Date Data Arrived at EDR: 08/31/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 81

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 09/20/2020
Date Data Arrived at EDR: 09/22/2020
Date Made Active in Reports: 12/14/2020
Number of Days to Update: 83

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System
California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 09/30/2020
Date Data Arrived at EDR: 10/19/2020
Date Made Active in Reports: 01/07/2021
Number of Days to Update: 80

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 01/20/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)
Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)
Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/14/2020
Date Data Arrived at EDR: 12/17/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 5

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 09/29/2020
Date Data Arrived at EDR: 11/17/2020
Date Made Active in Reports: 01/25/2021
Number of Days to Update: 69

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 11/17/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 01/15/2021
Next Scheduled EDR Contact: 04/26/2021
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 01/07/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 02/09/2021
Next Scheduled EDR Contact: 05/24/2021
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 09/21/2020
Date Data Arrived at EDR: 09/22/2020
Date Made Active in Reports: 12/14/2020
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 02/02/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 02/05/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/17/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 12/18/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 08/14/2020
Date Made Active in Reports: 11/04/2020
Number of Days to Update: 82

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 02/02/2021
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 10/19/2020
Date Data Arrived at EDR: 10/19/2020
Date Made Active in Reports: 01/04/2021
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 01/21/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 20

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 01/14/2021
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 11/02/2020
Date Data Arrived at EDR: 11/12/2020
Date Made Active in Reports: 01/25/2021
Number of Days to Update: 74

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 01/19/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 34

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 01/14/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 10/09/2019
Date Data Arrived at EDR: 10/11/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 70

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 01/08/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/30/2020
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/05/2020
Date Data Arrived at EDR: 08/10/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 59

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 01/19/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 12/01/2020
Date Made Active in Reports: 02/09/2021
Number of Days to Update: 70

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 11/30/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 02/05/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 01/08/2021
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 01/27/2021
Next Scheduled EDR Contact: 05/10/2021
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/30/2020
Date Data Arrived at EDR: 10/08/2020
Date Made Active in Reports: 01/04/2021
Number of Days to Update: 88

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 01/04/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 151

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 12/23/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 01/08/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 02/02/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 11/20/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 12/30/2020
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 02/09/2021
Number of Days to Update: 26

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 01/14/2021
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/23/2020
Date Made Active in Reports: 01/25/2021
Number of Days to Update: 63

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Semi-Annually

MINES VIOLATIONS: MSHA Violation Assessment Data
Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 11/24/2020
Date Data Arrived at EDR: 11/30/2020
Date Made Active in Reports: 01/25/2021
Number of Days to Update: 56

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 11/24/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Quarterly

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/25/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/25/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/16/2020
Date Data Arrived at EDR: 09/17/2020
Date Made Active in Reports: 12/10/2020
Number of Days to Update: 84

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 12/10/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 11/04/2020
Date Data Arrived at EDR: 12/01/2020
Date Made Active in Reports: 01/25/2021
Number of Days to Update: 55

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 07/02/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 77

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 01/15/2021
Next Scheduled EDR Contact: 04/26/2021
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information
ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 10/03/2020
Date Data Arrived at EDR: 10/06/2020
Date Made Active in Reports: 01/04/2021
Number of Days to Update: 90

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 01/08/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing
A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/17/2020
Date Made Active in Reports: 02/09/2021
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 11/17/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 11/13/2020
Date Data Arrived at EDR: 11/13/2020
Date Made Active in Reports: 01/25/2021
Number of Days to Update: 73

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan
Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 06/22/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/04/2020
Number of Days to Update: 74

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 12/17/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing
list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 07/17/2019
Number of Days to Update: 64

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 11/17/2020
Date Data Arrived at EDR: 11/18/2020
Date Made Active in Reports: 02/04/2021
Number of Days to Update: 78

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 11/23/2020
Date Data Arrived at EDR: 11/25/2020
Date Made Active in Reports: 02/10/2021
Number of Days to Update: 77

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Annually

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 11/23/2020
Date Data Arrived at EDR: 11/24/2020
Date Made Active in Reports: 02/10/2021
Number of Days to Update: 78

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Varies

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 06/16/2020
Date Made Active in Reports: 08/28/2020
Number of Days to Update: 73

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 12/18/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 10/16/2020
Date Data Arrived at EDR: 10/19/2020
Date Made Active in Reports: 01/07/2021
Number of Days to Update: 80

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 01/20/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 10/13/2020
Date Data Arrived at EDR: 10/14/2020
Date Made Active in Reports: 01/04/2021
Number of Days to Update: 82

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 01/22/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 11/12/2020
Date Data Arrived at EDR: 11/13/2020
Date Made Active in Reports: 01/29/2021
Number of Days to Update: 77

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 02/08/2021
Next Scheduled EDR Contact: 05/24/2021
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 04/15/2020
Date Made Active in Reports: 07/02/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 01/05/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 11/13/2020
Date Data Arrived at EDR: 11/13/2020
Date Made Active in Reports: 02/01/2021
Number of Days to Update: 80

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 11/13/2020
Date Data Arrived at EDR: 11/13/2020
Date Made Active in Reports: 02/01/2021
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 10/05/2020
Date Data Arrived at EDR: 10/06/2020
Date Made Active in Reports: 12/23/2020
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 01/05/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 08/31/2020
Date Data Arrived at EDR: 08/31/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 81

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 11/09/2020
Date Data Arrived at EDR: 11/10/2020
Date Made Active in Reports: 01/27/2021
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 02/09/2021
Next Scheduled EDR Contact: 05/24/2021
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 08/31/2020
Date Data Arrived at EDR: 08/31/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 81

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 12/01/2020
Number of Days to Update: 84

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 12/07/2020
Date Data Arrived at EDR: 12/09/2020
Date Made Active in Reports: 12/10/2020
Number of Days to Update: 1

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 12/07/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 12/01/2020
Number of Days to Update: 84

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 11/19/2019
Date Data Arrived at EDR: 01/07/2020
Date Made Active in Reports: 03/09/2020
Number of Days to Update: 62

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 01/08/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 11/13/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: No Update Planned

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 12/15/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing

In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 12/01/2020
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 08/31/2020
Date Data Arrived at EDR: 08/31/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 81

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 10/19/2020
Date Data Arrived at EDR: 10/19/2020
Date Made Active in Reports: 01/07/2021
Number of Days to Update: 80

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 01/20/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 09/08/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 11/30/2020
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Varies

HWTS: Hazardous Waste Tracking System
DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 10/13/2020
Date Data Arrived at EDR: 10/14/2020
Date Made Active in Reports: 11/03/2020
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 01/19/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 11/25/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: Varies

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 12/30/2020
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Varies

PCS INACTIVE: Listing of Inactive PCS Permits
An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 01/04/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Semi-Annually

PCS: Permit Compliance System

PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 01/04/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Semi-Annually

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List
The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank
The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites
A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 01/04/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks
Underground storage tank sites located in Alameda county.

Date of Government Version: 10/01/2020
Date Data Arrived at EDR: 10/06/2020
Date Made Active in Reports: 12/23/2020
Number of Days to Update: 78

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 01/04/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 10/19/2020
Date Data Arrived at EDR: 10/22/2020
Date Made Active in Reports: 01/12/2021
Number of Days to Update: 82

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 02/01/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 12/30/2020
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 12/15/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 12/24/2020
Number of Days to Update: 8

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 12/15/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 02/01/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 10/19/2020
Date Data Arrived at EDR: 10/22/2020
Date Made Active in Reports: 01/13/2021
Number of Days to Update: 83

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 01/25/2021
Next Scheduled EDR Contact: 05/10/2021
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 08/13/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 70

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 01/25/2021
Next Scheduled EDR Contact: 05/10/2021
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 10/22/2020
Date Data Arrived at EDR: 11/03/2020
Date Made Active in Reports: 01/20/2021
Number of Days to Update: 78

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 02/08/2021
Next Scheduled EDR Contact: 05/10/2021
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 10/02/2020
Date Data Arrived at EDR: 10/06/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 77

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 01/15/2021
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 01/19/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 11/18/2020
Date Data Arrived at EDR: 11/19/2020
Date Made Active in Reports: 02/04/2021
Number of Days to Update: 77

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 10/14/2020
Date Data Arrived at EDR: 10/15/2020
Date Made Active in Reports: 01/05/2021
Number of Days to Update: 82

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 01/19/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

KERN COUNTY:

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 10/29/2020
Date Data Arrived at EDR: 10/30/2020
Date Made Active in Reports: 01/15/2021
Number of Days to Update: 77

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 02/01/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 01/19/2021
Date Data Arrived at EDR: 01/21/2021
Date Made Active in Reports: 01/28/2021
Number of Days to Update: 7

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 02/01/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 05/11/2020
Date Data Arrived at EDR: 05/12/2020
Date Made Active in Reports: 07/27/2020
Number of Days to Update: 76

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 01/25/2021
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 08/13/2020
Date Data Arrived at EDR: 08/13/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 71

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 01/11/2021
Next Scheduled EDR Contact: 04/26/2021
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 07/31/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 80

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 02/01/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 12/09/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 10/19/2020
Date Data Arrived at EDR: 10/20/2020
Date Made Active in Reports: 01/12/2021
Number of Days to Update: 84

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 01/04/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 10/09/2020
Date Data Arrived at EDR: 10/09/2020
Date Made Active in Reports: 12/29/2020
Number of Days to Update: 81

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 01/12/2021
Next Scheduled EDR Contact: 04/26/2021
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 08/17/2020
Date Made Active in Reports: 11/05/2020
Number of Days to Update: 80

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 01/11/2021
Next Scheduled EDR Contact: 04/26/2021
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/18/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills
This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 04/30/2012
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 42

Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 01/15/2021
Next Scheduled EDR Contact: 04/26/2021
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory
A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/18/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory
A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/18/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 07/20/2020
Date Data Arrived at EDR: 10/09/2020
Date Made Active in Reports: 12/29/2020
Number of Days to Update: 81

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 01/12/2021
Next Scheduled EDR Contact: 04/26/2021
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 10/07/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 01/19/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 09/11/2020
Date Data Arrived at EDR: 10/07/2020
Date Made Active in Reports: 12/23/2020
Number of Days to Update: 77

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 01/19/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/10/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 72

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 12/21/2020
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/28/2020
Date Data Arrived at EDR: 07/30/2020
Date Made Active in Reports: 07/31/2020
Number of Days to Update: 1

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 01/29/2021
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 11/16/2020
Date Data Arrived at EDR: 11/23/2020
Date Made Active in Reports: 02/08/2021
Number of Days to Update: 77

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 11/15/2020
Next Scheduled EDR Contact: 03/08/3021
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 07/13/2020
Date Data Arrived at EDR: 07/15/2020
Date Made Active in Reports: 07/31/2020
Number of Days to Update: 16

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 12/21/2020
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 10/26/2020
Date Data Arrived at EDR: 10/28/2020
Date Made Active in Reports: 01/15/2021
Number of Days to Update: 79

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 01/25/2021
Next Scheduled EDR Contact: 05/10/2021
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 09/01/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 01/26/2021
Number of Days to Update: 82

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/01/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 09/01/2020
Date Data Arrived at EDR: 11/06/2020
Date Made Active in Reports: 01/26/2021
Number of Days to Update: 81

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/05/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 09/01/2020
Date Data Arrived at EDR: 11/03/2020
Date Made Active in Reports: 01/21/2021
Number of Days to Update: 79

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/02/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 11/24/2020
Date Data Arrived at EDR: 11/24/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 1

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 01/19/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 10/06/2020
Date Data Arrived at EDR: 10/07/2020
Date Made Active in Reports: 11/03/2020
Number of Days to Update: 27

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 12/09/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 10/06/2020
Date Data Arrived at EDR: 10/07/2020
Date Made Active in Reports: 11/03/2020
Number of Days to Update: 27

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 12/09/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/18/2020
Date Data Arrived at EDR: 03/31/2020
Date Made Active in Reports: 06/15/2020
Number of Days to Update: 76

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 12/30/2020
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/24/2020
Date Data Arrived at EDR: 03/31/2020
Date Made Active in Reports: 06/17/2020
Number of Days to Update: 78

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 12/30/2020
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 10/28/2020
Date Data Arrived at EDR: 10/30/2020
Date Made Active in Reports: 01/15/2021
Number of Days to Update: 77

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 02/01/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 11/16/2020
Date Data Arrived at EDR: 11/18/2020
Date Made Active in Reports: 02/04/2021
Number of Days to Update: 78

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 02/01/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 08/31/2020
Date Data Arrived at EDR: 08/31/2020
Date Made Active in Reports: 11/23/2020
Number of Days to Update: 84

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2020
Date Data Arrived at EDR: 11/23/2020
Date Made Active in Reports: 02/08/2021
Number of Days to Update: 77

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 01/19/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/14/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 02/01/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

SAN DIEGO CO SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 11/05/2020
Date Data Arrived at EDR: 11/06/2020
Date Made Active in Reports: 01/27/2021
Number of Days to Update: 82

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 02/01/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Varies

LUST SAN FRANCISCO: Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 02/01/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/05/2020
Date Data Arrived at EDR: 11/06/2020
Date Made Active in Reports: 01/26/2021
Number of Days to Update: 81

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 02/01/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 12/09/2020
Next Scheduled EDR Contact: 03/29/2021
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/12/2020
Date Data Arrived at EDR: 11/13/2020
Date Made Active in Reports: 02/01/2021
Number of Days to Update: 80

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 12/11/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 12/01/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 11/20/2020
Date Data Arrived at EDR: 11/23/2020
Date Made Active in Reports: 02/05/2021
Number of Days to Update: 74

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 11/16/2020
Next Scheduled EDR Contact: 03/08/2021
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 01/26/2021
Number of Days to Update: 82

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 02/01/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 11/11/2020
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/03/2019
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 08/25/2020
Date Data Arrived at EDR: 08/26/2020
Date Made Active in Reports: 09/16/2020
Number of Days to Update: 21

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 12/03/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 12/15/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 12/23/2020
Number of Days to Update: 7

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 12/15/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 09/18/2020
Date Data Arrived at EDR: 09/22/2020
Date Made Active in Reports: 12/14/2020
Number of Days to Update: 83

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 12/15/2020
Next Scheduled EDR Contact: 04/05/2021
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 10/01/2020
Date Data Arrived at EDR: 10/06/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 77

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 01/11/2021
Next Scheduled EDR Contact: 04/26/2021
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 11/23/2020
Date Data Arrived at EDR: 11/24/2020
Date Made Active in Reports: 02/10/2021
Number of Days to Update: 78

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 11/23/2020
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 08/11/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 75

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 02/01/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 10/14/2020
Date Data Arrived at EDR: 10/15/2020
Date Made Active in Reports: 01/05/2021
Number of Days to Update: 82

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 01/19/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 10/30/2020
Date Data Arrived at EDR: 11/03/2020
Date Made Active in Reports: 01/20/2021
Number of Days to Update: 78

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 02/01/2021
Next Scheduled EDR Contact: 05/17/2021
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 01/19/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 09/28/2020
Date Data Arrived at EDR: 10/22/2020
Date Made Active in Reports: 01/12/2021
Number of Days to Update: 82

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 01/19/2021
Next Scheduled EDR Contact: 05/02/2021
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/21/2020
Next Scheduled EDR Contact: 04/12/2021
Data Release Frequency: No Update Planned

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 02/08/2021
Next Scheduled EDR Contact: 05/24/2021
Data Release Frequency: No Update Planned

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 09/28/2020
Date Data Arrived at EDR: 10/22/2020
Date Made Active in Reports: 01/12/2021
Number of Days to Update: 82

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 01/20/2021
Next Scheduled EDR Contact: 05/03/2021
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 08/26/2020
Date Data Arrived at EDR: 09/08/2020
Date Made Active in Reports: 12/01/2020
Number of Days to Update: 84

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/08/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 12/21/2020
Date Data Arrived at EDR: 12/23/2020
Date Made Active in Reports: 01/04/2021
Number of Days to Update: 12

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 12/20/2020
Next Scheduled EDR Contact: 04/11/2021
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 01/26/2021
Date Data Arrived at EDR: 01/28/2021
Date Made Active in Reports: 02/03/2021
Number of Days to Update: 6

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 01/25/2021
Next Scheduled EDR Contact: 05/10/2021
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 08/10/2020
Date Data Arrived at EDR: 10/20/2020
Date Made Active in Reports: 11/02/2020
Number of Days to Update: 13

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 11/09/2020
Next Scheduled EDR Contact: 02/22/2021
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 01/08/2021
Next Scheduled EDR Contact: 04/19/2021
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 04/29/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 72

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 01/29/2021
Next Scheduled EDR Contact: 05/10/2021
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 01/11/2021
Next Scheduled EDR Contact: 04/26/2021
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 10/02/2019
Date Made Active in Reports: 12/10/2019
Number of Days to Update: 69

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 02/09/2021
Next Scheduled EDR Contact: 03/01/2021
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 12/03/2020
Next Scheduled EDR Contact: 03/22/2021
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

SHEPHERD NORTH PROPERTIES
6110 E. SHEPHERD AVE
CLOVIS, CA 93619

TARGET PROPERTY COORDINATES

Latitude (North):	36.868358 - 36˚ 52’ 6.09’’
Longitude (West):	119.672717 - 119˚ 40’ 21.78’’
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	261752.6
UTM Y (Meters):	4083401.5
Elevation:	398 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5603160 CLOVIS, CA
Version Date:	2012
North Map:	5603174 FRIANT, CA
Version Date:	2012

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

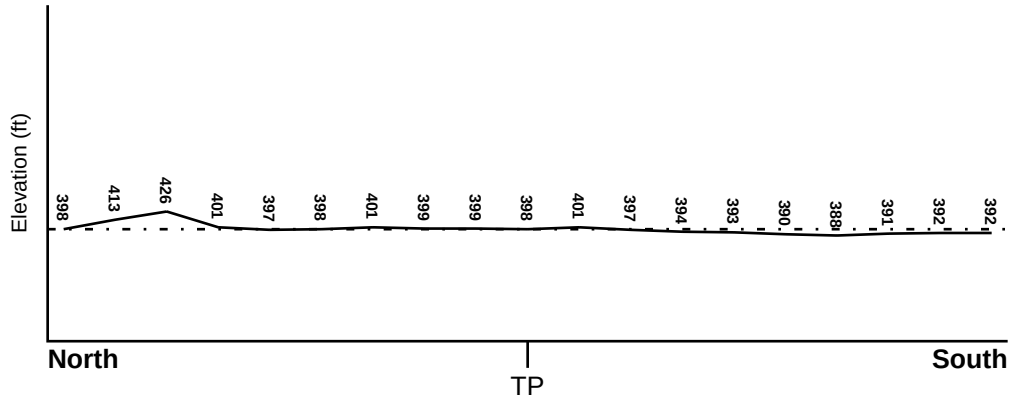
TOPOGRAPHIC INFORMATION

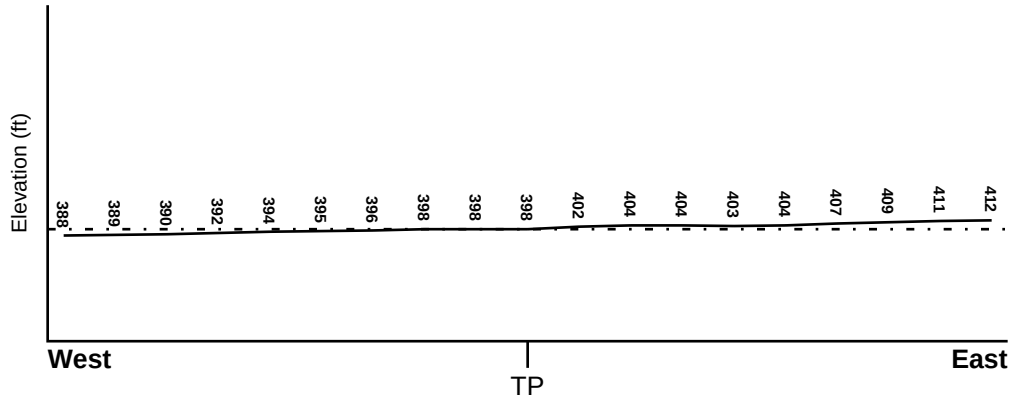
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 398 ft.

0 1/2 1 Miles

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06019C1585H	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06019C1040H	FEMA FIRM Flood data
06019C1045H	FEMA FIRM Flood data
06019C1580H	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
CLOVIS	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

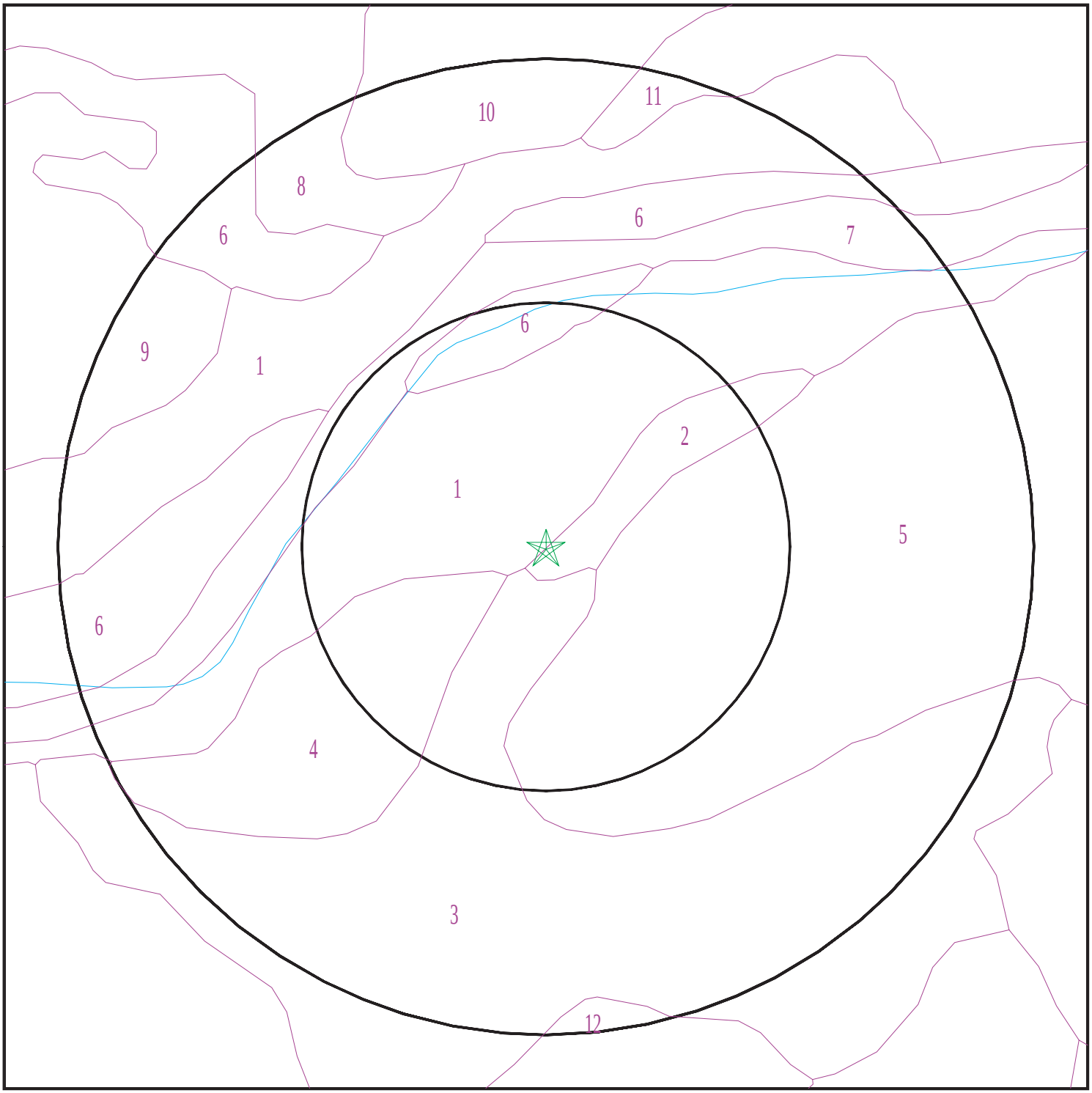
Era:	Mesozoic
System:	Cretaceous
Series:	Lower Cretaceous granitic rocks
Code:	Kg1 *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Plutonic and Intrusive Rocks

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 6366686.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME: Shepherd North Properties ADDRESS: 6110 E. Shepherd Ave Clovis CA 93619 LAT/LONG: 36.868358 / 119.672717	CLIENT: Krazan & Associates, Inc. CONTACT: Mark Edwards INQUIRY #: 6366686.2s DATE: February 12, 2021 2:34 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: GRANGEVILLE

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Somewhat poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 153 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6
2	7 inches	59 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6

Soil Map ID: 2

Soil Component Name: DELHI

Soil Surface Texture: loamy sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Unknown

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 141 Min: 42	Max: 7.3 Min: 6.1
2	7 inches	25 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 141 Min: 42	Max: 7.3 Min: 6.1
3	25 inches	59 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 141 Min: 42	Max: 7.3 Min: 6.1

Soil Map ID: 3

Soil Component Name: ATWATER

Soil Surface Texture: loamy sand

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	24 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
2	24 inches	42 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
3	42 inches	59 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

Soil Map ID: 4

Soil Component Name: GREENFIELD

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1
2	16 inches	38 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1
3	38 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1

Soil Map ID: 5

Soil Component Name: ATWATER

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	24 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
2	24 inches	42 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
3	42 inches	59 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

Soil Map ID: 6

Soil Component Name: TUJUNGA

Soil Surface Texture: stratified sand to loamy sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	3 inches	59 inches	stratified sand to loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 6.1
2	0 inches	3 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 6.1

Soil Map ID: 7

Soil Component Name: RIVERWASH

Soil Surface Texture: coarse sand

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Excessively drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 31 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches	coarse sand	Not reported	Not reported	Max: 141 Min: 42	Max: Min:

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	5 inches	59 inches	stratified coarse sand to sandy loam	Not reported	Not reported	Max: 141 Min: 42	Max: Min:

Soil Map ID: 8

Soil Component Name: RAMONA

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1
2	11 inches	24 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
3	24 inches	38 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1
4	38 inches	59 inches	coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1

Soil Map ID: 9

Soil Component Name: RAMONA

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	11 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1 Min: 0.1	Max: Min:

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	11 inches	24 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1 Min: 0.1	Max: Min:
3	24 inches	40 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1 Min: 0.1	Max: Min:
4	40 inches	53 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1 Min: 0.1	Max: Min:

Soil Map ID: 10

Soil Component Name: SAN JOAQUIN

Soil Surface Texture: loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.3 Min: 6.1
2	16 inches	27 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.3 Min: 6.1
3	27 inches	29 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.3 Min: 6.1
4	29 inches	35 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.3 Min: 6.1
5	35 inches	59 inches	coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 7.3 Min: 6.1

Soil Map ID: 11

Soil Component Name: FOSTER

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 7.4
2	16 inches	29 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 7.4
3	29 inches	59 inches	stratified sand to silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 7.4

Soil Map ID: 12

Soil Component Name: ATWATER

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	24 inches	40 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1
2	40 inches	44 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1
3	0 inches	24 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.1

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
B5	USGS40000178844	1/4 - 1/2 Mile ESE
B6	USGS40000178862	1/2 - 1 Mile ESE
7	USGS40000178858	1/2 - 1 Mile ESE
11	USGS40000178913	1/2 - 1 Mile WNW
15	USGS40000178707	1/2 - 1 Mile SSE

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

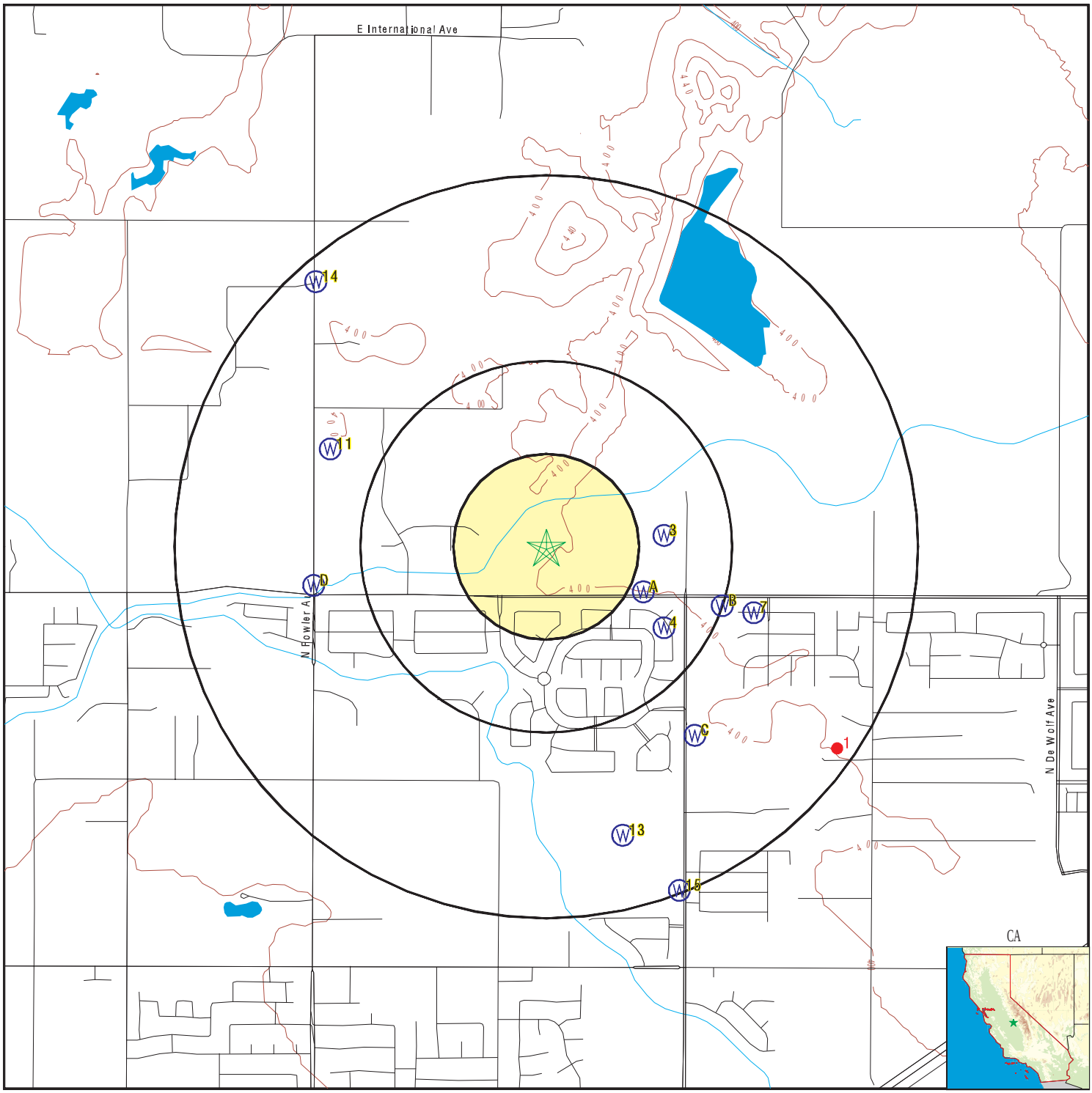
MAP ID	WELL ID	LOCATION FROM TP
A1	CADWR8000030686	1/4 - 1/2 Mile ESE
A2	CADWR8000030685	1/4 - 1/2 Mile ESE
3	CADWR0000019400	1/4 - 1/2 Mile East
4	CADWR0000036075	1/4 - 1/2 Mile SE
C8	CADWR8000030627	1/2 - 1 Mile SE
D9	CADWR0000033289	1/2 - 1 Mile West
D10	CADWR8000030694	1/2 - 1 Mile West
C12	CADWR8000030616	1/2 - 1 Mile SE
13	CADWR8000030578	1/2 - 1 Mile SSE
14	CADPR0000002623	1/2 - 1 Mile NW

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	CAOG14000012466	1/2 - 1 Mile SE

PHYSICAL SETTING SOURCE MAP - 6366686.2s



County Boundary
Major Roads
Contour Lines
Earthquake Fault Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location
HD Closest Hydrogeological Data
Oil, gas or related wells

N

SITE NAME:	Shepherd North Properties	CLIENT:	Krazan & Associates, Inc.
ADDRESS:	6110 E. Shepherd Ave Clovis CA 93619	CONTACT:	Mark Edwards
		INQUIRY #:	6366686.2s
LAT/LONG:	36.868358 / 119.672717	DATE:	February 12, 2021 2:34 pm

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Map ID Direction Distance Elevation	Database	EDR ID Number
A1 **ESE** **1/4 - 1/2 Mile** **Higher**	**CA WELLS**	**CADWR8000030686**

State Well #:	12S21E22P002M	Station ID:	17692
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Kings	Well Completion Rpt #:	Not Reported

A2 **ESE** **1/4 - 1/2 Mile** **Higher**	**CA WELLS**	**CADWR8000030685**

State Well #:	12S21E22P001M	Station ID:	17691
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Kings	Well Completion Rpt #:	Not Reported

---

3 **East** **1/4 - 1/2 Mile** **Higher**	**CA WELLS**	**CADWR0000019400**

Well ID:	12S21E22Q001M	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	12S21E22Q001M	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=12S21E22Q001M&store_num=		
GeoTracker Data:	Not Reported		

---

4 **SE** **1/4 - 1/2 Mile** **Higher**	**CA WELLS**	**CADWR0000036075**

Well ID:	12S21E27B001M	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	12S21E27B001M	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=12S21E27B001M&store_num=		
GeoTracker Data:	Not Reported		

B5 **ESE** **1/4 - 1/2 Mile** **Higher**	**FED USGS**	**USGS40000178844**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	012S021E27B001M	Type:	Well

Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	125
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1963-10-14
Feet below surface:	65.22	Feet to sea level:	Not Reported
Note:	Not Reported		

B6
ESE
1/2 - 1 Mile
Higher

FED USGS **USGS40000178862**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	012S021E22Q001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	100
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1963-10-14
Feet below surface:	60.17	Feet to sea level:	Not Reported
Note:	Not Reported		

7
ESE
1/2 - 1 Mile
Higher

FED USGS **USGS40000178858**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	012S021E23N001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	225
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1963-10-14
Feet below surface:	64.77	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID Direction Distance Elevation	Database	EDR ID Number
C8 **SE** **1/2 - 1 Mile** **Lower**	**CA WELLS**	**CADWR8000030627**

State Well #:	12S21E27F001M	Station ID:	17826
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Kings	Well Completion Rpt #:	Not Reported

D9 **West** **1/2 - 1 Mile** **Lower**	**CA WELLS**	**CADWR0000033289**

Well ID:	12S21E21P001M	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	12S21E21P001M	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=12S21E21P001M&store_num=		
GeoTracker Data:	Not Reported		

D10 **West** **1/2 - 1 Mile** **Lower**	**CA WELLS**	**CADWR8000030694**

State Well #:	12S21E21P001M	Station ID:	34538
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Kings	Well Completion Rpt #:	Not Reported

---

11 **WNW** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS40000178913**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	012S021E21K001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	125
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1963-10-14
Feet below surface:	45.87	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID Direction Distance Elevation	Database	EDR ID Number
C12 **SE** **1/2 - 1 Mile** **Higher**	**CA WELLS**	**CADWR8000030616**

State Well #:	12S21E27F002M	Station ID:	34826
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Kings	Well Completion Rpt #:	Not Reported

---

13 **SSE** **1/2 - 1 Mile** **Lower**	**CA WELLS**	**CADWR8000030578**

State Well #:	12S21E27L001M	Station ID:	17827
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Kings	Well Completion Rpt #:	Not Reported

---

14 **NW** **1/2 - 1 Mile** **Lower**	**CA WELLS**	**CADPR0000002623**

Well ID:	89636	Well Type:	UNK
Source:	Department of Pesticide Regulation		
Other Name:	89636	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DPR&samp_date=&global_id=&assigned_name=89636&store_num=		
GeoTracker Data:	Not Reported		

---

15 **SSE** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS40000178707**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	012S021E27P001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19550615	Well Depth:	132
Well Depth Units:	ft	Well Hole Depth:	132
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	1	Level reading date:	1963-02-13
Feet below surface:	60.84	Feet to sea level:	Not Reported
Note:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance	Database	EDR ID Number
1 **SE** **1/2 - 1 Mile**	**OIL_GAS**	**CAOG14000012466**

API #:	0401905987	Well #:	1
Well Status:	Plugged	Well Type:	Dry Hole
Lease Name:	Sagniere	Field Name:	Any Field
Area Name:	Any Area	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	07/23/1956		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93619	5	2

Federal EPA Radon Zone for FRESNO County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for FRESNO COUNTY, CA

Number of sites tested: 100

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.251 pCi/L	98%	2%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	1.433 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

OTHER STATE DATABASE INFORMATION

Groundwater Ambient Monitoring & Assessment Program
State Water Resources Control Board
Telephone: 916-341-5577
The GAMA Program is Californias comprehensive groundwater quality monitoring program. GAMA collects data by testing the untreated, raw water in different types of wells for naturally-occurring and man-made chemicals. The GAMA data includes Domestic, Monitoring and Municipal well types from the following sources, Department of Water Resources, Department of Heath Services, EDF, Agricultural Lands, Lawrence Livermore National Laboratory, Department of Pesticide Regulation, United States Geological Survey, Groundwater Ambient Monitoring and Assessment Program and Local Groundwater Projects.

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

California Oil and Gas Well Locations
Source: Dept of Conservation, Geologic Energy Management Division
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

PHYSICAL SETTING SOURCE RECORDS SEARCHED

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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August 30, 2021 Project No. 014-21021

Mr. Jeffrey Harris
Wilson Homes
7550 North Palm Avenue, Suite 102
Fresno, California 93711
jharris@wilsondevelopment.com

RE: Report of Findings
Phase II Limited Subsurface Survey and Soil Pile Sampling
Shepherd North Properties
North Side of East Shepherd Avenue
Clovis, California

Dear Mr. Harris:

Pursuant to your request, Krazan & Associates, Inc. (Krazan) conducted a Phase II Limited Subsurface Survey at (LSS) and soil pile sampling at the Shepherd North Residential Properties located on the north side of Shepherd Avenue at Temperance Avenue, Clovis, California (subject site). The work is based strictly upon the Summary of Findings provided in Krazan's February 24, 2021 *Phase I Environmental Site Assessment (ESA)* report for the referenced subject site prepared for Wilson Homes (client) and in a telephone conversation with the client on August 11, 2021. The work was conducted in conjunction with a real estate transaction and not by request of a regulatory agency.

BACKGROUND

Krazan identified recognized environmental conditions (RECs) in conjunction with the subject site as defined by ASTM E 1527-13. Krazan also identified potential areas of concern (PAOCs).

RECs

- The owner of the assessor's parcel number (APN) 557-031-37 property, indicated that a small underground storage tank (UST) was installed by a former property owner. This UST was reported to be located near the northwest corner of the smaller barn/shed located north of the eastern rural residence on his property.

PAOCs

- End-dump soil piles were observed along the southern boundary of the APN 557-012-28 property and in the southwestern portion of the APN 557-031-24 property. Given the absence of specific information concerning the origin or composition of the on-site soil piles, the presence or absence of potential significant concentrations of hazardous materials in the on-site soil piles is unknown.
- Based upon review of aerial photographs, the potential exists that USTs (in addition to the UST disclosed by the property owner) may be located or may have been formerly located in the vicinity of homesteads formerly located on the subject site. Consequently, the location and

presence or absence of current and/or former USTs and the related condition of the subject site subsurface in the areas of current and/or former USTs are unknown.

Telephone Conversation with Client on August 11, 2021

In a telephone conversation of August 11, 2021, the client requested that Krazan only address the soil pile PAOC and report the findings of the LSS, but not remove the UST(s), if encountered, at this time.

PURPOSE

Based upon the identified RECs and PAOCs, the purpose of the Phase II LSA will be to determine the presence or absence of significant impacts from constituents of potential concern (COPCs) related to the following areas of concern (AOCs):

- End dump soil piles along the southern boundary and southwestern portion of the subject site.
- The possible presence of a UST(s) associated with the former rural residences on the subject site.

SCOPE OF WORK

General Pre-field Activities

- A site-specific health and safety plan was prepared including appropriate level of personal protection equipment for Krazan personnel to cover sampling activities.
- Soil samples were collected in laboratory-grade containers and were immediately placed in an iced chest. The soil samples were labeled and identified on a chain of custody. The soil samples were transferred to an analytical laboratory under chain of custody protocol.
- The possible COPCs in soil investigated during the course of this assessment and their respective analytical methods included the following:
  - Total petroleum hydrocarbons carbon chain (TPH-cc) by EPA Method 8015B;
  - Volatile organic compounds (VOCs) by EPA Method 8260B;
  - CAM 17 metals by EPA Method 6010B/7471A;
  - Organochlorine pesticides (OCPs) by EPA Method 8081A; and,
  - Poly-chlorinated by-phenyls (PCBs) by EPA Method 8082.

Field Activities

Limited Subsurface Survey

- On July 28, 2021, an LSS was conducted by Professional Utility Locating Services (PULS) of Kingsburg, California using ground penetrating radar and electromagnetic equipment in the vicinity of the location of the on-site structures to assess the presence or absence of subsurface metallic anomalies characteristic of USTs and related features. The approximate area covered by the LSS is shown on Figure 2.

Presence of Soil Piles

- On August 13, 2021, four (4) discrete soil samples were collected from each of the two (2) soil piles as shown on Figure 2.
- The four (4) discrete samples from each soil pile were also composited by the laboratory into two (2) samples (SP-1A-SP-1D and SP2A-SP-2D) and submitted for analyses of TPH-cc, VOCs, OCPs, PCBs, and metals.

APPLICABLE REGULATORY AGENCY REFERENCE

Krazan's evaluation of the results and findings associated with the soil and soil vapor sampling included referencing the Revised January/July 2019 San Francisco Regional Water Quality Control Board's (SFRWQCB) ESLs referenced in the technical document titled, *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*. According to the RWQCB's 2007 document, ESLs are considered to be conservative. Under most circumstances and within limits described by the SFRWQCB, the presence of a chemical in soil at concentrations below the corresponding ESL (Residential Exposure or Commercial/Industrial Exposure) for the respective constituent can be assumed not to pose a significant, long-term (chronic) threat to human health and the environment. Additional evaluation will generally be necessary at sites where a chemical is present at concentrations above the corresponding ESL.

Krazan's evaluation of the results and findings associated with the soil and soil vapor also included referencing the California Department of Toxic Substances Control (DTSC), Human and Ecological Risk Office's (HERO) *Human Health Risk Assessment (HHRA) Note Number 3, DTSC-modified Screening Levels* (DTSC-SLs). The DTSC has developed modified screening levels based on the U.S. Environmental Protection Agency (USEPA) Regional Screening Levels (RSLs) for use in the human risk assessment process at hazardous waste sites and permitted facilities.

FINDINGS

Limited Subsurface Assessment

- The LSS detected the presence of one (1) ferrous metallic object measuring approximately eight (8) feet by eight (8) feet that produced an image typical of a UST. A small pothole was excavated in the anomalous area and a metallic object was encountered at a depth of approximately 1.5 feet below ground surface (bgs). The approximate location of the presumed UST is shown on Figure 2.
- The LSS report including photographs is provided in Appendix A.

Soil Pile Sampling Results

- The laboratory results of discrete soil samples SP-1A-SP-1D and SP-2A-SP-2D reported TPH-cc, VOCs, OCPs, and PCBs as not detected (ND) at or above the laboratory reporting limits (RLs), as shown on Table I.
- The laboratory results of composite soil samples SP-1A – SP-1D and SP-2A – SP-2D reported the following metals at or above the laboratory RLs: barium, chromium, cobalt, copper, lead,

nickel, vanadium, and zinc, as shown on Table II. However, none of the reported metals concentrations exceeded their respective Residential ESLs or DTSC Note 3/USEPA RSLs.

- The laboratory RL at 5.0 mg/kg for arsenic is above the Residential ESL/DTSC RSL for arsenic, so although arsenic may be present in the composite samples, the concentrations would be below 5.0 mg/kg and, thus, are within the accepted background level in California of 12 mg/kg.
- The laboratory analytical report is provided in Appendix B.

Limited Subsurface Assessment

- The LSS detected the presence of several small ferrous metallic objects that were identified as miscellaneous metallic objects including pipe, wire, etc. One (1) imbedded metallic object was detected at approximately 18 inches below ground surface (bgs) measuring approximately 40 inches in length. The object could not be positively identified. The approximate location of the metallic object is shown on Figure 2.
- The LSS report including photographs is provided in Appendix B.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings in the field and the laboratory analytical reports for the composite samples collected from the soil piles and analyzed during this Phase II LSA, there was no evidence of COCs in soil exceeding regulatory screening levels for soil to remain in place.

The results of the LSS indicated the presence of a UST. It is recommended that the UST be removed in accordance with local, State and Federal regulations.

LIMITATIONS

This Phase II LSA conducted at the subject site was not intended to characterize or define the extent of possible impact beneath the site; rather, this work was conducted to assess the presence or absence of COCs. The findings of this report were based upon the results of our field and laboratory investigations, along with the interpretation of subsurface conditions associated with our samples and borings.

The soil samples were located in the field by review of available maps and by tape measurement from existing landmarks. Therefore, the location of the samples and borings should be considered accurate only to the degree implied by the methods used to locate them. Chemical testing was done by laboratories certified by the State of California. The results of the chemical testing are accurate only to the degree of care of ensuring the testing accuracy and the representative nature of the soil samples obtained.

This type of assessment is undertaken with the calculated risk that the presence, full nature, and extent of contamination would not be revealed by methods employed. Although the work was conducted in accordance with industry standards and employing a professional standard of care, no warranty is given, either expressed or implied, that hazardous material contamination or buried structures, which would not have been disclosed through this investigation, do not exist at the subject site. Therefore, the data obtained are clear and accurate only to the degree implied by the sources and methods used.

The LSS equipment is considered a state-of-the-art technology that is effective within certain limitations for the investigation of buried features such as septic tanks, fuel bunkers, USTs, and/or piping in areas accessible at the time of the investigation. In uncommon or atypical cases where bunkers or tanks are buried at depths greater than two (2) feet bgs and/or which may be covered by layers of pavement cumulatively in excess of two to four inches in thickness, rock, gravel or aggregate layers, dense (clayey) soils, or other surface or subsurface metallic objects (such as motor vehicles, fencing, piping, conduit or rebar) that can interfere with the electrical transmission/reception of the equipment, the equipment's technical capabilities can be exceeded to a degree where the presence of a UST or other metallic feature could not be detected. No guarantee is made or implied that the geophysical survey will detect suspected metallic features under uncommon or atypical circumstances as described above, or that the discovery of underground piping or conduit commonly found underlying commercial properties in and of itself is evidence of the presence of USTs. It should be understood that the location of subsurface objects and utilities is dependent upon the recognition of physical phenomena at the ground surface. These phenomena can be magnetic fields or electromagnetic waves that give rise to a surface expression which in turn is interpreted as representative of subsurface objects. These waves, however, may be attenuated and/or distorted by a number of factors including soil moisture, corrosion, and proximity to other surface and subsurface facilities. The findings presented herewith are based on professional interpretation using state of the art methods and equipment and a degree of conservatism deemed proper as of this report date. It is not warranted that such data cannot be superseded by future geotechnical, environmental, or technical developments.

The findings presented herewith are based on professional interpretation using state of the art methods and equipment and a degree of conservatism deemed proper as of this report date. It is not warranted that such data cannot be superseded by future geotechnical, environmental, or technical developments.

This assessment and report were authorized by and prepared for the exclusive use of our client. Unauthorized use of or reliance on the information contained in this report without the expressed written consent of Krazan & Associates, Inc. is strictly prohibited.

CLOSING

We appreciate the opportunity to be of service to Wilson Homes. If you have any questions, or if we can be of further assistance, please feel free to contact me at (559) 348-2200.

PROFESSIONAL GEOLOGIST
MICHAEL H. BOWERY
Exp. 6/31/2022
No.5027
STATE OF CALIFORNIA

Respectfully Submitted,
KRAZAN & ASSOCIATES, INC.

Michael H. Bowery, PG 5027
Senior Manager

PROFESSIONAL GEOLOGIST
JASON R. PAUL
No. 7557
9/30/2021
STATE OF CALIFORNIA

Jason R. Paul, PG7557
Environmental Regional Manager

MHB/ACF/mlt

Attachments:

Table I – Soil Sample Results, TPH-cc, VOCs, OCPs, and PCBs
Table II – Soil Sample Results, Metals
Figure 1 – Vicinity Map
Figure 2 – Site Map
Appendix A – Laboratory Analytical Results
Appendix B – LSS Report

TABLE I
Shepherd North Properties
North Side of Shepherd at Temperance
Clovis, California
August 13, 2021 Soil Sample Results – TPH-cc, VOCs, OCPs, and PCBs
Concentrations are expressed in milligrams per kilogram (mg/kg)

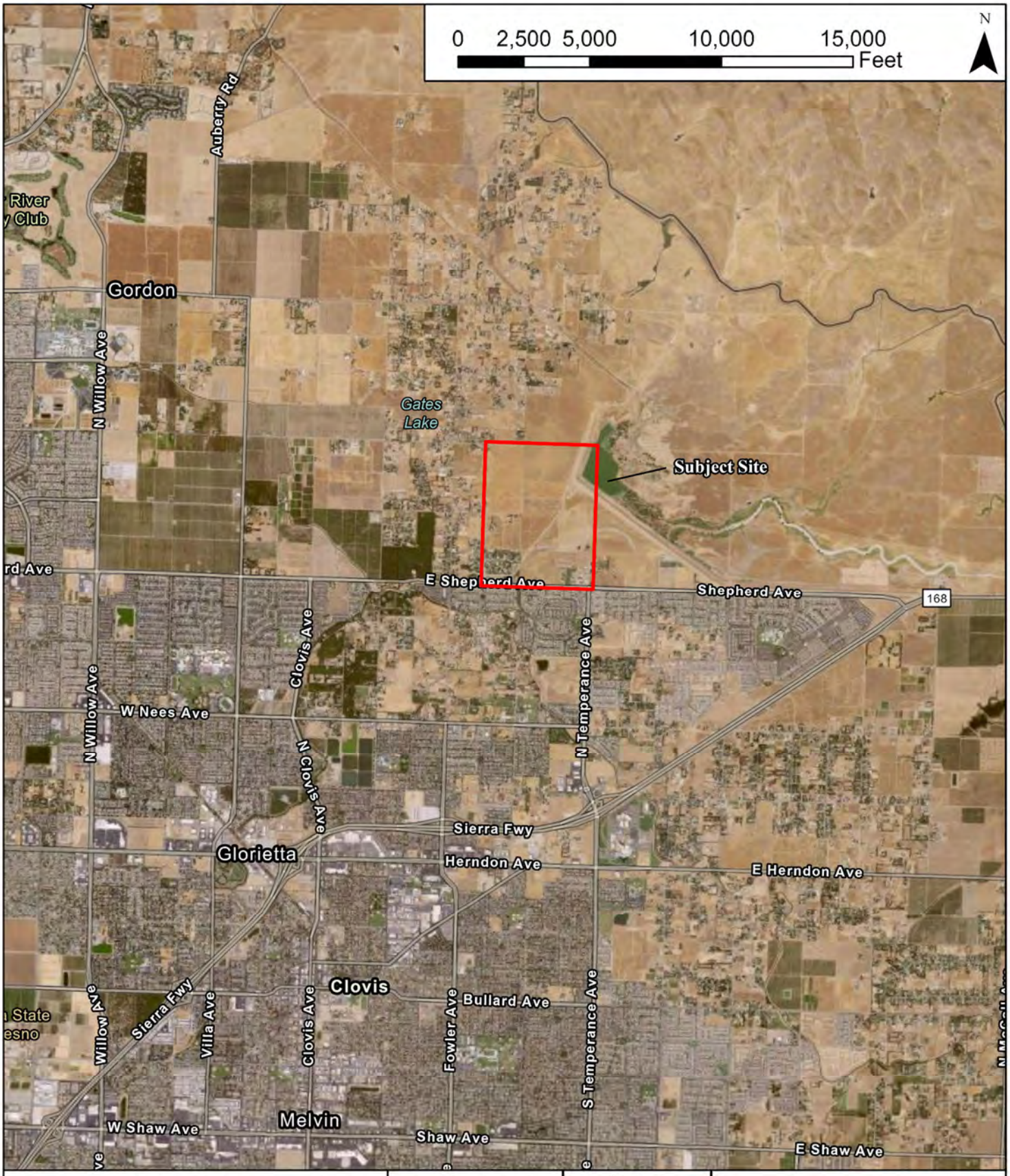
Sample No./Depth-feet bgs	TPH-g	TPH-d	TPH-mo	VOCs	OCPs	PCBs
SP-1A – 1D	ND	ND	ND	ND	ND	ND
SP-2A – 2D	ND	ND	ND	ND	ND	ND
Residential ESLs	430	260	$1.2X10^4$	Various	Various	0.23
Residential Note 3/RSLs	96	2,400	NE	Various	Various	0.3

ND = Not Detected at or above the laboratory reporting limit, NE = Not Established
ESLs – Residential Shallow Soil Exposure (California Regional Water Quality Control Board, San Francisco Bay Region – Revision 1 January 2019, Table S-1)
DTSC Note 3/UPEPA RSLs – Residential Soil Screening Levels, November 2020

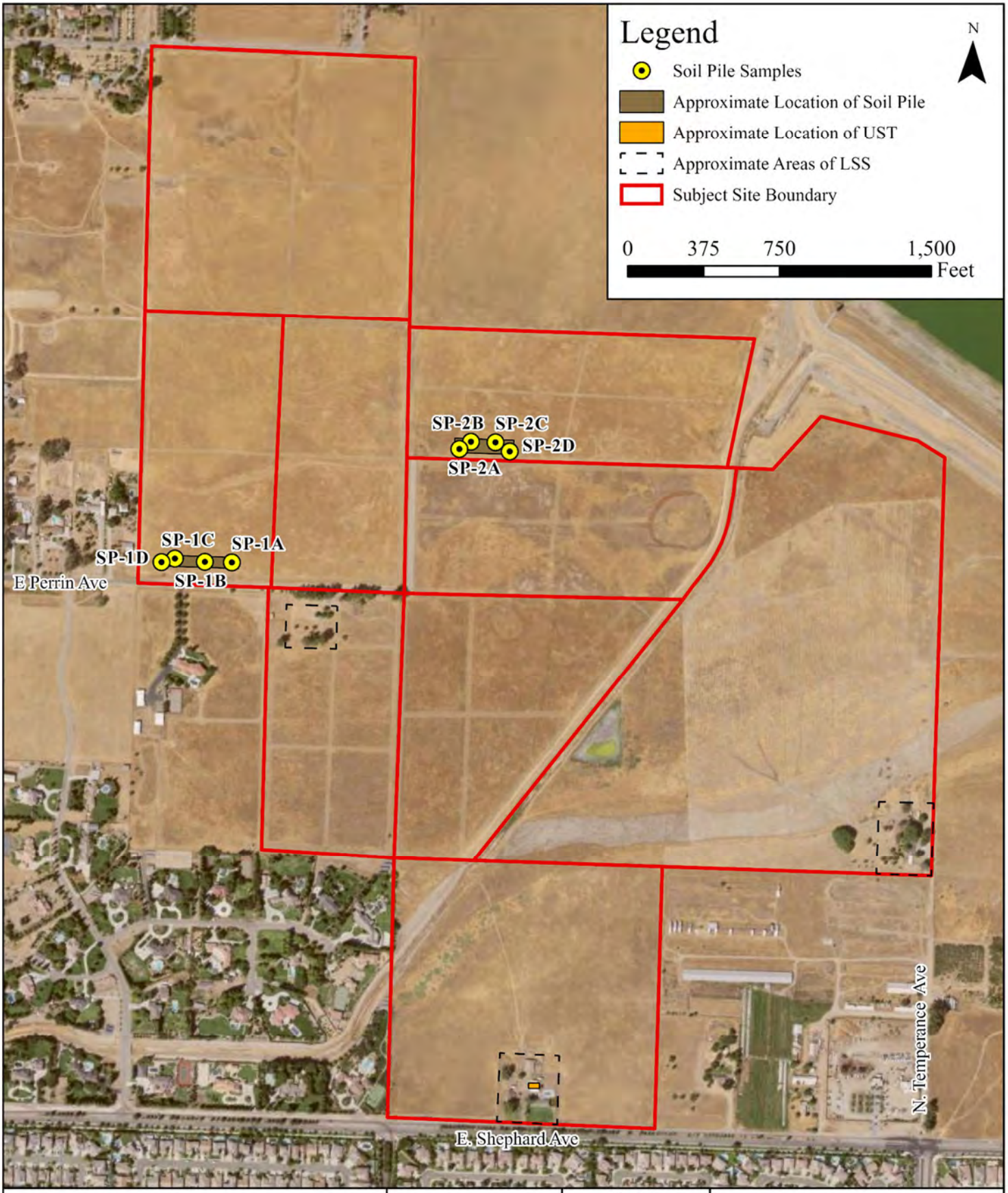
TABLE II
Shepherd North Properties
North Side of Shepherd at Temperance
Clovis, California
August 13, 2021 Soil Sample Results – Metals
Concentrations are expressed in milligrams per kilogram (mg/kg)

Sample No./Depth-feet bgs	Barium	Chromium	Cobalt	Copper	Lead	Nickel	Vanadium	Zinc
SP-1A – SP-1D	51	7.1	4.0	5.0	3.8	8.2	18	14
SP-2A – SP-2D	53	9.3	4.7	4.8	ND	15	18	19
ESLs	1.5×10^4	NE	23	3.1×10^3	80	820	390	2.3×10^4
Residential Note 3/RSLs	1.5×10^4	NE	23	NE	80	1.5×10^4	390	2.3×10^4

Only those Metals detected above the laboratory RLs are shown
ND = Not Detected at or above the laboratory reporting limit
NE = Not Established
ESLs – Residential Shallow Soil Exposure (California Regional Water Quality Control Board, San Francisco Bay Region – Rev. 1, January 2019, Table S-1)
DTSC Note 3/UPEPA RSLs – Residential Soil Screening Levels, November 2020



Vicinity Map	Scale:	Date:	Krazan
North Shepherd Properties North Side of East Shepherd Ave. Clovis, CA	1"=5000'	August 2021	SITE DEVELOPMENT ENGINEERS *With Offices Serving the Western United States*
	Drawn By: DN	**Approved By:** MB	
	Project NO: 014-21021	**Figure No.:** 1	



Site Map	Scale: 1"=650'	Date: August 2021	Krazan SITE DEVELOPMENT ENGINEERS *With Offices Serving the Western United States*
North Shepherd Properties North Side of East Shepherd Ave. Clovis CA	Drawn By: DN	Approved By: MB	
	Project NO: 014-21021	Figure No.: 2	

Appendix A

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
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24 August 2021

Mike Bowery
Krazan, Clovis
215 West Dakota Avenue
Clovis, CA 93612

RE: Shepherd North Wilson

Enclosed are the results of analyses for samples received by the laboratory on 08/17/21 10:44. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jeff Lee
Project Manager

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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Krazan, Clovis	Project:	Shepherd North Wilson	
215 West Dakota Avenue	Project Number:	014-21021	**Reported:**
Clovis CA, 93612	Project Manager:	Mike Bowery	08/24/21 12:07

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Composite 4:1 SP-1A - SP-1D	T212545-09	Soil	08/13/21 10:30	08/17/21 10:44
Composite 4:1 SP-2A - SP-2D	T212545-10	Soil	08/13/21 10:55	08/17/21 10:44

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Krazan, Clovis	Project: Shepherd North Wilson	
215 West Dakota Avenue	Project Number: 014-21021	**Reported:**
Clovis CA, 93612	Project Manager: Mike Bowery	08/24/21 12:07

DETECTIONS SUMMARY

Sample ID: Composite 4:1 SP-1A - SP-1D **Laboratory ID:** T212545-09

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**51**	1.0	mg/kg	EPA 6010b	
Chromium	**7.1**	2.0	mg/kg	EPA 6010b	
Cobalt	**4.0**	2.0	mg/kg	EPA 6010b	
Copper	**5.0**	1.0	mg/kg	EPA 6010b	
Lead	**3.8**	3.0	mg/kg	EPA 6010b	
Nickel	**8.2**	2.0	mg/kg	EPA 6010b	
Vanadium	**18**	5.0	mg/kg	EPA 6010b	
Zinc	**14**	1.0	mg/kg	EPA 6010b	

Sample ID: Composite 4:1 SP-2A - SP-2D **Laboratory ID:** T212545-10

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**53**	1.0	mg/kg	EPA 6010b	
Chromium	**9.2**	2.0	mg/kg	EPA 6010b	
Cobalt	**4.7**	2.0	mg/kg	EPA 6010b	
Copper	**4.8**	1.0	mg/kg	EPA 6010b	
Nickel	**15**	2.0	mg/kg	EPA 6010b	
Vanadium	**18**	5.0	mg/kg	EPA 6010b	
Zinc	**19**	1.0	mg/kg	EPA 6010b	

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Clovis CA, 93612	Project Manager: Mike Bowery	08/24/21 12:07

Composite 4:1 SP-1A - SP-1D

T212545-09 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	1081743	08/17/21	08/22/21	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*114 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	1081738	08/17/21	08/19/21	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**51**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**7.1**	2.0	"	"	"	"	"	"	
Cobalt	**4.0**	2.0	"	"	"	"	"	"	
Copper	**5.0**	1.0	"	"	"	"	"	"	
Lead	**3.8**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**8.2**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	5.0	"	"	"	"	"	"	
Vanadium	**18**	5.0	"	"	"	"	"	"	
Zinc	**14**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	1081740	08/17/21	08/18/21	EPA 7471A Soil	

SunStar Laboratories, Inc.

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Clovis CA, 93612	Project Manager: Mike Bowery	08/24/21 12:07

Composite 4:1 SP-1A - SP-1D

T212545-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Organochlorine Pesticides by EPA Method 8081A									
alpha-BHC	ND	0.0050	mg/kg	1	1081744	08/17/21	08/19/21	EPA 8081A	
gamma-BHC (Lindane)	ND	0.0050	"	"	"	"	"	"	
beta-BHC	ND	0.0050	"	"	"	"	"	"	
delta-BHC	ND	0.0050	"	"	"	"	"	"	
Heptachlor	ND	0.0050	"	"	"	"	"	"	
Aldrin	ND	0.0050	"	"	"	"	"	"	
Heptachlor epoxide	ND	0.0050	"	"	"	"	"	"	
gamma-Chlordane	ND	0.0050	"	"	"	"	"	"	
alpha-Chlordane	ND	0.0050	"	"	"	"	"	"	
Endosulfan I	ND	0.0050	"	"	"	"	"	"	
4,4′-DDE	ND	0.0050	"	"	"	"	"	"	
Dieldrin	ND	0.0050	"	"	"	"	"	"	
Endrin	ND	0.0050	"	"	"	"	"	"	
4,4′-DDD	ND	0.0050	"	"	"	"	"	"	
Endosulfan II	ND	0.0050	"	"	"	"	"	"	
4,4′-DDT	ND	0.0050	"	"	"	"	"	"	
Endrin aldehyde	ND	0.0050	"	"	"	"	"	"	
Endosulfan sulfate	ND	0.0050	"	"	"	"	"	"	
Methoxychlor	ND	0.0050	"	"	"	"	"	"	
Endrin ketone	ND	0.0050	"	"	"	"	"	"	
Toxaphene	ND	0.020	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*89.4 %*	*35-140*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*85.7 %*	*35-140*		"	"	"	"	
Polychlorinated Biphenyls by EPA Method 8082/3550C									
PCB-1016	ND	0.010	mg/kg	1	1081736	08/17/21	08/20/21	EPA 8082	
PCB-1221	ND	0.010	"	"	"	"	"	"	
PCB-1232	ND	0.010	"	"	"	"	"	"	
PCB-1242	ND	0.010	"	"	"	"	"	"	
PCB-1248	ND	0.010	"	"	"	"	"	"	
PCB-1254	ND	0.010	"	"	"	"	"	"	
PCB-1260	ND	0.010	"	"	"	"	"	"	

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Composite 4:1 SP-1A - SP-1D

T212545-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Polychlorinated Biphenyls by EPA Method 8082/3550C									
Surrogate: Tetrachloro-meta-xylene		*82.2 %*	*35-140*		*1081736*	*08/17/21*	*08/20/21*	*EPA 8082*	
Surrogate: Decachlorobiphenyl		*82.7 %*	*35-140*		*"*	*"*	*"*	*"*	
Volatile Organic Compounds by EPA Method 8260B									
Bromobenzene	ND	0.0025	mg/kg	1	1081927	08/19/21	08/19/21	EPA 8260B	
Bromochloromethane	ND	0.0025	"	"	"	"	"	"	
Bromodichloromethane	ND	0.0025	"	"	"	"	"	"	
Bromoform	ND	0.0025	"	"	"	"	"	"	
Bromomethane	ND	0.0025	"	"	"	"	"	"	
n-Butylbenzene	ND	0.0025	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.0025	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.0025	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.0025	"	"	"	"	"	"	
Chlorobenzene	ND	0.0025	"	"	"	"	"	"	
Chloroethane	ND	0.0025	"	"	"	"	"	"	
Chloroform	ND	0.0025	"	"	"	"	"	"	
Chloromethane	ND	0.0025	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.0025	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.0025	"	"	"	"	"	"	
Dibromochloromethane	ND	0.0025	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	0.0050	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.0025	"	"	"	"	"	"	
Dibromomethane	ND	0.0025	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.0025	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.0025	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.0025	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.0025	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.0025	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.0025	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.0025	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.0025	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.0025	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.0025	"	"	"	"	"	"	

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Composite 4:1 SP-1A - SP-1D

T212545-09 (Soil)

SunStar Laboratories, Inc.

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
1,3-Dichloropropane	ND	0.0025	mg/kg	1	1081927	08/19/21	08/19/21	EPA 8260B	
2,2-Dichloropropane	ND	0.0025	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.0025	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.0025	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.0025	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.0025	"	"	"	"	"	"	
Isopropylbenzene	ND	0.0025	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.0025	"	"	"	"	"	"	
Methylene chloride	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.0025	"	"	"	"	"	"	
n-Propylbenzene	ND	0.0025	"	"	"	"	"	"	
Styrene	ND	0.0025	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.0025	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.0025	"	"	"	"	"	"	
Tetrachloroethene	ND	0.0025	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.0025	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.0025	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.0025	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.0025	"	"	"	"	"	"	
Trichloroethene	ND	0.0025	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.0025	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.0025	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0025	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0025	"	"	"	"	"	"	
Vinyl chloride	ND	0.0025	"	"	"	"	"	"	
Benzene	ND	0.0025	"	"	"	"	"	"	
Toluene	ND	0.0025	"	"	"	"	"	"	
Ethylbenzene	ND	0.0025	"	"	"	"	"	"	
m,p-Xylene	ND	0.0050	"	"	"	"	"	"	
o-Xylene	ND	0.0025	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*98.4 %*	*75.4-139*		"	"	"	"	
Surrogate: Dibromofluoromethane		*105 %*	*73.1-125*		"	"	"	"	

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Composite 4:1 SP-1A - SP-1D

T212545-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Volatile Organic Compounds by EPA Method 8260B									
Surrogate: Toluene-d8		*101 %*		*82.6-117*	*1081927*	*08/19/21*	*08/19/21*	*EPA 8260B*	

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Composite 4:1 SP-2A - SP-2D

T212545-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	1081743	08/17/21	08/22/21	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*116 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	1081738	08/17/21	08/19/21	EPA 6010b	
Silver	ND	2.0	"	"	"	"	08/19/21	"	
Arsenic	ND	5.0	"	"	"	"	08/19/21	"	
Barium	**53**	1.0	"	"	"	"	08/19/21	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	08/19/21	"	
Chromium	**9.2**	2.0	"	"	"	"	08/19/21	"	
Cobalt	**4.7**	2.0	"	"	"	"	08/19/21	"	
Copper	**4.8**	1.0	"	"	"	"	08/19/21	"	
Lead	ND	3.0	"	"	"	"	08/19/21	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**15**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	5.0	"	"	"	"	"	"	
Vanadium	**18**	5.0	"	"	"	"	08/19/21	"	
Zinc	**19**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	1081740	08/17/21	08/18/21	EPA 7471A Soil	

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Composite 4:1 SP-2A - SP-2D

T212545-10 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organochlorine Pesticides by EPA Method 8081A									
alpha-BHC	ND	0.0050	mg/kg	1	1081744	08/17/21	08/19/21	EPA 8081A	
gamma-BHC (Lindane)	ND	0.0050	"	"	"	"	"	"	
beta-BHC	ND	0.0050	"	"	"	"	"	"	
delta-BHC	ND	0.0050	"	"	"	"	"	"	
Heptachlor	ND	0.0050	"	"	"	"	"	"	
Aldrin	ND	0.0050	"	"	"	"	"	"	
Heptachlor epoxide	ND	0.0050	"	"	"	"	"	"	
gamma-Chlordane	ND	0.0050	"	"	"	"	"	"	
alpha-Chlordane	ND	0.0050	"	"	"	"	"	"	
Endosulfan I	ND	0.0050	"	"	"	"	"	"	
4,4′-DDE	ND	0.0050	"	"	"	"	"	"	
Dieldrin	ND	0.0050	"	"	"	"	"	"	
Endrin	ND	0.0050	"	"	"	"	"	"	
4,4′-DDD	ND	0.0050	"	"	"	"	"	"	
Endosulfan II	ND	0.0050	"	"	"	"	"	"	
4,4′-DDT	ND	0.0050	"	"	"	"	"	"	
Endrin aldehyde	ND	0.0050	"	"	"	"	"	"	
Endosulfan sulfate	ND	0.0050	"	"	"	"	"	"	
Methoxychlor	ND	0.0050	"	"	"	"	"	"	
Endrin ketone	ND	0.0050	"	"	"	"	"	"	
Toxaphene	ND	0.020	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		*89.0 %*	*35-140*		"	"	"	"	
Surrogate: Decachlorobiphenyl		*79.4 %*	*35-140*		"	"	"	"	
Polychlorinated Biphenyls by EPA Method 8082/3550C									
PCB-1016	ND	0.010	mg/kg	1	1081736	08/17/21	08/20/21	EPA 8082	
PCB-1221	ND	0.010	"	"	"	"	"	"	
PCB-1232	ND	0.010	"	"	"	"	"	"	
PCB-1242	ND	0.010	"	"	"	"	"	"	
PCB-1248	ND	0.010	"	"	"	"	"	"	
PCB-1254	ND	0.010	"	"	"	"	"	"	
PCB-1260	ND	0.010	"	"	"	"	"	"	

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Composite 4:1 SP-2A - SP-2D

T212545-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Polychlorinated Biphenyls by EPA Method 8082/3550C									
Surrogate: Tetrachloro-meta-xylene		*85.6 %*		*35-140*	*1081736*	*08/17/21*	*08/20/21*	*EPA 8082*	
Surrogate: Decachlorobiphenyl		*83.5 %*		*35-140*	*"*	*"*	*"*	*"*	
Volatile Organic Compounds by EPA Method 8260B									
Bromobenzene	ND	0.0025	mg/kg	1	1081927	08/19/21	08/19/21	EPA 8260B	
Bromochloromethane	ND	0.0025	"	"	"	"	"	"	
Bromodichloromethane	ND	0.0025	"	"	"	"	"	"	
Bromoform	ND	0.0025	"	"	"	"	"	"	
Bromomethane	ND	0.0025	"	"	"	"	"	"	
n-Butylbenzene	ND	0.0025	"	"	"	"	"	"	
sec-Butylbenzene	ND	0.0025	"	"	"	"	"	"	
tert-Butylbenzene	ND	0.0025	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.0025	"	"	"	"	"	"	
Chlorobenzene	ND	0.0025	"	"	"	"	"	"	
Chloroethane	ND	0.0025	"	"	"	"	"	"	
Chloroform	ND	0.0025	"	"	"	"	"	"	
Chloromethane	ND	0.0025	"	"	"	"	"	"	
2-Chlorotoluene	ND	0.0025	"	"	"	"	"	"	
4-Chlorotoluene	ND	0.0025	"	"	"	"	"	"	
Dibromochloromethane	ND	0.0025	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	0.0050	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.0025	"	"	"	"	"	"	
Dibromomethane	ND	0.0025	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.0025	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.0025	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.0025	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.0025	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.0025	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.0025	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.0025	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.0025	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.0025	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.0025	"	"	"	"	"	"	

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Krazan, Clovis	Project:	Shepherd North Wilson	
215 West Dakota Avenue	Project Number:	014-21021	**Reported:**
Clovis CA, 93612	Project Manager:	Mike Bowery	08/24/21 12:07

Composite 4:1 SP-2A - SP-2D

T212545-10 (Soil)

SunStar Laboratories, Inc.

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
1,3-Dichloropropane	ND	0.0025	mg/kg	1	1081927	08/19/21	08/19/21	EPA 8260B	
2,2-Dichloropropane	ND	0.0025	"	"	"	"	"	"	
1,1-Dichloropropene	ND	0.0025	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.0025	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.0025	"	"	"	"	"	"	
Hexachlorobutadiene	ND	0.0025	"	"	"	"	"	"	
Isopropylbenzene	ND	0.0025	"	"	"	"	"	"	
p-Isopropyltoluene	ND	0.0025	"	"	"	"	"	"	
Methylene chloride	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.0025	"	"	"	"	"	"	
n-Propylbenzene	ND	0.0025	"	"	"	"	"	"	
Styrene	ND	0.0025	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.0025	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.0025	"	"	"	"	"	"	
Tetrachloroethene	ND	0.0025	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	0.0025	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	0.0025	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.0025	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.0025	"	"	"	"	"	"	
Trichloroethene	ND	0.0025	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.0025	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	0.0025	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0025	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0025	"	"	"	"	"	"	
Vinyl chloride	ND	0.0025	"	"	"	"	"	"	
Benzene	ND	0.0025	"	"	"	"	"	"	
Toluene	ND	0.0025	"	"	"	"	"	"	
Ethylbenzene	ND	0.0025	"	"	"	"	"	"	
m,p-Xylene	ND	0.0050	"	"	"	"	"	"	
o-Xylene	ND	0.0025	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*98.5 %*	*75.4-139*		"	"	"	"	
Surrogate: Dibromofluoromethane		*104 %*	*73.1-125*		"	"	"	"	

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Krazan, Clovis	Project:	Shepherd North Wilson	
215 West Dakota Avenue	Project Number:	014-21021	**Reported:**
Clovis CA, 93612	Project Manager:	Mike Bowery	08/24/21 12:07

Composite 4:1 SP-2A - SP-2D

T212545-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Volatile Organic Compounds by EPA Method 8260B									
Surrogate: Toluene-d8		*101 %*		*82.6-117*	*1081927*	*08/19/21*	*08/19/21*	*EPA 8260B*	

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Krazan, Clovis	Project:	Shepherd North Wilson	
215 West Dakota Avenue	Project Number:	014-21021	**Reported:**
Clovis CA, 93612	Project Manager:	Mike Bowery	08/24/21 12:07

Extractable Petroleum Hydrocarbons by 8015B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1081743 - EPA 3550B GC										
Blank (1081743-BLK1)				Prepared: 08/17/21 Analyzed: 08/18/21						
C6-C12 (GRO)	ND	10	mg/kg							
C13-C28 (DRO)	ND	10	"							
C29-C40 (MORO)	ND	10	"							
Surrogate: p-Terphenyl	*108*		*"*	*100*		*108*	*65-135*			
LCS (1081743-BS1)				Prepared: 08/17/21 Analyzed: 08/18/21						
C13-C28 (DRO)	440	10	mg/kg	500		88.5	75-125			
Surrogate: p-Terphenyl	*113*		*"*	*100*		*113*	*65-135*			
LCS Dup (1081743-BSD1)				Prepared: 08/17/21 Analyzed: 08/18/21						
C13-C28 (DRO)	450	10	mg/kg	500		89.3	75-125	0.976	20	
Surrogate: p-Terphenyl	*216*		*"*	*200*		*108*	*65-135*			

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Krazan, Clovis	Project: Shepherd North Wilson	
215 West Dakota Avenue	Project Number: 014-21021	**Reported:**
Clovis CA, 93612	Project Manager: Mike Bowery	08/24/21 12:07

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1081738 - EPA 3050B										
Blank (1081738-BLK1)				Prepared: 08/17/21 Analyzed: 08/19/21						
Antimony	ND	3.0	mg/kg							
Silver	ND	2.0	"							
Arsenic	ND	5.0	"							
Barium	ND	1.0	"							
Beryllium	ND	1.0	"							
Cadmium	ND	2.0	"							
Chromium	ND	2.0	"							
Cobalt	ND	2.0	"							
Copper	ND	1.0	"							
Lead	ND	3.0	"							
Molybdenum	ND	5.0	"							
Nickel	ND	2.0	"							
Selenium	ND	5.0	"							
Thallium	ND	5.0	"							
Vanadium	ND	5.0	"							
Zinc	ND	1.0	"							
LCS (1081738-BS1)				Prepared: 08/17/21 Analyzed: 08/19/21						
Arsenic	95.5	5.0	mg/kg	100		95.5	75-125			
Barium	97.7	1.0	"	100		97.7	75-125			
Cadmium	97.5	2.0	"	100		97.5	75-125			
Chromium	97.8	2.0	"	100		97.8	75-125			
Lead	95.7	3.0	"	100		95.7	75-125			
Matrix Spike (1081738-MS1)		**Source: T212545-09**		Prepared: 08/17/21 Analyzed: 08/19/21						
Arsenic	78.8	5.0	mg/kg	98.0	ND	80.4	75-125			
Barium	130	1.0	"	98.0	51.1	80.9	75-125			
Cadmium	79.4	2.0	"	98.0	0.163	80.8	75-125			
Chromium	86.3	2.0	"	98.0	7.06	80.8	75-125			
Lead	79.1	3.0	"	98.0	3.84	76.7	75-125			

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215 West Dakota Avenue	Project Number: 014-21021	**Reported:**
Clovis CA, 93612	Project Manager: Mike Bowery	08/24/21 12:07

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1081738 - EPA 3050B										
Matrix Spike Dup (1081738-MSD1)		**Source: T212545-09**		Prepared: 08/17/21 Analyzed: 08/19/21						
Arsenic	77.1	5.0	mg/kg	96.2	ND	80.1	75-125	2.27	20	
Barium	130	1.0	"	96.2	51.1	81.7	75-125	0.575	20	
Cadmium	76.9	2.0	"	96.2	0.163	79.8	75-125	3.20	20	
Chromium	84.2	2.0	"	96.2	7.06	80.2	75-125	2.45	20	
Lead	77.0	3.0	"	96.2	3.84	76.1	75-125	2.64	20	

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215 West Dakota Avenue	Project Number:	014-21021	**Reported:**
Clovis CA, 93612	Project Manager:	Mike Bowery	08/24/21 12:07

Cold Vapor Extraction EPA 7470/7471 - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1081740 - EPA 7471A Soil										
Blank (1081740-BLK1)				Prepared: 08/17/21 Analyzed: 08/18/21						
Mercury	ND	0.10	mg/kg							
LCS (1081740-BS1)				Prepared: 08/17/21 Analyzed: 08/18/21						
Mercury	0.355	0.10	mg/kg	0.397		89.3	80-120			
Matrix Spike (1081740-MS1)		**Source: T212538-01RE1**		Prepared: 08/17/21 Analyzed: 08/18/21						
Mercury	0.371	0.10	mg/kg	0.417	ND	89.0	75-125			
Matrix Spike Dup (1081740-MSD1)		**Source: T212538-01RE1**		Prepared: 08/17/21 Analyzed: 08/18/21						
Mercury	0.364	0.10	mg/kg	0.391	ND	93.1	75-125	1.85	20	

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Krazan, Clovis	Project: Shepherd North Wilson	
215 West Dakota Avenue	Project Number: 014-21021	**Reported:**
Clovis CA, 93612	Project Manager: Mike Bowery	08/24/21 12:07

Organochlorine Pesticides by EPA Method 8081A - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1081744 - EPA 3550C ECD/GCMS										
Blank (1081744-BLK1)				Prepared: 08/17/21 Analyzed: 08/19/21						
alpha-BHC	ND	0.0050	mg/kg							
gamma-BHC (Lindane)	ND	0.0050	"							
beta-BHC	ND	0.0050	"							
delta-BHC	ND	0.0050	"							
Heptachlor	ND	0.0050	"							
Aldrin	ND	0.0050	"							
Heptachlor epoxide	ND	0.0050	"							
gamma-Chlordane	ND	0.0050	"							
alpha-Chlordane	ND	0.0050	"							
Endosulfan I	ND	0.0050	"							
4,4′-DDE	ND	0.0050	"							
Dieldrin	ND	0.0050	"							
Endrin	ND	0.0050	"							
4,4′-DDD	ND	0.0050	"							
Endosulfan II	ND	0.0050	"							
4,4′-DDT	ND	0.0050	"							
Endrin aldehyde	ND	0.0050	"							
Endosulfan sulfate	ND	0.0050	"							
Methoxychlor	ND	0.0050	"							
Endrin ketone	ND	0.0050	"							
Toxaphene	ND	0.020	"							
Surrogate: Tetrachloro-meta-xylene	*0.00953*		*"*	*0.0100*		*95.3*	*35-140*			
Surrogate: Decachlorobiphenyl	*0.00845*		*"*	*0.0100*		*84.5*	*35-140*			
LCS (1081744-BS1)				Prepared: 08/17/21 Analyzed: 08/19/21						
gamma-BHC (Lindane)	0.0288	0.0050	mg/kg	0.0400		72.0	40-120			
Heptachlor	0.0293	0.0050	"	0.0400		73.2	40-120			
Aldrin	0.0213	0.0050	"	0.0400		53.3	40-120			
Dieldrin	0.0279	0.0050	"	0.0400		69.7	40-120			
Endrin	0.0287	0.0050	"	0.0400		71.7	40-120			
4,4′-DDT	0.0288	0.0050	"	0.0400		72.0	33-147			
Surrogate: Tetrachloro-meta-xylene	*0.00915*		*"*	*0.0100*		*91.5*	*35-140*			
Surrogate: Decachlorobiphenyl	*0.00917*		*"*	*0.0100*		*91.7*	*35-140*			

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215 West Dakota Avenue	Project Number: 014-21021	**Reported:**
Clovis CA, 93612	Project Manager: Mike Bowery	08/24/21 12:07

Organochlorine Pesticides by EPA Method 8081A - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1081744 - EPA 3550C ECD/GCMS										
LCS Dup (1081744-BSD1)				Prepared: 08/17/21 Analyzed: 08/19/21						
gamma-BHC (Lindane)	0.0312	0.0050	mg/kg	0.0400		78.1	40-120	8.10	30	
Heptachlor	0.0315	0.0050	"	0.0400		78.8	40-120	7.36	30	
Aldrin	0.0227	0.0050	"	0.0400		56.7	40-120	6.28	30	
Dieldrin	0.0304	0.0050	"	0.0400		75.9	40-120	8.49	30	
Endrin	0.0312	0.0050	"	0.0400		78.0	40-120	8.36	30	
4,4′-DDT	0.0319	0.0050	"	0.0400		79.8	33-147	10.3	30	
Surrogate: Tetrachloro-meta-xylene	*0.00956*		*"*	*0.0100*		*95.6*	*35-140*			
Surrogate: Decachlorobiphenyl	*0.00906*		*"*	*0.0100*		*90.6*	*35-140*			

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215 West Dakota Avenue	Project Number: 014-21021	**Reported:**
Clovis CA, 93612	Project Manager: Mike Bowery	08/24/21 12:07

Polychlorinated Biphenyls by EPA Method 8082/3550C - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1081736 - EPA 3550C ECD/GCMS										
Blank (1081736-BLK1)				Prepared: 08/17/21 Analyzed: 08/20/21						
PCB-1016	ND	0.010	mg/kg							
PCB-1221	ND	0.010	"							
PCB-1232	ND	0.010	"							
PCB-1242	ND	0.010	"							
PCB-1248	ND	0.010	"							
PCB-1254	ND	0.010	"							
PCB-1260	ND	0.010	"							
Surrogate: Tetrachloro-meta-xylene	*0.00778*		*"*	*0.0100*		*77.8*	*35-140*			
Surrogate: Decachlorobiphenyl	*0.00879*		*"*	*0.0100*		*87.9*	*35-140*			
LCS (1081736-BS1)				Prepared: 08/17/21 Analyzed: 08/20/21						
PCB-1016	0.0740	0.010	mg/kg	0.100		74.0	40-130			
PCB-1260	0.0842	0.010	"	0.100		84.2	40-130			
Surrogate: Tetrachloro-meta-xylene	*0.00836*		*"*	*0.0100*		*83.6*	*35-140*			
Surrogate: Decachlorobiphenyl	*0.00963*		*"*	*0.0100*		*96.3*	*35-140*			
LCS Dup (1081736-BSD1)				Prepared: 08/17/21 Analyzed: 08/20/21						
PCB-1016	0.0732	0.010	mg/kg	0.102		72.0	40-130	1.03	30	
PCB-1260	0.0829	0.010	"	0.102		81.5	40-130	1.54	30	
Surrogate: Tetrachloro-meta-xylene	*0.00838*		*"*	*0.0102*		*82.4*	*35-140*			
Surrogate: Decachlorobiphenyl	*0.00868*		*"*	*0.0102*		*85.4*	*35-140*			

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Krazan, Clovis	Project: Shepherd North Wilson	
215 West Dakota Avenue	Project Number: 014-21021	**Reported:**
Clovis CA, 93612	Project Manager: Mike Bowery	08/24/21 12:07

Volatile Organic Compounds by EPA Method 8260B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1081927 - EPA 5030 GCMS										
Blank (1081927-BLK1)				Prepared & Analyzed: 08/19/21						
Bromobenzene	ND	0.0025	mg/kg							
Bromochloromethane	ND	0.0025	"							
Bromodichloromethane	ND	0.0025	"							
Bromoform	ND	0.0025	"							
Bromomethane	ND	0.0025	"							
n-Butylbenzene	ND	0.0025	"							
sec-Butylbenzene	ND	0.0025	"							
tert-Butylbenzene	ND	0.0025	"							
Carbon tetrachloride	ND	0.0025	"							
Chlorobenzene	ND	0.0025	"							
Chloroethane	ND	0.0025	"							
Chloroform	ND	0.0025	"							
Chloromethane	ND	0.0025	"							
2-Chlorotoluene	ND	0.0025	"							
4-Chlorotoluene	ND	0.0025	"							
Dibromochloromethane	ND	0.0025	"							
1,2-Dibromo-3-chloropropane	ND	0.0050	"							
1,2-Dibromoethane (EDB)	ND	0.0025	"							
Dibromomethane	ND	0.0025	"							
1,2-Dichlorobenzene	ND	0.0025	"							
1,3-Dichlorobenzene	ND	0.0025	"							
1,4-Dichlorobenzene	ND	0.0025	"							
Dichlorodifluoromethane	ND	0.0025	"							
1,1-Dichloroethane	ND	0.0025	"							
1,2-Dichloroethane	ND	0.0025	"							
1,1-Dichloroethene	ND	0.0025	"							
cis-1,2-Dichloroethene	ND	0.0025	"							
trans-1,2-Dichloroethene	ND	0.0025	"							
1,2-Dichloropropane	ND	0.0025	"							
1,3-Dichloropropane	ND	0.0025	"							
2,2-Dichloropropane	ND	0.0025	"							
1,1-Dichloropropene	ND	0.0025	"							
cis-1,3-Dichloropropene	ND	0.0025	"							
trans-1,3-Dichloropropene	ND	0.0025	"							
Hexachlorobutadiene	ND	0.0025	"							
Isopropylbenzene	ND	0.0025	"							

SunStar Laboratories, Inc.

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Jeff Lee, Project Manager

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Krazan, Clovis	Project: Shepherd North Wilson	
215 West Dakota Avenue	Project Number: 014-21021	**Reported:**
Clovis CA, 93612	Project Manager: Mike Bowery	08/24/21 12:07

Volatile Organic Compounds by EPA Method 8260B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1081927 - EPA 5030 GCMS										
Blank (1081927-BLK1)				Prepared & Analyzed: 08/19/21						
p-Isopropyltoluene	ND	0.0025	mg/kg							
Methylene chloride	ND	0.010	"							
Naphthalene	ND	0.0025	"							
n-Propylbenzene	ND	0.0025	"							
Styrene	ND	0.0025	"							
1,1,2,2-Tetrachloroethane	ND	0.0025	"							
1,1,1,2-Tetrachloroethane	ND	0.0025	"							
Tetrachloroethene	ND	0.0025	"							
1,2,3-Trichlorobenzene	ND	0.0025	"							
1,2,4-Trichlorobenzene	ND	0.0025	"							
1,1,2-Trichloroethane	ND	0.0025	"							
1,1,1-Trichloroethane	ND	0.0025	"							
Trichloroethene	ND	0.0025	"							
Trichlorofluoromethane	ND	0.0025	"							
1,2,3-Trichloropropane	ND	0.0025	"							
1,3,5-Trimethylbenzene	ND	0.0025	"							
1,2,4-Trimethylbenzene	ND	0.0025	"							
Vinyl chloride	ND	0.0025	"							
Benzene	ND	0.0025	"							
Toluene	ND	0.0025	"							
Ethylbenzene	ND	0.0025	"							
m,p-Xylene	ND	0.0050	"							
o-Xylene	ND	0.0025	"							
Surrogate: 4-Bromofluorobenzene	*0.0486*		*"*	*0.0500*		*97.1*	*75.4-139*			
Surrogate: Dibromofluoromethane	*0.0480*		*"*	*0.0500*		*96.0*	*73.1-125*			
Surrogate: Toluene-d8	*0.0500*		*"*	*0.0500*		*100*	*82.6-117*			
LCS (1081927-BS1)				Prepared & Analyzed: 08/19/21						
Chlorobenzene	0.0534	0.0025	mg/kg	0.0500		107	65.2-124			
1,1-Dichloroethene	0.0563	0.0025	"	0.0500		113	60.9-131			
Trichloroethene	0.0556	0.0025	"	0.0500		111	62.1-126			
Benzene	0.0561	0.0025	"	0.0500		112	65.3-127			
Toluene	0.0519	0.0025	"	0.0500		104	64.3-122			
Surrogate: 4-Bromofluorobenzene	*0.0497*		*"*	*0.0500*		*99.4*	*75.4-139*			
Surrogate: Dibromofluoromethane	*0.0513*		*"*	*0.0500*		*103*	*73.1-125*			
Surrogate: Toluene-d8	*0.0502*		*"*	*0.0500*		*100*	*82.6-117*			

SunStar Laboratories, Inc.

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Jeff Lee, Project Manager

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
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Krazan, Clovis	Project: Shepherd North Wilson	
215 West Dakota Avenue	Project Number: 014-21021	**Reported:**
Clovis CA, 93612	Project Manager: Mike Bowery	08/24/21 12:07

Volatile Organic Compounds by EPA Method 8260B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1081927 - EPA 5030 GCMS										
Matrix Spike (1081927-MS1)		**Source: T212562-01**		Prepared & Analyzed: 08/19/21						
Chlorobenzene	0.0406	0.0025	mg/kg	0.0494	ND	82.1	65.2-125			
1,1-Dichloroethene	0.0403	0.0025	"	0.0494	ND	81.5	60.9-131			
Trichloroethene	0.0426	0.0025	"	0.0494	ND	86.2	62.1-126			
Benzene	0.0427	0.0025	"	0.0494	ND	86.4	65.3-127			
Toluene	0.0398	0.0025	"	0.0494	ND	80.5	64.3-125			
Surrogate: 4-Bromofluorobenzene	*0.0505*		*"*	*0.0494*		*102*	*75.4-139*			
Surrogate: Dibromofluoromethane	*0.0528*		*"*	*0.0494*		*107*	*73.1-125*			
Surrogate: Toluene-d8	*0.0501*		*"*	*0.0494*		*101*	*82.6-117*			
Matrix Spike Dup (1081927-MSD1)		**Source: T212562-01**		Prepared & Analyzed: 08/19/21						
Chlorobenzene	0.0413	0.0025	mg/kg	0.0494	ND	83.5	65.2-125	1.76	20	
1,1-Dichloroethene	0.0419	0.0025	"	0.0494	ND	84.8	60.9-131	4.02	20	
Trichloroethene	0.0440	0.0025	"	0.0494	ND	89.1	62.1-126	3.31	20	
Benzene	0.0441	0.0025	"	0.0494	ND	89.2	65.3-127	3.17	20	
Toluene	0.0413	0.0025	"	0.0494	ND	83.5	64.3-125	3.66	20	
Surrogate: 4-Bromofluorobenzene	*0.0505*		*"*	*0.0494*		*102*	*75.4-139*			
Surrogate: Dibromofluoromethane	*0.0518*		*"*	*0.0494*		*105*	*73.1-125*			
Surrogate: Toluene-d8	*0.0496*		*"*	*0.0494*		*100*	*82.6-117*			

SunStar Laboratories, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jeff Lee, Project Manager

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Krazan, Clovis	Project:	Shepherd North Wilson	
215 West Dakota Avenue	Project Number:	014-21021	**Reported:**
Clovis CA, 93612	Project Manager:	Mike Bowery	08/24/21 12:07

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

SunStar Laboratories, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jeff Lee, Project Manager

Krazan & Associates, Inc. 215 W. Dakota Avenue, Clovis, CA 93612, (559) 348-2200, FAX (559) 348-2190

CHAIN-OF-CUSTODY RECORD

DATE: 08/13/21 **Lab ID:** T212545

Client:	Krazan & Associates, Inc.
Address:	215 West Dakota Avenue Clovis, CA 93612
Sampled By:	Michael Bowery David Nava
Phone:	(559) 348-2200
FAX:	(559) 348-2201
Project Manager:	Michael Bowery
Project Job:	014-21021 Shepherd North Wilson

REQUESTED ANALYSIS

	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container #	Container Type	TPH-CC 8015C	VOCs 8260B	CAM 17 Metals by 6010B/7471A	PCBs 8082	OCPs 8081A								
1	SP-1A	8/13/21	10:30	Soil	1	Sleeve	x	x	x	x	x								
2	SP-1B	8/13/21	10:32	Soil	1	Sleeve													
3	SP-1C	8/13/21	10:35	Soil	1	Sleeve													
4	SP-1D	8/13/21	10:37	Soil	1	Sleeve													
5	SP-2A	8/13/21	10:55	Soil	1	Sleeve	x	x	x	x	x								
6	SP-2B	8/13/21	10:57	Soil	1	Sleeve													
7	SP-2C	8/13/21	11:00	Soil	1	Sleeve													
8	SP-2D	8/13/21	11:02	Soil	1	Sleeve													
9																			
10																			

Correct Containers:	Yes	No	
Sample Temperature:	Ambient	Cold	Warm
Sample Preservative:	Yes	No	
Turnaround Time:	Normal	Specify:	

Comments:

Composite SP-1A, SP-1B, SP-1C, and SP-1D into one (1) sample

and

Composite SP-2A, SP-2B, SP-2C, and SP-2D into one (1) sample

RELINQUISHED BY		RECEIVED BY	
Signature:	D.N.	Signature:	
Print:	David M Nava	Print:	
Company:	Krazan & Associates	Company:	
Date:	08/16/21 Time 4:00pm	Date:	Time:
Signature:		Signature:	Paul Berner
Print:		Print:	Paul Berner
Company:	Fed Ex	Company:	SunStar Labs
Date:	8/17/21 Time: 10:44	Date:	8/17/21 Time: 10:44
Signature:		Signature:	
Print:		Print:	
Company:		Company:	
Date:	Time:	Date:	Time:

3.7°C

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

Rev. 02 Date 07/19
Receiving Form 001

SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #: T212545

Client Name: Krazan

Project: Shepherd North Wilson

Delivered by: ☐ Client ☐ SunStar Courier ☐ GLS ☑ FedEx ☐ UPS

If Courier, Received by: _____

Date/Time Courier Received: _____

Lab Received by: Paul

Date/Time Lab Received: 8/17/21 10:44

Total number of coolers received: 1 Thermometer ID: SC-1 Calibration due : 8/17/21

Temperature:	Cooler #1	3.9 °C +/- the CF (-0.2°C) =	3.7 °C	corrected temperature
Temperature:	Cooler #2	°C +/- the CF (-0.2°C) =	°C	corrected temperature
Temperature:	Cooler #3	°C +/- the CF (-0.2°C) =	°C	corrected temperature

Temperature criteria = ≤ 6°C (no frozen containers)	Within criteria?	☑ **Yes** ☐ **No** ☐ **N/A**
If NO:		
Samples received on ice?	☐ Yes	☐ **No → Complete Non-Conformance Sheet**
If on ice, samples received same day collected?	☐ Yes → Acceptable	☐ **No → Complete Non-Conformance Sheet**

Custody seals intact on cooler/sample	☐ Yes	☐ No*	☑ N/A
Sample containers intact	☑ Yes	☐ No*	
Sample labels match Chain of Custody IDs	☑ Yes	☐ No*	
Total number of containers received match COC	☑ Yes	☐ No*	
Proper containers received for analyses requested on COC	☑ Yes	☐ No*	
Proper preservative indicated on COC/containers for analyses requested	☐ Yes	☐ No*	☑ N/A
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times	☑ **Yes**	☐ **No***	

* Complete Non-Conformance Receiving Sheet if checked

Cooler/Sample Review - Initials and date: PB 8/17/21

Comments:

(949) 297-5020 ■ www.sunstarlabs.com ■ 25712 Commercentre Drive ■ Lake Forest, CA 92630

WORK ORDER

Printed: 8/17/2021 1:07:51PM

T212545

SunStar Laboratories, Inc.

Client: **Krazan, Clovis**
Project: **Shepherd North Wilson**

Project Manager: **Jeff Lee**
Project Number: **014-21021**

Report To:
Krazan, Clovis
Mike Bowery
215 West Dakota Avenue
Clovis, CA 93612
Phone: (559) 862-6144
Fax: (559) 348-2190

Invoice To:
Krazan, Clovis
Mike Bowery
215 West Dakota Avenue
Clovis, CA 93612
Phone :(559) 862-6144
Fax: (559) 348-2190

Date Due:	08/24/21 17:00 (5 day TAT)		
Received By:	Paul Berner	Date Received:	08/17/21 10:44
Logged In By:	Jennifer Berger	Date Logged In:	08/17/21 11:58

Samples Received at:	**3.7°C**		
Custody Seals	No	Received On Ice	Yes
Containers Intact	Yes		
COC/Labels Agree	Yes		
Preservation Confirı	Yes		

Analysis	Due	TAT	Expires	Comments

T212545-01 SP-1A [Soil] Sampled 08/13/21 10:30 (GMT-08:00) Pacific Time (US &

[NO ANALYSES]

T212545-02 SP-1B [Soil] Sampled 08/13/21 10:32 (GMT-08:00) Pacific Time (US &

[NO ANALYSES]

T212545-03 SP-1C [Soil] Sampled 08/13/21 10:35 (GMT-08:00) Pacific Time (US &

[NO ANALYSES]

T212545-04 SP-1D [Soil] Sampled 08/13/21 10:37 (GMT-08:00) Pacific Time (US &

[NO ANALYSES]

T212545-05 SP-2A [Soil] Sampled 08/13/21 10:55 (GMT-08:00) Pacific Time (US &

[NO ANALYSES]

T212545-06 SP-2B [Soil] Sampled 08/13/21 10:57 (GMT-08:00) Pacific Time (US &

[NO ANALYSES]

T212545-07 SP-2C [Soil] Sampled 08/13/21 11:00 (GMT-08:00) Pacific Time (US &

[NO ANALYSES]

T212545

SunStar Laboratories, Inc.

Client: Krazan, Clovis
Project: Shepherd North Wilson
Project Manager: Jeff Lee
Project Number: 014-21021

Analysis	Due	TAT	Expires	Comments
T212545-08 SP-2D [Soil] Sampled 08/13/21 11:02 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T212545-09 Composite 4:1 SP-1A - SP-1D [Soil] Sampled 08/13/21 10:30 (GMT-08:00) Pacific Time (US &				**Composite samples SP-1A, SP-1B, SP-1C, SP-1D # 1,2,3,4**
8260	08/24/21 15:00	5	08/27/21 10:30	
8082 PCB	08/24/21 15:00	5	08/27/21 10:30	
6010 Title 22	08/24/21 15:00	5	02/09/22 10:30	
8081 Pesticides	08/24/21 15:00	5	08/27/21 10:30	
8015 Carbon Chain	08/24/21 15:00	5	08/27/21 10:30	
T212545-10 Composite 4:1 SP-2A - SP-2D [Soil] Sampled 08/13/21 10:55 (GMT-08:00) Pacific Time (US &				**Composite samples SP-2A, SP-2B, SP-2C, SP-2D # 5,6,7,8**
8082 PCB	08/24/21 15:00	5	08/27/21 10:55	
6010 Title 22	08/24/21 15:00	5	02/09/22 10:55	
8081 Pesticides	08/24/21 15:00	5	08/27/21 10:55	
8260	08/24/21 15:00	5	08/27/21 10:55	
8015 Carbon Chain	08/24/21 15:00	5	08/27/21 10:55	

Analysis groups included in this work order

6010 Title 22

subgroup 6010B T22 7470/71 Hg

Reviewed By

Date

Appendix B

Professional Utility Locating Services, LLC

Project No. #

Mr. Michael Bowery
Krazan & Associates, Inc.
Clovis, California 93612

Re: Limited Geophysical Survey
Shepherd North Properties Phase II
Fresno, CA

Dear Mr. Bowery,

Pursuant to your request, Professional Utility Locating Services, LLC (PULS) has conducted a limited geophysical survey (LGS) at the above-referenced property (project site). The work was based upon direction from Mr. Michael Bowery with Krazan and Associates, Inc. (client).

SITE LOCATION

The project site is located at Fresno, CA

METHODOLOGY

Geophysical equipment is considered state-of-the-art technology that is effective within certain limitations for the investigation of buried features such as septic tanks, fuel bunkers, underground storage tanks (USTs) and/or piping. The geophysical equipment utilized during the course of this investigation included the following:

Subsite Electronics 2550GR Ground Penetrating Radar System (GPR)

GPR surveys are conducted in a grid-like pattern across the target area where data is collected in parallel transects. GPR works by sending a pulse of energy into a material and recording the strength and the time required for the return of any reflected energy pulse. Reflections are produced whenever the energy pulse enters into a material with different electrical conduction properties or dielectric permittivity from the material it left. The strength, or amplitude, of the reflection is determined by the contrast in the dielectric constants and conductivities of the two materials. A receiving antenna receives the subsurface reflection which is than processed by computer software and a screen image is produced. Different reflection characteristics represent different subsurface features/structures. For example, the reflective signature of a buried pipe or buried conduit will produce an image that is different than that of a backfilled excavation or trench.

Schonstedt GA-52C Magnetometer

A magnetometer survey is conducted by "sweeping" the magnetometer in a back-and-forth motion across the surface of the target area. The magnetometer detects the presence of ferromagnetic materials by producing a variable audible response directly proportional to the strength of the detected magnetic field.

Professional Utility Locating Services, LLC

Ditch Witch 970T Line Locator

A line locator is utilized to trace the location of a buried utility with the capability of carrying an electrical current across the surface of the target area. The line locator consists of a transmitter and hand-held receiver. The transmitter is attached to the above-ground portion of an underground utility and an electrical current is transmitted along the buried utility line. The hand-held receiver detects the strength of the electrical current along a buried utility line.

PURPOSE

The purpose of this LGS was to assess the presence or absence of subsurface features indicative of USTs, backfilled excavations and to "clear" soil boring locations from subsurface objects/features.

SCOPE OF WORK

The scope of work consisted of making multiple transects in a grid-like pattern across the surface of the project site property with GPR and a magnetometer. LGS-identified anomalies were marked on the surface of the project site utilizing marker paint. Screen images of subsurface detected anomalies were then saved on the computer and photographs were taken of the surface of the project site in the location of the LGS-identified subsurface anomalies.

FINDINGS

Ground Penetrating Radar

On July 28, 2021 use of GPR identified the following result: GPR was also used on Property to detect any possible UST locations. The same location detected by the Schonstedt produced a screen image typical of a UST. See phone location and screen shot. In addition, due to indication of object being shallow in nature, a small pothole was made approximately 18" deep and metal surface was observed.

Magnetometer

On July 28, 2021, Magnetometer detected the following: Various small ferrous objects were detected, not indicating UST presence. There was on indicating
large ferrous metal object. See Photo for locating.

Limitations

The limited geophysical survey equipment is considered a state-of-the-art technology that is effective within certain limitations for the investigation of buried features such as septic tanks, fuel bunkers, USTs, and/or piping. In uncommon or atypical cases where bunkers or tanks are buried at depths greater than two feet below ground surface and/or which may be covered by layers of pavement cumulatively in excess of two (2) to four

Professional Utility Locating Services, LLC

(4) inches in thickness, rock, gravel or aggregate layers, dense (clayey) soils, or other surface or subsurface metallic objects (such as motor vehicles, fencing, piping, conduit or rebar) that can interfere with the electrical transmission/reception of the equipment, the equipment's technical capabilities can be exceeded to a degree where the presence of a UST or other metallic feature could not be detected. No guarantee is made or implied that the geophysical survey will detect suspected metallic features under uncommon or atypical circumstances as described above, or that the discovery of underground piping or conduit commonly found underlying commercial properties in and of itself is evidence of the presence of USTs. It should be understood that the location of subsurface objects and utilities is dependent upon the recognition of physical phenomena at the ground surface. These phenomena can be magnetic fields or electromagnetic waves that give rise to a surface expression which in turn is interpreted as representative of subsurface objects. These waves, however, may be attenuated and/or distorted by a number of factors, including soil moisture, corrosion, and proximity to other surface and subsurface facilities.

The findings presented herewith are based on professional interpretation using state of the art methods and equipment and a degree of conservatism deemed proper as of this report date. It is not warranted that such data cannot be superseded by future environmental, geotechnical or technical developments.

This assessment and report were authorized by and prepared for the exclusive use of our client. Unauthorized use of or reliance on the information contained in this report without the express written consent of Professional Utility Locating Services, LLC is strictly prohibited.

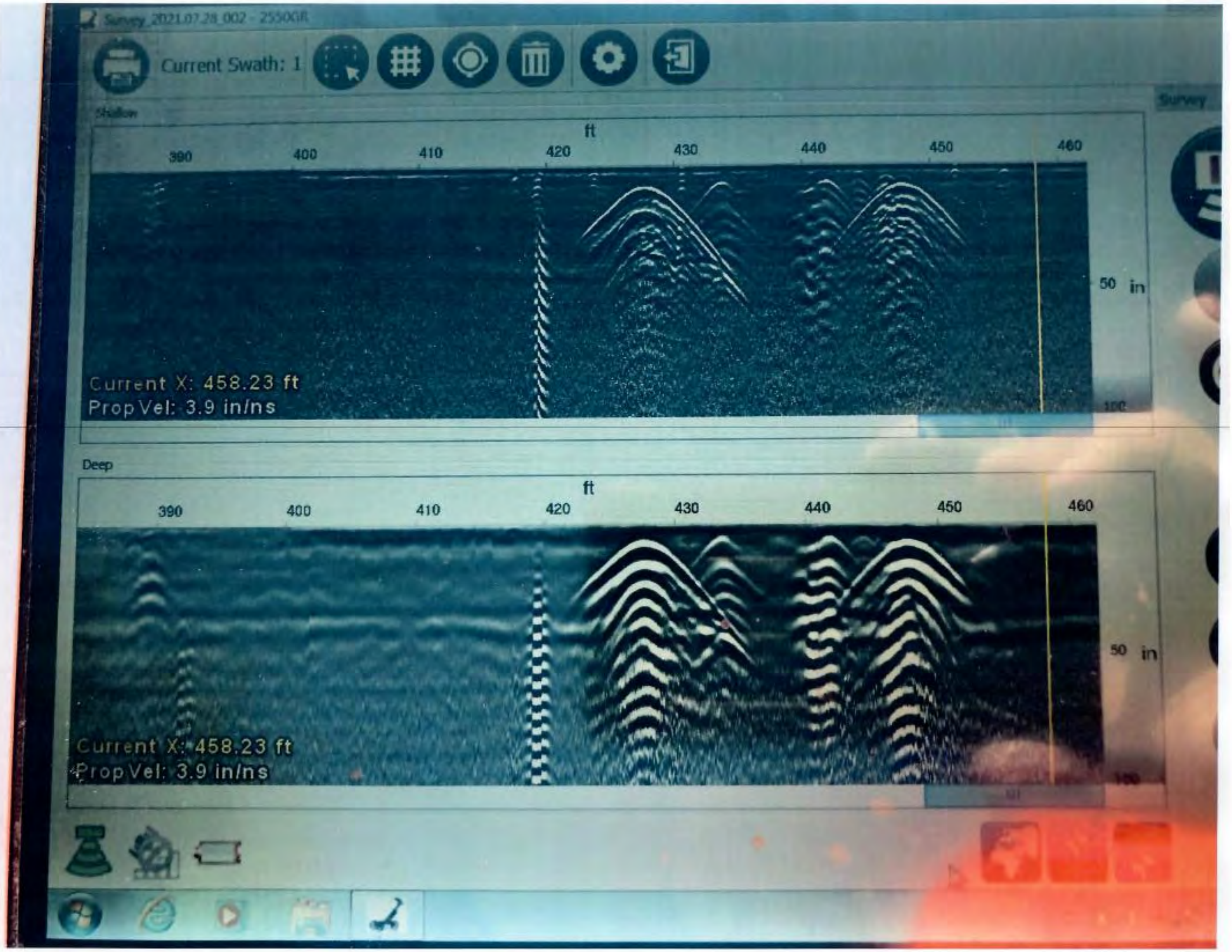
CLOSING

We appreciate the opportunity to be of service to Krazan and Associates, Inc. If you have any further questions, please feel free to contact me at 559-897-3511.

Respectfully submitted,

Tom Woods

Tom Woods


Survey_2021.07.28_002 - 2550GR
Current Swath: 1
Shallow
ft
390
400
410
420
430
440
450
460
50 in
Current X: 458.23 ft
Prop Vel: 3.9 in/ns
Deep
ft
390
400
410
420
430
440
450
460
50 in
Current X: 458.23 ft
Prop Vel: 3.9 in/ns

Appendix H

Noise

Vista Ranch Project
Noise Impact Study
City of Clovis, CA

Prepared for:

De Novo Planning Group
180 East Main St. #108
Tustin, CA 92780

Prepared by:

MD Acoustics, LLC
Claire Pincock, INCE-USA
Rachel Edelman
1197 Los Angeles Avenue, Ste 256
Simi Valley, CA 93065

Date: 4/18/2024

TABLE OF CONTENTS

1.0 Introduction 1
1.1 Purpose of Analysis and Study Objectives 1
1.2 Site Location and Study Area 1
1.3 Proposed Project Description 1

2.0 Fundamentals of Noise 8
2.1 Sound, Noise and Acoustics 8
2.2 Frequency and Hertz 8
2.3 Sound Pressure Levels and Decibels 8
2.4 Addition of Decibels 8
2.5 Human Response to Changes in Noise Levels 9
2.6 Noise Descriptors 9
2.7 Traffic Noise Prediction 10
2.8 Sound Propagation 10

3.0 Ground-Borne Vibration Fundamentals 12
3.1 Vibration Descriptors 12
3.2 Vibration Perception 12
3.3 Vibration Propagation 12

4.0 Regulatory Setting 13
4.1 Federal Regulations 13
4.2 State Regulations 13
4.3 City of Clovis Noise Regulations 14
4.4 County of Fresno Noise Regulations 20

5.0 Study Method and Procedure 24
5.1 Noise Measurement Procedure and Criteria 24
5.2 Noise Measurement Locations 24
5.3 FHWA Traffic Noise Prediction Model 24
5.4 FHWA Roadway Construction Noise Model 26

6.0 Existing Noise Environment 28
6.1 Short-Term Noise Measurement Results 28
6.2 Airport Noise Contours 28

7.0 Future Noise Environment Impacts 29
7.1 Future Exterior Noise 29
7.1.1 Noise Impacts to Off-Site Receptors Due to Project Generated Traffic 29
7.1.2 Noise Impacts to On-Site Receptors Due to Project Generated Traffic 32

8.0 Construction Noise Impact 33
8.1 Construction Noise 33
8.2 Construction Vibration 34

8.3 Construction Noise Reduction Policies 35

9.0 References 36

LIST OF APPENDICES

Appendix A: Photographs and Field Measurement Data 1

Appendix B: Traffic Noise Modeling Output 2

Appendix C: Construction Noise Modeling Output 3

LIST OF EXHIBITS

Exhibit A: Location Map 3

Exhibit B: Existing County Land Use and Zoning 4

Exhibit C: Existing City Land Use and Zoning 5

Exhibit D: Proposed General Plan Land Use Designations 6

Exhibit E: Master Plan Zoning 7

Exhibit F: Typical A-Weighted Noise Levels 8

Exhibit G: Land Use and Noise Compatibility Matrix 14

Exhibit H: Measurement Locations 27

LIST OF TABLES

Table 1: Roadway Noise Modeling Parameters 25

Table 2: Roadway Vehicle Distribution (Truck Mix) 26

Table 3: Short-Term Noise Measurement Data[1] 28

Table 4: Existing Scenario - Noise Levels Along Roadways (dBA CNEL) 29

Table 5: Cumulative Scenario - Noise Levels Along Roadways (dBA CNEL) 30

Table 6: Typical Construction Equipment Noise Levels[1] 33

Table 7: Guideline Vibration Damage Potential Threshold Criteria 34

Table 8: Vibration Source Levels for Construction Equipment 35

1.0 Introduction

1.1 Purpose of Analysis and Study Objectives

The purpose of this noise impact study is to evaluate the potential noise impacts for the project study area and compare results to City and CEQA thresholds. The assessment was conducted and compared to the noise standards set forth by the Federal, State, and Local agencies. Consistent with the California Environmental Quality Act (CEQA) and CEQA Guidelines, a significant impact related to noise would occur if a proposed project is determined to result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable agencies.
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the Project.
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the Project.

The following is provided in this report:

- A description of the study area and the proposed Project
- Information regarding the fundamentals of noise
- A description of the local noise guidelines and standards
- An evaluation of the existing ambient noise environment
- An analysis of the traffic noise impacts to the project site
- An evaluation of the interior noise limit compliance
- Construction noise and vibration evaluation

1.2 Site Location and Study Area

The Project site is located directly north of the City of Clovis limit line, in unincorporated Fresno County. The Project site consists of approximately 952 acres located within the City's Planning Area and is bounded on the north by East Behymer Avenue, on the east by the Big Dry Creek Reservoir, on the south by East Shepherd and East Perrin Avenues, and on the west by North Fowler and North Sunnyside Avenues. The Project site is located within portions of Sections 21, 22, and 23 of Township 12 South, Range 21 East, Mount Diablo Base and Meridian (MDBM). Exhibit A shows the Project location.

1.3 Proposed Project Description

The Project site is currently located in Fresno County. Exhibit B identifies the existing Fresno County land use designations and zoning for the Project site and surrounding aera. The City of Clovis General

Plan was adopted on August 25, 2014. Exhibit C depicts the existing land use designations for the Project site and the surrounding areas under the adopted City of Clovis General Plan. The Project area includes the approximately 507-acre Vista Ranch Master Plan and the approximately 445-acre Non-Development Area, as described below.

Vista Ranch Master Plan (Master Plan): Includes approximately 507 acres located entirely within the Project Area. The Master Plan contemplates the construction of up to 3,286 residential units, approximately 48 acres of commercial/mixed-uses, approximately 19 acres for an elementary school site, and approximately 57 acres of parks, trails and open space. The Master Plan is divided into two distinct planning areas, as further defined below: (1) MPArea1, an approximately 368-acre area proposed for immediate development, and (2) MPArea2, the remaining approximately 139 acres that is anticipated for future development.

- **MPArea 1 (Development Area):** MPArea 1 includes approximately 368 acres proposed to be developed by Wilson Premier Homes, Inc. A majority of the Development Area has been planned for urban uses and is included in the area designated as the Northeast Urban Center in the City's 1993 General Plan and subsequent General Plan updates. Consistent with that vision, the approximately 368-acre Development Area would consist of a mix of urban uses, including 2,500 to 2,718 residential units, non-residential uses for future gateway neighborhood commercial uses and community recreational facilities up to 133,000 square feet in size, and approximately 43 acres of parks, trails and open space. The Development Area would have a full project-level analysis in the environmental impact report (EIR), considering all entitlements necessary for development in the near term.
- **MPArea 2:** MPArea 2 includes approximately 139 acres controlled by several property owners within the Master Plan. MPArea 2 also plans for a mix of urban uses as part of the Northeast Urban Center under the City's 1993 General Plan and subsequent General Plan updates. MPArea 2 is anticipated to have a programmatic-level analysis in the EIR. Future development of MPArea 2 is at the discretion of the property owners and subject to project-level analysis.

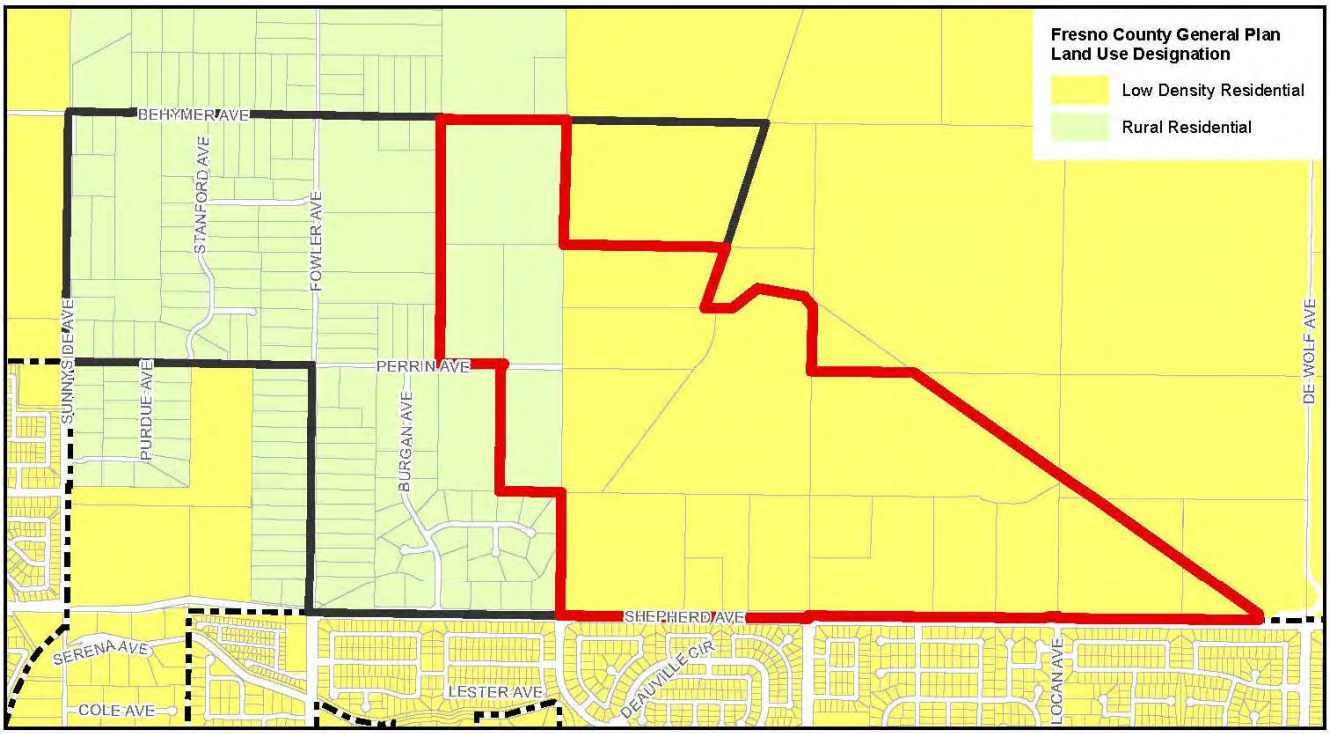
Non-Development Area: The Non-Development Area includes approximately 445 acres that have not requested, nor would receive, any entitlements other than to be included in the SOI expansion. The Non-Development Area is anticipated to have a programmatic-level analysis in the EIR.

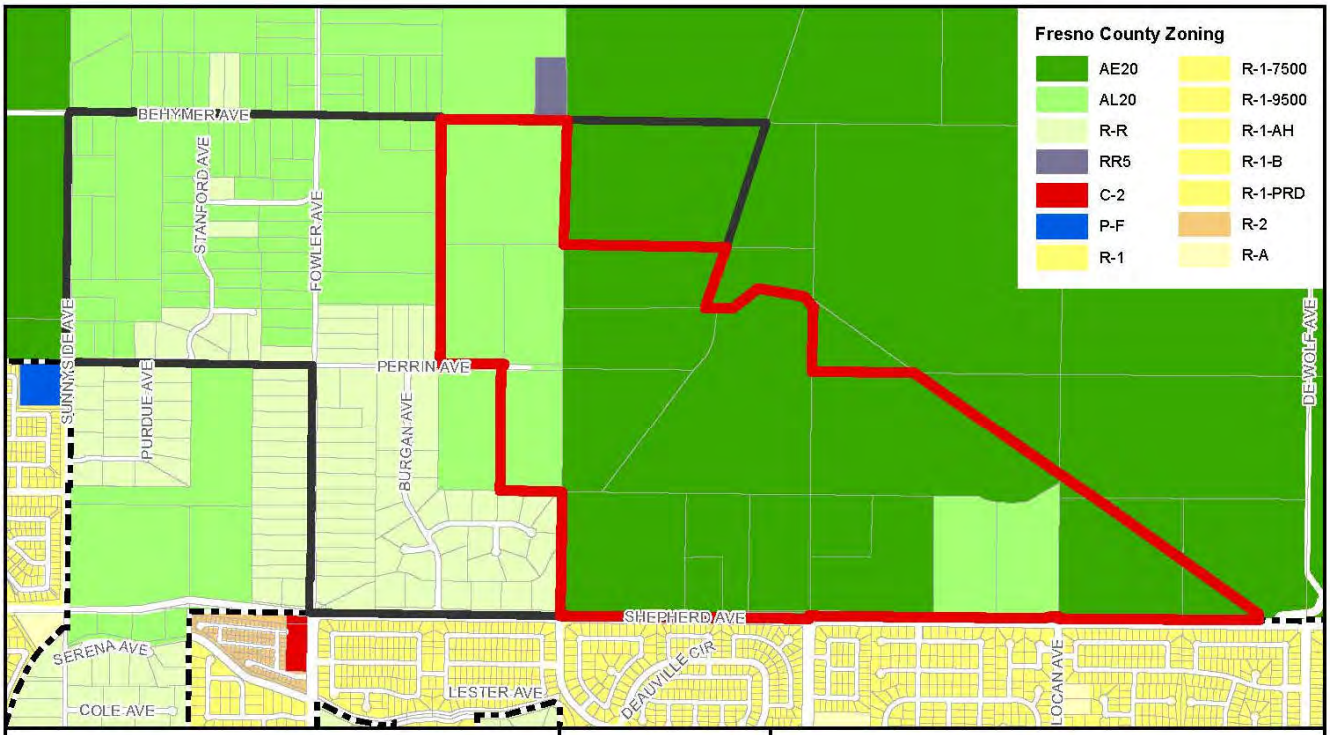
Exhibit D shows the proposed general plan land use designations, and Exhibit E shows the proposed Master Plan zoning.

Exhibit A

General Plan Update Study Area

Exhibit B
Existing County Land Use and Zoning





LEGEND

- Master Plan Area
- SOI Expansion Area
- Clovis City Limits

N

0 500 1,000
US Feet

SOI Expansion Vista Ranch

Figure 2.0-6. Existing County Land Use and Zoning

Sources: City of Clovis, Fresno County GIS Map date: January 26, 2024

De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm

Exhibit C

Existing City Land Use Designations

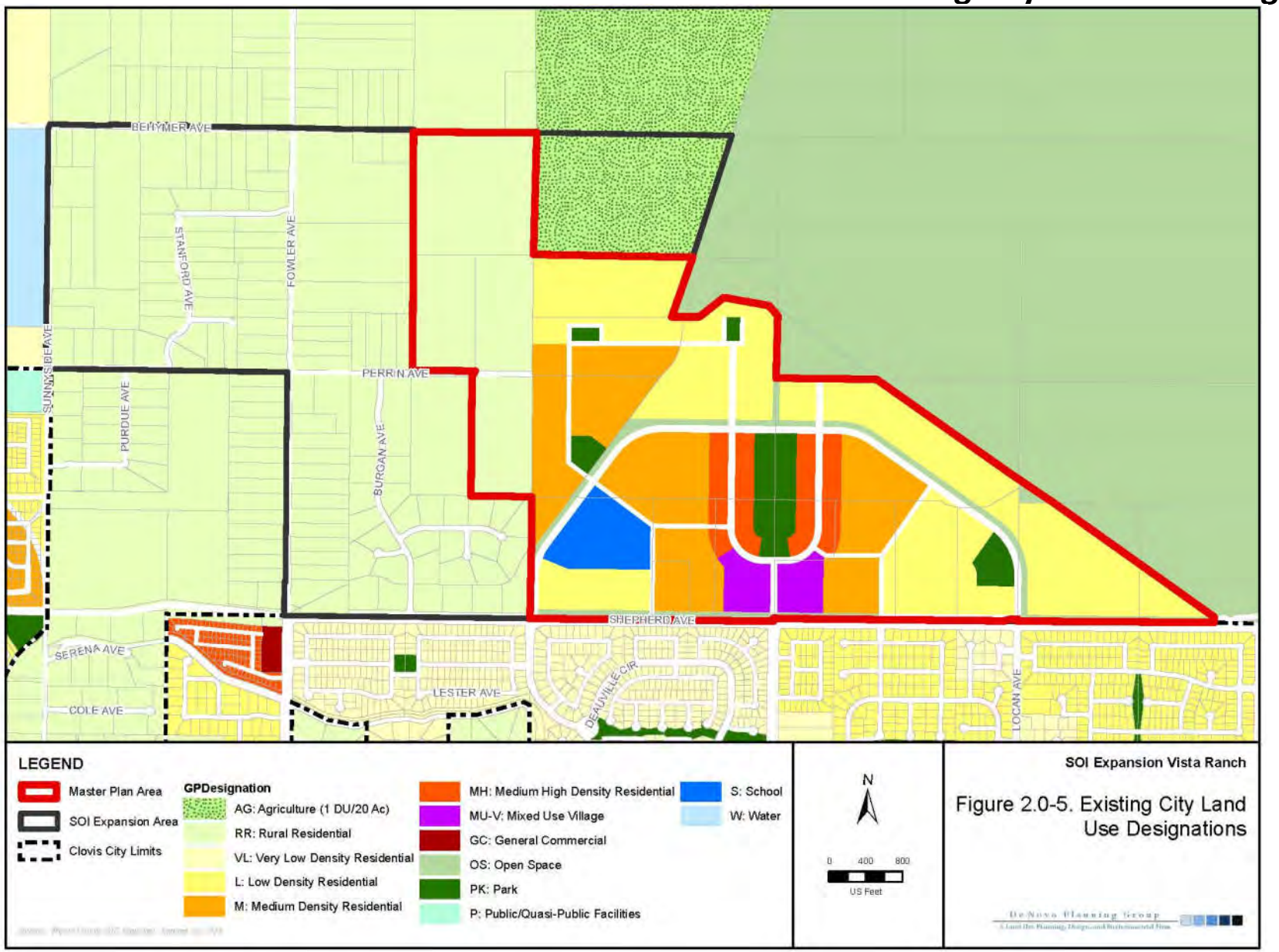


Exhibit D

Proposed General Plan Land Use Designations

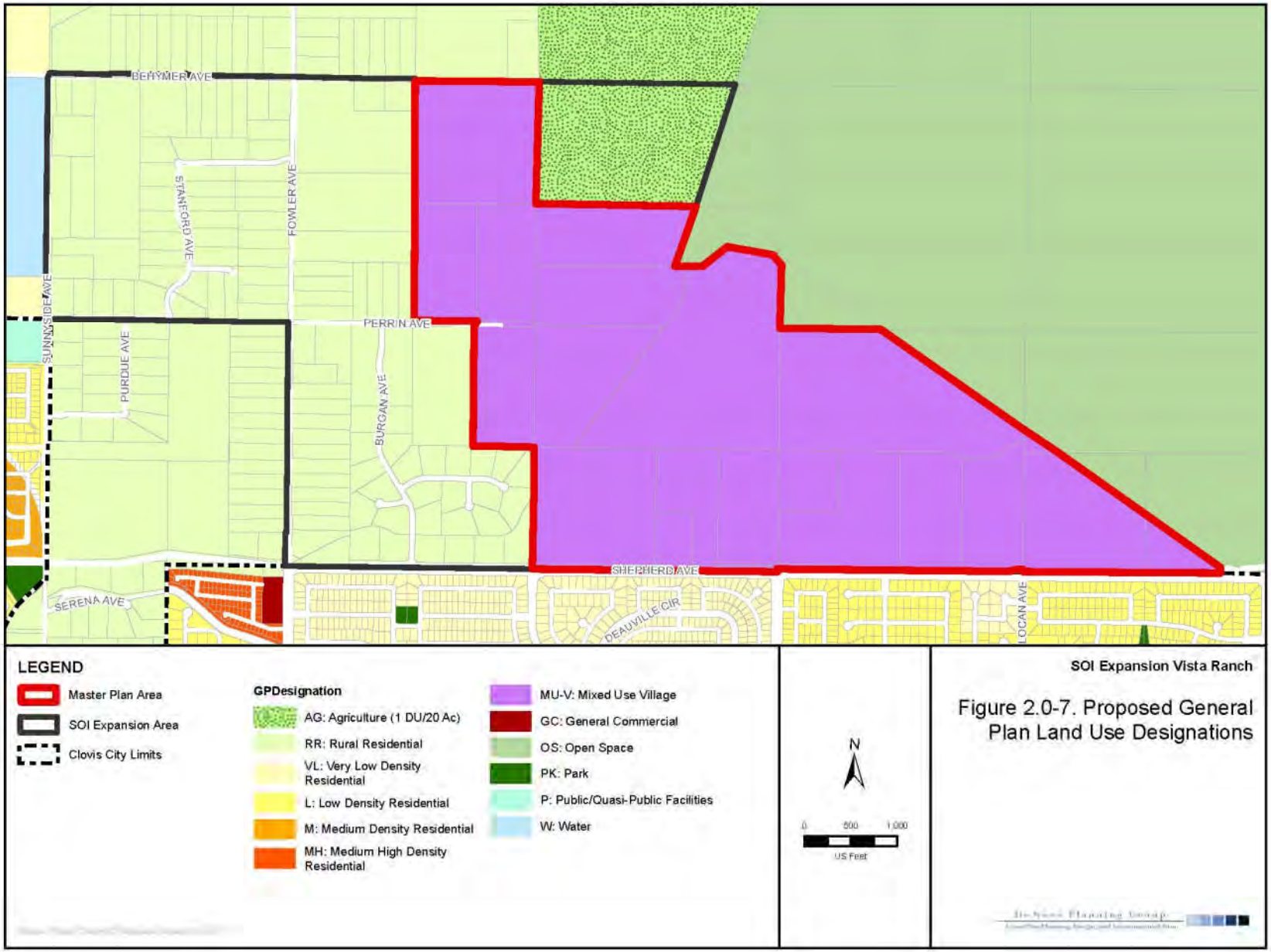
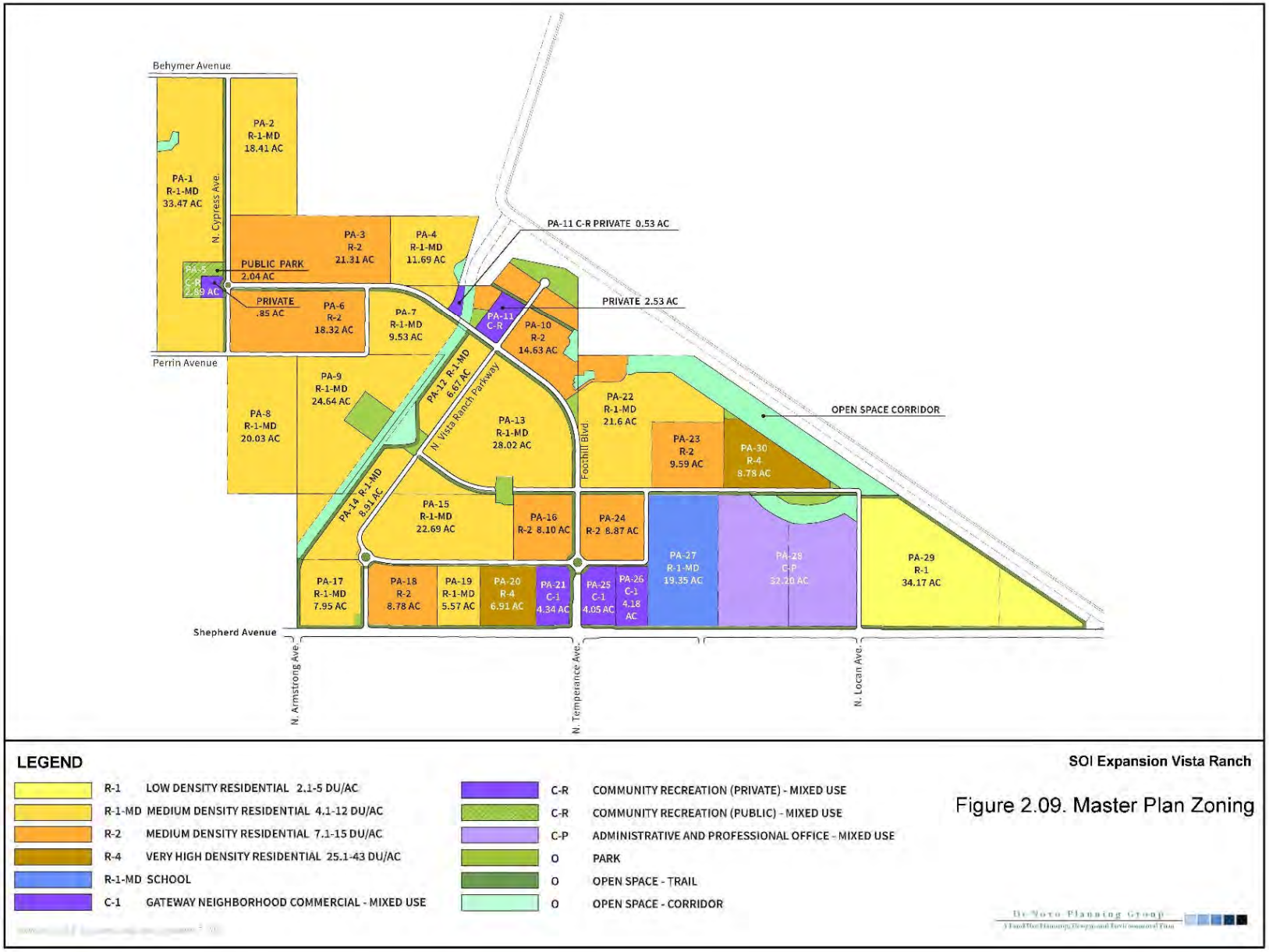


Exhibit E

Master Plan Zoning



2.0 Fundamentals of Noise

This section of the report provides basic information about noise and presents some of the terms used in the report.

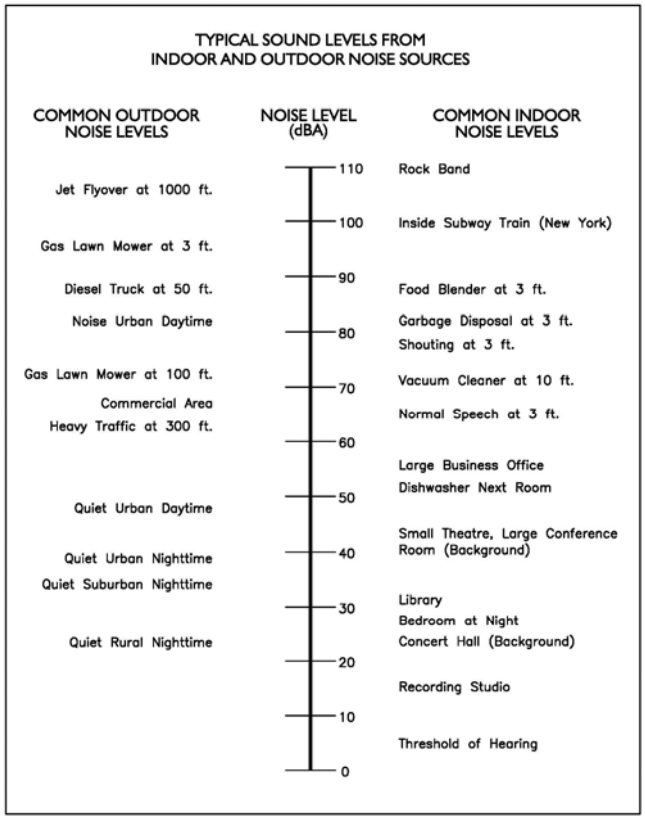
2.1 Sound, Noise and Acoustics

Sound is a disturbance created by a moving or vibrating source and is capable of being detected by the hearing organs. Sound may be thought of as mechanical energy of a moving object transmitted by pressure waves through a medium to a human ear. For traffic or stationary noise, the medium of concern is air. *Noise* is defined as sound that is loud, unpleasant, unexpected, or unwanted.

2.2 Frequency and Hertz

A continuous sound is described by its *frequency* (pitch) and its *amplitude* (loudness). Frequency relates to the number of pressure oscillations per second. Low-frequency sounds are low in pitch (bass sounding) and high-frequency sounds are high in pitch (squeak). These oscillations per second (cycles) are commonly referred to as Hertz (Hz). The human ear can hear from the bass pitch starting out at 20 Hz all the way to the high pitch of 20,000 Hz.

Exhibit F: Typical A-Weighted Noise Levels



2.3 Sound Pressure Levels and Decibels

The *amplitude* of a sound determines its loudness. The loudness of sound increases or decreases as the amplitude increases or decreases. Sound pressure amplitude is measured in units of micro-Newton per square inch meter ($\mu N/m^2$), also called micro-Pascal (µPa). One µPa is approximately one hundred billionths (0.00000000001) of normal atmospheric pressure. Sound pressure level (SPL or L_p) is used to describe in logarithmic units the ratio of actual sound pressures to a reference pressure squared. These units are called decibels, abbreviated dB. Exhibit C illustrates references sound levels for different noise sources.

2.4 Addition of Decibels

Because decibels are on a logarithmic scale, sound pressure levels cannot be added or subtracted by simple plus or minus addition. When two sounds or equal SPL are combined, they will produce an SPL 3 dB greater than the original single SPL. In other words, sound energy must be doubled to produce a 3 dB increase. If two sounds differ by approximately 10 dB, the higher sound level is the predominant sound.

2.5 Human Response to Changes in Noise Levels

In general, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz, and it perceives a sound within that range as being more intense than a sound with a higher or lower frequency with the same magnitude. For purposes of this report as well as with most environmental documents, the A-scale weighting is typically reported in terms of A-weighted decibel (dBA), a scale designed to account for the frequency-dependent sensitivity of the ear. Typically, the human ear can barely perceive a change in noise level of 3 dB. A change in 5 dB is readily perceptible, and a change in 10 dB is perceived as being twice or half as loud. As previously discussed, a doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound energy (e.g., doubling the volume of traffic on a highway) would result in a barely perceptible change in sound level.

2.6 Noise Descriptors

Noise in our daily environment fluctuates over time. Some noise levels occur in regular patterns; others are random. Some noise levels are constant while others are sporadic. Noise descriptors were created to describe the different time-varying noise levels.

A-Weighted Sound Level: The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high-frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

Ambient Noise Level: The composite of noise from all sources, near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Community Noise Equivalent Level (CNEL): The average equivalent A-weighted sound level during a 24-hour day, obtained after the addition of five (5) decibels to sound levels in the evening from 7:00 to 10:00 PM and after the addition of ten (10) decibels to sound levels in the night before 7:00 AM and after 10:00 PM.

Decibel (dB): A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A): A-weighted sound level (see definition above).

Equivalent Sound Level (LEQ): The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time-varying noise level. The energy average noise level during the sample period.

Habitable Room: Any room meeting the requirements of the Uniform Building Code or other applicable regulations, which is intended to be used for sleeping, living, cooking, or dining purposes, excluding such enclosed spaces as closets, pantries, bath or toilet rooms, service rooms, connecting corridors, laundries, unfinished attics, foyers, storage spaces, cellars, utility rooms, and similar spaces.

L(n): The A-weighted sound level exceeded during a certain percentage of the sample time. For example, L10 in the sound level exceeded 10 percent of the sample time. Similarly L50, L90, and L99, etc.

Noise: *A*ny unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

Outdoor Living Area: Outdoor spaces that are associated with residential land uses typically used for passive recreational activities or other noise-sensitive uses. Such spaces include patio areas, barbecue areas, jacuzzi areas, etc. associated with residential uses; outdoor patient recovery or resting areas associated with hospitals, convalescent hospitals, or rest homes; outdoor areas associated with places of worship which have a significant role in services or other noise-sensitive activities; and outdoor school facilities routinely used for educational purposes which may be adversely impacted by noise. Outdoor areas usually not included in this definition are: front yard areas, driveways, greenbelts, maintenance areas and storage areas associated with residential land uses; exterior areas at hospitals that are not used for patient activities; outdoor areas associated with places of worship and principally used for short-term social gatherings; and, outdoor areas associated with school facilities that are not typically associated with educational uses prone to adverse noise impacts (for example, school play yard areas).

Percent Noise Levels: See L(n).

Sound Level (Noise Level): The weighted sound pressure level obtained by use of a sound level meter having a standard frequency filter for attenuating part of the sound spectrum.

Sound Level Meter: An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

Single Event Noise Exposure Level (SENEL): The dB(A) level which, if it lasted for one second, would produce the same A-weighted sound energy as the actual event.

2.7 Traffic Noise Prediction

Noise levels associated with traffic depends on a variety of factors: (1) volume of traffic, (2) speed of traffic, (3) auto, medium truck (2–3 axle) and heavy truck percentage (4 axle and greater), and sound propagation. The greater the volume of traffic, higher speeds and truck percentages equate to a louder volume in noise. A doubling of the Average Daily Traffic (ADT) along a roadway will increase noise levels by approximately 3 dB; reasons for this are discussed in the sections above.

2.8 Sound Propagation

As sound propagates from a source, it spreads geometrically. Sound from a small, localized source (i.e., a point source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates at a rate of 6 dB per doubling of distance. The movement of vehicles down a roadway makes the source of the sound appear to propagate from a line (i.e., line source) rather than a point source. This line source results in the noise propagating from a roadway in a cylindrical spreading versus a spherical spreading that results from a point source. The sound level attenuates for a line source at a rate of 3 dB per doubling of distance.

As noise propagates from the source, it is affected by the ground and atmosphere. Noise models use hard site (reflective surfaces) and soft site (absorptive surfaces) to help calculate predicted noise levels. Hard site conditions assume no excessive ground absorption between the noise source and the

receiver. Soft site conditions such as grass, soft dirt or landscaping attenuate noise at a rate of 1.5 dB per doubling of distance. When added to the geometric spreading, the excess ground attenuation results in an overall noise attenuation of 4.5 dB per doubling of distance for a line source and 7.5 dB per doubling of distance for a point source.

Research has demonstrated that atmospheric conditions can have a significant effect on noise levels when noise receivers are located 200 feet from a noise source. Wind, temperature, air humidity, and turbulence can further impact have far sound can travel.

3.0 Ground-Borne Vibration Fundamentals

3.1 Vibration Descriptors

Ground-borne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. The effects of ground-borne vibrations typically only cause a nuisance to people, but at extreme vibration levels, damage to buildings may occur. Although ground-borne vibration can be felt outdoors, it is typically only an annoyance to people indoors, where the associated effects of the shaking of a building can be notable. Ground-borne noise is an effect of ground-borne vibration and only exists indoors since it is produced from noise radiated from the motion of the walls and floors of a room and may also consist of the rattling of windows or dishes on shelves.

Several different methods are used to quantify vibration amplitude.

PPV – Known as the peak particle velocity (PPV), which is the maximum instantaneous peak in vibration velocity, typically given in inches per second.

RMS – Known as root mean squared (RMS) can be used to denote vibration amplitude

VdB – A commonly used abbreviation to describe the vibration level (VdB) for a vibration source.

3.2 Vibration Perception

Typically, developed areas are continuously affected by vibration velocities of 50 VdB or lower. These continuous vibrations are not noticeable to humans, whose threshold of perception is around 65 VdB. Outdoor sources that may produce perceptible vibrations are usually caused by construction equipment, steel-wheeled trains, and traffic on rough roads, while smooth roads rarely produce perceptible ground-borne noise or vibration. To counter the effects of ground-borne vibration, the Federal Transit Administration (FTA) has published guidance relative to vibration impacts. According to the FTA, fragile buildings can be exposed to ground-borne vibration levels of 0.3 inches per second without experiencing structural damage.

3.3 Vibration Propagation

There are three main types of vibration propagation: surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wavefront, similar to ripples produced by throwing a rock into a pool of water. P-waves, or compression waves, are body waves that carry their energy along an expanding spherical wavefront. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wavefront. However, unlike P-waves, the particle motion is transverse, or side-to-side and perpendicular to the direction of propagation.

As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil but has been shown to be effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests.

4.0 Regulatory Setting

The proposed Project is located within the City of Clovis, California and noise regulations are addressed through the efforts of various federal, state and local government agencies. The agencies responsible for regulating noise are discussed below.

4.1 Federal Regulations

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves three purposes:

- Publicize noise emission standards for interstate commerce
- Assist state and local abatement efforts
- Promote noise education and research

The Federal Office of Noise Abatement and Control (ONAC) originally was tasked with implementing the Noise Control Act. However, it was eventually eliminated leaving other federal agencies and committees to develop noise policies and programs. Some examples of these agencies are as follows: The Department of Transportation (DOT) assumed a significant role in noise control through its various agencies. The Federal Aviation Agency (FAA) is responsible for regulating noise from aircraft and airports. The Federal Highway Administration (FHWA) is responsible for regulating noise from the interstate highway system. The Occupational Safety and Health Administration (OSHA) is responsible for the prohibition of excessive noise exposure to workers. The Housing and Urban Development (HUD) is responsible for establishing noise regulations as it relates to exterior/interior noise levels for new HUD-assisted housing developments near high noise areas.

The federal government advocates that local jurisdictions use their land use regulatory authority to arrange new development in such a way that "noise sensitive" uses are either prohibited from being constructed adjacent to a highway, or alternatively that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Since the federal government has preempted the setting of standards for noise levels that can be emitted by the transportation source, the City is restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning.

4.2 State Regulations

Established in 1973, the California Department of Health Services Office of Noise Control (ONC) was instrumental in developing regularity tools to control and abate noise for use by local agencies. One significant model is the "Land Use Compatibility for Community Noise Environments Matrix." The matrix allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise.

The State of California has established noise insulation standards as outlined in Title 24, the California Building Code (CBC) which in some cases requires acoustical analyses to outline exterior noise levels and to ensure interior noise levels do not exceed the interior threshold. The State mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general

plan. The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services.

4.3 City of Clovis Noise Regulations

The City of Clovis outlines their noise regulations and standards within the General Plan Environmental Safety Element and the Noise Ordinance from the Municipal Code.

City of Clovis General Plan

Applicable policies and standards governing environmental noise in the City are set forth in the General Plan Environmental Safety Element. The guidelines rank noise land use compatibility in terms of clearly compatible, normally compatible, normally incompatible, and clearly incompatible as illustrated in Exhibit G.

Exhibit G: Land Use and Noise Compatibility Matrix

LAND USES	ENERGY AVERAGE (CNEL)						
Example Land Uses	**<**	**55**	**60**	**65**	**70**	**75**	**80>**
Amphitheater, concert hall, auditorium, meeting hall	B	B	C	C	D	D	D
Mobile home	A	A	B	C	C	D	D
Hospital, library, school, faith/religious uses	A	A	B	C	C	D	D
Hotel, motel, transient lodging	A	A	B	B	C	C	D
Single family, multifamily, faith/religious uses	A	A	B	B	C	D	D
Parks	A	A	A	B	C	D	D
Office building, research & development, professional office, city office building, and hotel	A	A	A	B	B	C	D
Amusement park, miniature golf, go-cart track, health club, equestrian center	A	A	A	B	B	D	D
Golf courses, nature centers, cemeteries, wildlife reserves, wildlife habitat	A	A	A	A	B	C	C
Commercial retail, bank, restaurant, movie theater	A	A	A	A	B	B	C
Automobile service station, auto dealer, manufacturing, warehousing, wholesale, utilities	A	A	A	A	B	B	B
Agriculture	A	A	A	A	A	A	A

Notes:

Compatibility zones indicate the degree to which the land uses listed are compatible with the noise levels (CNEL) shown in the table.

Zone A. Clearly Compatible. Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Zone B. Normally Compatible. New construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.

Zone C. Normally Incompatible. New construction or development should normally be discouraged. If new construction or development does proceed, a detailed analysis or noise reduction requirements must be made and needed noise insulation features must be included in the design.

Zone D. Clearly Incompatible. New construction or development should generally not be undertaken.

The General Plan also outlines an acceptable exterior level of 65 dBA CNEL and an interior level of 45 dBA CNEL (windows closed) for residential uses in Table ES-1. The City has outlined goals, policies, and implementation measures to reduce potential noise impacts which are presented below:

Goals, Policies, and Implementation Measures

Policies, goals, and implementation program measures from the Policy Plan that would mitigate potential impacts on noise include the following.

Goal 3: An environment in which minimized noise contributes to the public's health, safety, and welfare.

Policy 3.1 Land use compatibility. Approve development and require mitigation measures to ensure existing and future land use compatibility as shown in the Noise Level Exposure and Land Use Compatibility Matrix and the City's noise ordinance.

Policy 3.2 Land use and traffic patterns. Discourage land use and traffic patterns that would expose sensitive land uses or noise-sensitive areas to unacceptable noise levels.

Policy 3.3 New residential. When new residential development is proposed adjacent to land designated for industrial or commercial uses, require the proposed development to assess potential noise impacts and fund feasible noise-related mitigation measures.

Policy 3.4 Acoustical study. Require an acoustical study for proposed projects that have the potential to exceed acceptable noise thresholds or are exposed to existing or future noise levels in excess of the thresholds in the City's noise ordinance.

Policy 3.5 Site and building design. Minimize noise impacts by requiring appropriate site, circulation, equipment, and building design, and sound walls, landscaping, and other buffers.

Policy 3.6 Noise impacts. Minimize or eliminate persistent, periodic, or impulsive noise impacts of business operations.

Policy 3.7 Mixed-use buildings. Require that mixed-use structures be designed to prevent transfer of noise and vibration between uses.

Policy 3.8 Existing uses. Require the use of noise abatement devices for existing uses that exceed acceptable noise thresholds.

Policy 3.9 Caltrans facilities. Coordinate with Caltrans to ensure the inclusion of noise mitigation measures in the design of new highway projects or improvements to existing facilities.

Policy 3.10 Airport changes. Coordinate with the Fresno Yosemite International Airport to minimize noise impacts on properties in Clovis due to changes in flight patterns or airport expansion.

Policy 3.11 Airport land use compatibility. Approve land uses in a manner that is consistent with the Fresno Yosemite International Airport Land Use Compatibility Plan.

Policy 3.12 Truck traffic. Plan and maintain truck routes that avoid noise-sensitive land uses and areas. Encourage business delivery areas to be located away from residential properties and to mitigate associated noise impacts.

Policy 3.13 Small aircraft and helicopters. Minimize the noise impact of small aircraft and helicopters on residential neighborhoods.

Policy 3.14 Control sound at the source. Prioritize using noise mitigation measures to control sound at the source before buffers, soundwalls, and other perimeter measures.

City of Clovis– Noise Ordinance/Municipal Code

Chapter 9.22.080 and 9.22.100 General Performance Standards of the City's Municipal Code outlines the City's noise ordinance.

Section 9.22.080 –Noise

D. Noise standards. The following noise standards, unless otherwise specifically indicated, shall apply to all property with a designated noise zone:

MAXIMUM EXTERIOR NOISE STANDARDS

Noise Zone	Type of Land Use	Allowable Exterior Noise Level (15-Minute Leq)	
		7 a.m. to 10 p.m.	10 p.m. to 7 a.m.
I	Single-, two- or multiple-family residential	55 dBA	50 dBA
II	Commercial	65 dBA	60 dBA
III	Residential portions of mixed use properties	60 dBA	50 dBA
IV	Industrial or manufacturing	70 dBA	70 dBA

MAXIMUM INTERIOR NOISE STANDARDS

Noise Zone	Type of Land Use	Allowable Exterior Noise Level (15-Minute Leq)	
		7 a.m. to 10 p.m.	10 p.m. to 7 a.m.
I	Residential	45 dBA	40 dBA
II	Administrative/professional office	50 dBA	—
III	Residential portions of mixed use properties	45 dBA	40 dBA

1. If the ambient noise level exceeds the resulting standard, the ambient shall be the standard.

2. It is unlawful for any person to create any noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured on any property measured at the property line, to exceed either of the following within the incorporated area of the City:

a. The noise standard for the applicable zone for any fifteen (15) minute period;

b. A maximum impulsive noise level equal to the value of the noise standard plus twenty (20) dBA for any period of time (measured using A-weighted slow response). Impulsive noise which repeats four (4) or more times in any hour between 10:00 p.m. and 7:00 a.m. shall be measured as continuous sound and meet the noise standard for the applicable zone.

3. When properties of two (2) different noise zones abut one another, the maximum exterior noise level shall be the lower of the two (2) noise zones where one zone is residential, and in other contexts shall be the average of the two (2) zones.

4. Commercial, industrial, and recreational uses which create impulsive noise as part of their regular processes, such as through the use of pile drivers, forge hammers, punch presses, and gunshots, shall not be located in any zone district adjacent to a residential zone district unless a noise study is completed demonstrating the impulsive noise does not exceed the standards at the property line for the residential zone district. Impulse noise from these uses shall be measured as continuous sound. The noise study shall be subject to review and approval by the Director or his or her designee, and shall be completed as part of any discretionary permit process for the use or prior to obtaining a building permit. This provision shall not apply to uses existing on the effective date of the ordinance codified in this title.

5. Emergency electrical generators in residential zone districts shall comply with the California Building Code and California Residential Code, as amended, for the installation and operation of the emergency generator. Test cycle operation shall be limited to the hours between 10:00 a.m. and 4:00 p.m. Emergency electrical generators are intended to provide emergency power to run air conditioning, medical equipment and other household appliances in the event of a rolling blackout or other power grid failure.

E. Measurement of sound levels. Measurement of sound levels shall be as follows:

1. Sound level meter. Sound levels shall be measured on the A-weighting network of a sound level meter meeting the requirements of ASA Standards S14-1971 for General Purpose Sound Level Meters, or the latest revision published by the American National Standards Institute, Inc., using the slow meter response. The meter shall be calibrated and used according to the manufacturer's instructions.

2. Location of microphone. Measurements shall be taken with the microphone located at any point on the property line of the noise source, but no closer than three feet (3') from any wall and not less than three feet (3') above the ground.

3. Minimum of two (2) readings. A minimum of two (2) readings shall be taken for a period of ten (10) minutes each with ten (10) minute intervals between measurements. The sound level shall be the average of these readings.

F. Activities exempt from regulations. The following activities shall be exempt from the provisions of this section:

1. Emergency exemption. The emission of sound for the purpose of alerting persons to the existence of an emergency, or the emission of sound in the performance of emergency work.

2. Warning devices. Warning devices necessary for the protection of public safety, (e.g., ambulance, fire, and police sirens, and train horns).

3. Railroad activities. All locomotives and rail cars operated by a railroad that is regulated by the State Public Utilities Commission.

4. Federal or State pre-exempted activities. Any activity, to the extent regulation thereof has been pre-exempted by Federal or State law.

5. Pre-existing uses. Uses existing at the time of the effective date of the ordinance codified in this title, which are in compliance with all applicable standards in effect prior to adoption, and which are not otherwise operating as a nuisance in violation of Article 6 of Chapter 27 of Title 5.

6. Public health and safety activities. All transportation, flood control, and utility maintenance and construction operations conducted by government entities or utility companies at any time on public rights-of-way, and those situations that may occur on private property deemed necessary to serve the best interests of the public and to protect the public's health and well-being, including, but not limited to: debris and limb removal; removal of damaged poles and vehicles; removal of downed wires; restoring electrical service; repairing traffic signals; repair of water hydrants; repair of mains, gas lines, oil lines, and sewers; repair and maintenance of flood control and storm water facilities; repair and maintenance of streets and sidewalks.

7. Ordinary municipal activities. Ordinary municipal activities conducted by the City or other entity having jurisdiction in the City, including, but not limited to: solid waste collection; street sweeping; operation, maintenance, and repair of water production, treatment, and distribution facilities; operation, maintenance, and repair of sewage treatment, collection and distribution facilities; and vacuuming catch basins.

8. Public safety training activities. Training activities by fire, law enforcement, and public utility officials that cannot reasonably take place within the parameters of this section, including but not limited to training that involves: hydrant testing, pumping hose lays, running chain saws, operating power tools, demolition, vehicle noise, and use of generators.

9. Public celebrations. Public celebrations, holidays, or occasions generally celebrated, or public parades held under authorized permits; any sporting event or activity conducted under the direction and supervision of any public or private school.

G. Acts deemed violations of section. The following acts are a violation of this section:

1. Noise-related nuisances defined in Chapter 27 of Title 5. Violations of Article 6 of Chapter 27 of Title 5 pertaining to unlawful noise-related nuisances shall also be considered a violation of this section.

2. Construction noise. Construction activities shall be subject to the provisions of Section 5.27.604, which sets forth the permissible hours for construction activity. At all other times, no person shall operate, or cause to be operated, tools or equipment used in alteration, construction, demolition, drilling, or repair work so that the sound creates a noise disturbance across a residential property line, except for emergency work. Stationary equipment (e.g., generators) shall not be located adjacent to any existing residences unless enclosed in a noise attenuating structure, subject to the review and approval of the Director.

3. Places of public entertainment. Operating, playing, or allowing the operation or playing of a drum, musical instrument, phonograph, radio, sound amplifier, television, or similar device that produces, reproduces, or amplifies sound in a place of public entertainment at a sound level greater than ninety-five (95) dBA (read by the slow response on a sound level meter) at any point that is normally occupied by a customer is prohibited, unless conspicuous signs are located near each public entrance, stating "Warning: Sound Levels Within May Cause Hearing Impairment."

4. Stationary nonemergency signaling devices. Sounding or allowing the sounding of an electronically amplified signal from a stationary bell, chime, siren, whistle, or similar device intended primarily for nonemergency purposes, from any place, for more than ten (10) consecutive seconds in any hourly period is prohibited.

5. Compacting mechanisms. Operating or allowing the operation of the compacting mechanism of any motor vehicle that compacts refuse and that creates, during the compacting cycle, a sound level in excess of eighty-five (85) dBA when measured at fifty feet (50') from any point of the vehicle is prohibited between the hours of 9:00 p.m. and 5:00 a.m.

6. Vehicle or motorboat repairs and testing. Repairing, rebuilding, modifying, or testing any motor vehicle, motorcycle, or motorboat in a manner as to cause a noise disturbance across property lines or within a noise-sensitive zone is prohibited.

H. Responsibility to eliminate or reduce acts deemed violations of section. Improvements to eliminate or reduce negative impacts between uses deemed violations of this section shall be provided by the new use, rather than the existing use. (§ 2, Ord. 14-13, eff. October 8, 2014; § 1(2) (Atts. 1, 2), Ord. 20-18, eff. February 3, 2021)

9.22.100 Vibrations.

Uses that generate vibrations that may be considered a nuisance or hazard on any adjacent property shall be corrected, cushioned, or isolated to prevent the continued generation of vibrations. Uses shall be operated in compliance with the following provisions:

A. Not perceptible along property line. Uses shall not generate ground vibration that is perceptible without instruments by the average person at any point along or beyond the property line of the parcel containing the activities which generate the vibration.

B. No discomfort or annoyance. Uses, activities, and processes shall not generate ground vibration that causes discomfort or annoyance to reasonable persons of normal sensitivity or which endangers the comfort, health, or peace of residents whose property abuts the property lines of the subject parcel.

C. No interference. Uses shall not generate ground vibration that interferes with the operations of equipment and facilities on adjoining parcels.

D. Temporary construction exempt. Vibrations from temporary construction/demolition and vehicles that leave the subject parcel (e.g., trucks) are exempt from the provisions of this section. (§ 2, Ord. 14-13, eff. October 8, 2014)

4.4 County of Fresno Noise Regulations

The Project site is currently located in Fresno County. The County of Fresno outlines their noise regulations and standards within the General Plan Health and Safety Element and the Noise Ordinance from the Municipal Code.

County of Fresno General Plan

The City has outlined goals, policies, and implementation programs to reduce potential noise impacts which are presented below:

Goals, Policies, and Implementation Programs

Goals, policies, and implementation programs from the Policy Plan that would mitigate potential impacts on noise include the following.

GOAL HS-G*:* To protect residential and other noise-sensitive uses from exposure to harmful or annoying noise levels; to identify maximum acceptable noise levels compatible with various land use designations; and to develop a policy framework necessary to achieve and maintain a healthful noise environment.

Polices:

Policy HS-G.1: The County shall require that all proposed development incorporate design elements necessary to minimize adverse noise impacts on surrounding land uses.

Policy HS-G.2: The County shall require new roadway improvement projects to achieve and maintain the normally acceptable noise levels shown in Chart HS-1: "Land Use Compatibility for Community Noise Environments."

Policy HS-G.3: The County shall allow the development of new noise-sensitive land uses (which include, but are not limited to, residential neighborhoods, schools, and hospitals) only in areas where existing or projected noise levels are "acceptable" according to

the Chart HS-1: "Land Use Compatibility for Community Noise Environments." Noise mitigation measures may be required to reduce noise in outdoor activity areas and interior spaces to these levels.

Policy HS-G.4: So that noise mitigation may be considered in the design of new projects, the County shall require an acoustical analysis as part of the environmental review process where:

a. Noise sensitive land uses are proposed in areas exposed to existing or projected noise levels that are "generally unacceptable" or higher according to the Chart HS-1: "Land Use Compatibility for Community Noise Environments;"

b. Proposed projects are likely to produce noise levels exceeding the levels shown in the County's Noise Control Ordinance at existing or planned noise-sensitive uses.

Policy HS-G.5: Where noise mitigation measures are required to achieve acceptable levels according to land use compatibility or the Noise Control Ordinance, the County shall place emphasis of such measures upon site planning and project design. These measures may include, but are not limited to, building orientation, setbacks, earthen berms, and building construction practices. The County shall consider the use of noise barriers, such as soundwalls, as a means of achieving the noise standards after other design-related noise mitigation measures have been evaluated or integrated into the project.

Policy HS-G.6: The County shall regulate construction-related noise to reduce impacts on adjacent uses in accordance with the County's Noise Control Ordinance.

Policy HS-G.7 Where existing noise-sensitive uses may be exposed to increased noise levels due to *roadway improvement projects*, the County shall apply the following criteria to determine the significance of the impact:

a. Where existing noise levels are less than 60 dBLdn at outdoor activity areas of noise-sensitive uses, a 5 dBLdn increase in noise levels will be considered significant;

b. Where existing noise levels are between 60 and 65 dBLdn at outdoor activity areas of noise-sensitive uses, a 3 dBLdn increase in noise levels will be considered significant; and

c. Where existing noise levels are greater than 65 dBLdn at outdoor activity areas of noise-sensitive uses, a 1.5 dBLdn increase in noise levels will be considered significant.

Policy HS-G.8: The County shall evaluate the compatibility of proposed projects with existing and future noise levels through a comparison to Chart HS-1, "Land Use Compatibility for Community Noise Environments."

Policy HS-G.9: The County shall not allow the development of new residential land uses in areas exposed to existing or projected levels of noise from aircraft operations at any airport or air base which exceed 60 dBLdn or CNEL.

County of Fresno– Noise Ordinance/Municipal Code

Chapter 8.40 – Noise Control of the County's Municipal Code outlines the County's noise ordinance.

8.40.040 – Exterior noise standards.

A. It is unlawful for any person, including an owner, whether through the owner or the owner's agent, lessee, sublessor, sublessee or occupant, at any location within the unincorporated area of the county, to create any noise, or to allow the creation of any noise, on property owned, leased, occupied or otherwise controlled by such person which causes the exterior noise level when measured at any affected single- or multiple-family residence, school, hospital, church or public library situation in either the incorporated or unincorporated area to exceed the noise level standards as set forth in the following table:

EXTERIOR NOISE STANDARDS

Category	Cumulative number of minutes in any one-hour time period	Noise Level Standards, dBA	
		7 a.m. to 10 p.m.	10 p.m. to 7 a.m.
1	30	50	45
2	15	55	50
3	5	60	55
4	2	65	60
5	0	70	65

B. In the event the measured ambient noise level exceeds the applicable noise level standard in any category above, the applicable standard shall be adjusted so as to equal the ambient noise level.

C. Each of the noise level standards specified above shall be reduced by five dB(A) for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises.

D. If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient noise level can be measured, the noise level measured while the source is in operation shall be compared directly to the noise level standards.

8.40.050 – Interior noise standards.

A. It is unlawful for any person, at any location within the unincorporated are of the county to operate or cause to be operated within a dwelling unit, any source of sound or to allow the creation of any noise which causes the noise level when measured inside a receiving dwelling unit situated in either the incorporated or unincorporated are to exceed the noise level standards as set forth in the following table:

INTERIOR NOISE STANDARDS

Category	Cumulative number of minutes in any one-hour time period	Noise Level Standards, dBA	
		7 a.m. to 10 p.m.	10 p.m. to 7 a.m.
1	5	45	35
2	1	50	40
3	0	55	45

B. In the event the measured ambient noise level exceeds the applicable noise level standard in any category above, the applicable standard shall be adjusted so as to equal the ambient noise level.

C. Each of the noise level standards specified above shall be reduced by five dB(A) for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises.

D. If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient noise level can be measured, the noise level measured while the source is in operation shall be compared directly to the noise level standards.

5.0 Study Method and Procedure

The following section describes the noise modeling procedures and assumptions used for this assessment.

5.1 Noise Measurement Procedure and Criteria

Noise measurements are taken to determine the existing noise levels. A noise receiver or receptor is any location in the noise analysis in which noise might produce an impact. The following criteria are used to select measurement locations and receptors:

- Locations expected to receive the highest noise impacts, such as the first row of houses
- Locations that are acoustically representative and equivalent to the area of concern
- Human land usage
- Sites clear of major obstruction and contamination

MD conducted the sound level measurements in accordance with the City's and Caltrans's (TeNS) technical noise specifications. All measurement equipment meets American National Standards Institute (ANSI) specifications for sound level meters (S1.4-1983 identified in Chapter 19.68.020.AA). The following gives a brief description of the Caltrans Technical Noise Supplement procedures for sound level measurements:

- Microphones for sound level meters were placed 5 feet above the ground for all measurements
- Sound level meters were calibrated (Larson Davis CAL 200) before and after each measurement
- Following the calibration of equipment, a windscreen was placed over the microphone
- Frequency weighting was set on "A" and slow response
- Results of the long-term noise measurements were recorded on field data sheets
- During any short-term noise measurements, any noise contaminations such as barking dogs, local traffic, lawnmowers, or aircraft fly-overs were noted
- Temperature and sky conditions were observed and documented

5.2 Noise Measurement Locations

Noise monitoring locations were selected based on the nearest sensitive receptors relative to the proposed onsite noise sources. Nine (9) short-term 15-min noise measurements were conducted at or near the project site and are illustrated in Exhibit H. Appendix A includes photos, a field sheet, and measured noise data.

5.3 FHWA Traffic Noise Prediction Model

Traffic noise from vehicular traffic was projected using a computer program that replicates the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108). The FHWA model arrives at the predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). Roadway volumes correspond to the Kittelson & Associates traffic counts and segment projections. It's assumed that the peak hour is 10% of the ADT. The referenced traffic data was applied to the model and is in Appendix B. The following outlines the key adjustments made to the REMEL for the roadway inputs:

- Roadway classification – (e.g., freeway, major arterial, arterial, secondary, collector, etc.),
- Roadway Active Width – (distance between the center of the outermost travel lanes on each side of the roadway)
- Average Daily Traffic Volumes (ADT), Travel Speeds, Percentages of automobiles, medium trucks, and heavy trucks
- Roadway grade and angle of view
- Site Conditions (e.g., soft vs. hard)
- Percentage of total ADT which flows each hour throughout a 24-hour period

Roadway modeling assumptions utilized for the technical study are provided in Table 1 and Table 2.

Table 1: Roadway Noise Modeling Parameters

Roadway	Segment	Existing ADT[1]	Existing + Project ADT[1]	Cumulative ADT[1]	Cumulative + Project ADT[1]	Speed[2]
Willow Ave	International Ave to Behymer Ave	13,120	12,460	17,950	17,290	50
Willow Ave	Behymer Ave to Shepherd Ave	14,580	14,820	19,540	19,780	50
Minnewawa Ave	International Ave to Behymer Ave	8,420	8,990	4,610	5,180	50
Minnewawa Ave	Behymer Ave to Shepherd Ave	5,860	5,720	2,750	2,610	50
Clovis Ave	Shepherd Ave to Nees Ave	5,770	8,430	12,260	14,920	45
Clovis Ave	Nees Ave to Alluvial Ave	11,140	11,080	15,910	15,850	45
Clovis Ave	Alluvial Ave to Herndon Ave	16,510	15,570	21,620	20,680	45
Sunnyside Ave	Shepherd Ave to Nees Ave	2,480	3,920	5,890	7,330	45
Sunnyside Ave	Nees Ave to Alluvial Ave	4,420	7,090	10,710	13,380	45
Sunnyside Ave	Alluvial Ave to Herndon Ave	9,030	12,930	11,970	15,870	45
Fowler Ave	Shepherd Ave to Teague Ave	5,630	7,540	11,540	13,450	45
Fowler Ave	Teague Ave to Nees Ave	6,020	7,250	11,750	12,980	50
Fowler Ave	Nees Ave to Alluvial Ave	9,480	9,410	14,910	14,840	45
Fowler Ave	Alluvial Ave to SR 168 WB Ramps	14,200	14,070	17,790	17,660	45
Temperance Ave	Shepherd Ave to Nees Ave	4,950	7,460	7,600	10,110	50
Temperance Ave	Nees Ave to Alluvial Ave	11,420	13,150	9,840	11,570	50
Temperance Ave	Alluvial Ave to SR 168 WB Ramps	15,010	19,160	18,680	22,830	50
Locan Ave	Shepherd Ave to Nees Ave	1,670	4,540	1,910	4,780	45
De Wolf Ave	Shepherd Ave to Owens Mountain Pkwy	3,350	4,640	3,690	4,980	40
Behymer Ave	Willow Ave to Minnewawa Ave	4,600	5,560	7,270	8,230	50
Behymer Ave	Minnewawa Ave to Fowler Ave	7,720	10,000	8,670	10,950	50
Shepherd Ave	Willow Ave to Minnewawa Ave	10,090	8,340	16,710	14,960	50
Shepherd Ave	Minnewawa Ave to Clovis Ave	9,240	8,170	12,210	11,140	50
Shepherd Ave	Clovis Ave to Sunnyside Ave	8,090	6,480	15,250	13,640	50
Shepherd Ave	Sunnyside Ave to Fowler Ave	3,740	2,280	7,000	5,540	50
Shepherd Ave	Fowler Ave to Temperance Ave	6,800	6,330	10,320	9,850	50
Shepherd Ave	Temperance Ave to Locan Ave	4,910	8,490	6,280	9,860	50

Roadway	Segment	Existing ADT[1]	Existing + Project ADT[1]	Cumulative ADT[1]	Cumulative + Project ADT[1]	Speed[2]
Shepherd Ave	Locan Ave to De Wolf Ave	3,940	6,530	5,190	7,780	50
Shepherd Ave	De Wolf Ave to SR 168	7,100	7,700	8,080	8,680	50
Nees Ave	Clovis Ave to Sunnyside Ave	9,430	13,120	14,300	17,990	45
Nees Ave	Sunnyside Ave to Fowler Ave	7,970	9,750	10,080	11,860	45
Nees Ave	Fowler Ave to Temperance Ave	7,010	8,670	8,520	10,180	45
Nees Ave	Temperance Ave to Locan Ave	4,380	5,140	4,070	4,830	45
Alluvial Ave	Clovis Ave to Sunnyside Ave	9,760	10,270	9,530	10,040	45
Alluvial Ave	Sunnyside Ave to Fowler Ave	8,330	10,260	8,390	10,320	45
Alluvial Ave	Fowler Ave to Temperance Ave	5,070	6,340	7,730	9,000	40
Herndon Ave	SR 168 to Clovis Ave	38,530	42,370	48,810	52,650	45
Herndon Ave	Clovis Ave to Sunnyside Ave	35,690	38,600	38,210	41,120	45

Notes:
1) Kittelson & Associates, Inc.
2) Speed was modeled as posted.

Table 2: Roadway Vehicle Distribution (Truck Mix)

Motor-Vehicle Type	Daytime % (7AM to 7 PM)	Evening % (7 PM to 10 PM)	Night % (10 PM to 7 AM)	Total % of Traffic Flow
Automobiles	75.5	14.0	10.5	97.42
Medium Trucks	48.9	2.2	48.9	1.84
Heavy Trucks	47.3	5.4	47.3	0.74

Notes:
[1] Typical California roadway distribution.

5.4 FHWA Roadway Construction Noise Model

The construction noise analysis utilizes the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RNCM), together with several key construction parameters. Key inputs include distance to the sensitive receiver, equipment usage, % usage factor, and baseline parameters for the project site.

The Project was analyzed based on the different construction phases. Construction noise is expected to be loudest during the grading, concrete, and building phases of construction. The construction noise calculation output worksheet is located in Appendix C.

= Short-Term Monitoring Location

Exhibit G
Measurement Locations

6.0 Existing Noise Environment

Nine (9) 15-min ambient noise measurements were conducted at or near the property site. The noise measurements were taken to determine the existing ambient noise levels. Noise data indicates that traffic along Shepherd Avenue is the primary source of noise impacting the site and the adjacent uses. This assessment utilizes the ambient noise data as a basis and compares project operational levels to said data.

6.1 Short-Term Noise Measurement Results

The results of the short-term noise data are presented in Table 3.

Table 3: Short-Term Noise Measurement Data[1]

Noise Measurement Location	Approximate Location	Start Time	A-Weighted Sound Level (dBA)							
			Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)	L(90)
ST1	5230 E Shepherd Ave	7:53 AM	46.4	68.0	38.0	53.3	46.9	45.2	43.9	41.6
ST2	9290 N Purdue Ave	8:27 AM	69.1	82.2	55.7	77.4	72.0	68.7	66.4	62.6
ST3	9464 N Stanford Ave	9:01 AM	46.0	63.5	34.5	56.8	48.8	39.4	37.3	35.6
ST4	5798 E Perrin Rd	9:45 AM	39.0	57.9	29.0	47.6	41.9	36.7	33.3	30.4
ST5	5932 E Shepherd Ave	10:08 AM	69.0	79.6	43.1	77.5	74.4	69.3	63.7	52.1
ST6	7250 E Shepherd Ave	11:10 AM	68.2	81.6	39.7	77.9	74.1	66.5	58.5	47.2
ST7	9115 N Temperance Ave	11:48 AM	45.2	67.2	32.4	53.2	44.7	37.8	36.1	34.1
ST8	5750 E Behymer Ave	12:39 PM	48.7	70.6	32.6	57.0	50.0	41.8	38.5	34.8
ST9	5455 E Behymer Ave	1:09 PM	70.1	83.6	39.2	80.3	74.9	67.0	59.8	47.9

Notes:
1. Short-term noise monitoring locations are illustrated in Exhibit H.

Noise data indicates the ambient noise level ranged from 39 to 70 dBA Leq at the project site. Maximum levels reached up to 69 dBA at location 5 as a result of traffic along Shepherd Avenue, and up to 70 dBA at location 9 due to jet passbys and heavy truck traffic along Behymer Avenue and Fowler Avenue. Additional field notes and photographs are provided in Appendix A.

6.2 Airport Noise Contours

The Project is outside the Fresno Yosemite International Airport Contours, as shown in the Noise Exposure Map Update, Septempber 2017.

7.0 Future Noise Environment Impacts

This assessment analyzes future noise impacts as a result of the Project. The analysis details the estimated exterior noise levels.

7.1 Future Exterior Noise

The following outlines the exterior noise levels associated with the proposed Project:

7.1.1 Noise Impacts to Off-Site Receptors Due to Project Generated Traffic

A worst-case project-generated traffic noise level was modeled utilizing the FHWA Traffic Noise Prediction Model - FHWA-RD-77-108. Traffic noise levels were calculated 50 feet from the centerline of the analyzed roadway. The modeling is theoretical and does not take into account any existing barriers, structures, and/or topographical features that may further reduce noise levels. Therefore, the levels are shown for comparative purposes only to show the difference between with and without project conditions. In addition, the noise contours for 55, 60, 65, and 70 dBA CNEL were calculated for hard site conditions. Additionally, the soft site condition was analyzed for Shepherd Avenue to determine the noise impact to the site. The potential off-site noise impacts caused by an increase of traffic from operation of the proposed Project on the nearby roadways were calculated for existing, existing plus Project, cumulative, and cumulative plus Project scenarios.

Tables 4 and 5 compare the without and with project scenario and shows the change in traffic noise levels as a result of the proposed Project. It takes a change of 3 dB or more to hear a perceptible difference.

Table 4: Existing Scenario - Noise Levels Along Roadways (dBA CNEL)

Roadway	Segment	Existing	Existing With Project	
		CNEL @ 50' dBA	CNEL @ 50' dBA	Change in Noise Level[1]
Willow Ave	International Ave to Behymer Ave	72.2	72.0	-0.2
Willow Ave	Behymer Ave to Shepherd Ave	72.4	72.5	0.1
Minnewawa Ave	International Ave to Behymer Ave	68.3	68.6	0.3
Minnewawa Ave	Behymer Ave to Shepherd Ave	66.7	66.6	-0.1
Clovis Ave	Shepherd Ave to Nees Ave	66.1	67.8	1.7
Clovis Ave	Nees Ave to Alluvial Ave	69.0	68.9	-0.1
Clovis Ave	Alluvial Ave to Herndon Ave	70.7	70.4	-0.3
Sunnyside Ave	Shepherd Ave to Nees Ave	61.8	63.8	2.0
Sunnyside Ave	Nees Ave to Alluvial Ave	64.7	66.7	2.0
Sunnyside Ave	Alluvial Ave to Herndon Ave	66.4	68.0	1.6
Fowler Ave	Shepherd Ave to Teague Ave	65.7	67.0	1.3
Fowler Ave	Teague Ave to Nees Ave	66.8	67.6	0.5
Fowler Ave	Nees Ave to Alluvial Ave	68.3	68.2	-0.1
Fowler Ave	Alluvial Ave to SR 168 WB Ramps	70.0	70.0	0.0

Roadway	Segment	Existing	Existing With Project	
		CNEL @ 50' dBA	CNEL @ 50' dBA	Change in Noise Level[1]
Temperance Ave	Shepherd Ave to Nees Ave	66.6	68.4	1.8
Temperance Ave	Nees Ave to Alluvial Ave	72.2	72.0	-0.2
Temperance Ave	Alluvial Ave to SR 168 WB Ramps	72.4	72.5	0.1
Locan Ave	Shepherd Ave to Nees Ave	68.3	68.6	0.3
De Wolf Ave	Shepherd Ave to Owens Mountain Pkwy	66.7	66.6	-0.1
Behymer Ave	Willow Ave to Minnewawa Ave	66.1	67.8	1.6
Behymer Ave	Minnewawa Ave to Fowler Ave	69.0	68.9	0.0
Shepherd Ave	Willow Ave to Minnewawa Ave	70.7	70.4	-0.3
Shepherd Ave	Minnewawa Ave to Clovis Ave	61.8	63.8	2.0
Shepherd Ave	Clovis Ave to Sunnyside Ave	64.7	66.7	2.1
Shepherd Ave	Sunnyside Ave to Fowler Ave	66.4	68.0	1.6
Shepherd Ave	Fowler Ave to Temperance Ave	65.7	67.0	1.3
Shepherd Ave	Temperance Ave to Locan Ave	66.8	67.6	0.8
Shepherd Ave	Locan Ave to De Wolf Ave	68.3	68.2	0.0
Shepherd Ave	De Wolf Ave to SR 168	70.0	70.0	0.0
Nees Ave	Clovis Ave to Sunnyside Ave	66.6	68.4	1.8
Nees Ave	Sunnyside Ave to Fowler Ave	70.3	70.9	0.6
Nees Ave	Fowler Ave to Temperance Ave	71.4	72.5	1.1
Nees Ave	Temperance Ave to Locan Ave	60.1	64.4	4.3
Alluvial Ave	Clovis Ave to Sunnyside Ave	62.0	63.4	1.4
Alluvial Ave	Sunnyside Ave to Fowler Ave	65.7	66.5	0.8
Alluvial Ave	Fowler Ave to Temperance Ave	67.9	69.0	1.1
Herndon Ave	SR 168 to Clovis Ave	69.4	68.6	-0.8
Herndon Ave	Clovis Ave to Sunnyside Ave	69.1	68.5	-0.5

1. An impact would occur if the Project increased the roadway segment level by 3 dB or more (an audible difference) and resulting in a future level from clearly compatible to normally compatible or from normally compatible to normally incompatible.

When comparing existing plus project levels to existing levels, Locan Avenue from Shepherd Avenue to Nees Avenue has the potential for significant impact as the only roadway segment with an increase of more than 3 dB. This segment is in the City of Clovis. The project will stay within normally compatible for single family residential and is therefore not an impact.

Table 5: Cumulative Scenario - Noise Levels Along Roadways (dBA CNEL)

Roadway	Segment	Cumulative	Cumulative With Project	
		CNEL @ 50' dBA	CNEL @ 50' dBA	Change in Noise Level1
Willow Ave	International Ave to Behymer Ave	73.6	73.4	-0.2

Roadway	Segment	Cumulative	Cumulative With Project	
		CNEL @ 50' dBA	CNEL @ 50' dBA	Change in Noise Level1
Willow Ave	Behymer Ave to Shepherd Ave	73.7	73.7	0.1
Minnewawa Ave	International Ave to Behymer Ave	65.7	66.2	0.5
Minnewawa Ave	Behymer Ave to Shepherd Ave	63.4	63.2	-0.2
Clovis Ave	Shepherd Ave to Nees Ave	69.4	70.2	0.9
Clovis Ave	Nees Ave to Alluvial Ave	70.5	70.5	0.0
Clovis Ave	Alluvial Ave to Herndon Ave	71.9	71.7	-0.2
Sunnyside Ave	Shepherd Ave to Nees Ave	65.6	66.5	0.9
Sunnyside Ave	Nees Ave to Alluvial Ave	68.5	69.5	1.0
Sunnyside Ave	Alluvial Ave to Herndon Ave	67.6	68.9	1.2
Fowler Ave	Shepherd Ave to Teague Ave	68.8	69.5	0.7
Fowler Ave	Teague Ave to Nees Ave	69.7	70.2	0.4
Fowler Ave	Nees Ave to Alluvial Ave	70.2	70.2	0.0
Fowler Ave	Alluvial Ave to SR 168 WB Ramps	71.0	71.0	0.0
Temperance Ave	Shepherd Ave to Nees Ave	68.5	69.7	1.2
Temperance Ave	Nees Ave to Alluvial Ave	69.6	70.3	0.7
Temperance Ave	Alluvial Ave to SR 168 WB Ramps	72.4	73.3	0.9
Locan Ave	Shepherd Ave to Nees Ave	60.7	64.6	4.0
De Wolf Ave	Shepherd Ave to Owens Mountain Pkwy	62.4	63.7	1.3
Behymer Ave	Willow Ave to Minnewawa Ave	67.6	68.2	0.5
Behymer Ave	Minnewawa Ave to Fowler Ave	68.4	69.4	1.0
Shepherd Ave	Willow Ave to Minnewawa Ave	71.6	71.1	-0.5
Shepherd Ave	Minnewawa Ave to Clovis Ave	70.3	69.9	-0.4
Shepherd Ave	Clovis Ave to Sunnyside Ave	71.6	71.1	-0.5
Shepherd Ave	Sunnyside Ave to Fowler Ave	67.5	66.5	-1.0
Shepherd Ave	Fowler Ave to Temperance Ave	69.6	69.3	-0.2
Shepherd Ave	Temperance Ave to Locan Ave	67.5	69.4	2.0
Shepherd Ave	Locan Ave to De Wolf Ave	66.6	68.3	1.8
Shepherd Ave	De Wolf Ave to SR 168	68.8	69.2	0.3
Nees Ave	Clovis Ave to Sunnyside Ave	69.4	70.4	1.0
Nees Ave	Sunnyside Ave to Fowler Ave	68.3	69.0	0.7
Nees Ave	Fowler Ave to Temperance Ave	67.3	68.0	0.8
Nees Ave	Temperance Ave to Locan Ave	63.9	64.7	0.7
Alluvial Ave	Clovis Ave to Sunnyside Ave	67.7	68.0	0.2
Alluvial Ave	Sunnyside Ave to Fowler Ave	67.2	68.1	0.9
Alluvial Ave	Fowler Ave to Temperance Ave	65.4	66.1	0.7
Herndon Ave	SR 168 to Clovis Ave	87.7	88.0	0.3
Herndon Ave	Clovis Ave to Sunnyside Ave	75.5	75.8	0.3

Roadway	Segment	Cumulative	Cumulative With Project	
		CNEL @ 50' dBA	CNEL @ 50' dBA	Change in Noise Level1

1. An impact would occur if the Project increased the roadway segment level by 3 dB or more (an audible difference) and resulting in a future level from clearly compatible to normally compatible or from normally compatible to normally incompatible.

When comparing cumulative plus project levels to cumulative levels, Locan Avenue from Shepherd Avenue to Nees Avenue has the potential for significant impact as the only roadway segment with an increase of more than 3 dB. This segment is in the City of Clovis. The project will stay within normally compatible for single family residential and is therefore not an impact.

7.1.2 Noise Impacts to On-Site Receptors Due to Project Generated Traffic

The Project's proposed residential properties are outside of Shepherd Avenue's 70 dBA CNEL contours. Residences along Shepherd Avenue will be exposed to levels up to 69.4 dBA CNEL at the property line. These are within the normally compatible levels for residential uses but above the exterior 65 dBA CNEL standard as outlined in Table ES-1 of the 2014 General Plan.

To meet the exterior residential standards, any unshielded residential private yards within 80 ft of the centerline of Shepherd Avenue must be shielded by 6-foot sound walls. These walls must be at least 4.2 lbs/ft^2. Any unshielded residential glass facades within 80 ft of the centerline of Shepherd Avenue or Sunnyside Avenue directly facing the subject roadway must have an STC rating of 30 or more. This includes any 2nd-floor or taller windows which would not be shielded by the 6-foot sound walls.

8.0 Construction Noise Impact

The degree of construction noise may vary for different areas of the project site and also vary depending on the construction activities. Noise levels associated with the construction will vary with the different phases of construction.

8.1 Construction Noise

The Environmental Protection Agency (EPA) has compiled data regarding the noise generated characteristics of typical construction activities. The data is presented in Table 6.

Table 6: Typical Construction Equipment Noise Levels[1]

Type	Lmax (dBA) at 50 Feet
Backhoe	80
Truck	88
Concrete Mixer	85
Pneumatic Tool	85
Pump	76
Saw, Electric	76
Air Compressor	81
Generator	81
Paver	89
Roller	74

Notes:
[1] Referenced Noise Levels from FTA noise and vibration manual.

Construction noise is considered a short-term impact and would be considered significant if construction activities are taken outside the allowable times as described in the City of Clovis Municipal Code Section 5.27.604. Construction is anticipated to occur during the permissible hours according to the County's Municipal Code. Construction noise will have a temporary or periodic audible increase in the ambient noise level above the existing within the project vicinity. The impact is considered less than significant. However, construction noise level projections are provided. Furthermore, noise reduction policies are provided to further reduce construction noise.

Typical operating cycles for these types of construction equipment may involve one or two minutes of full-power operation followed by three to four minutes at lower power settings. Noise levels will be the loudest during the grading phase. This analysis looks at the impact of the closest parcel to residential uses, 55702211S. All other areas of development will be similar or quieter. Multiple construction projects occurring at the same time will not significantly affect these projectionss. The modeling assumes construction equipment as close as 25 feet from the adjacent residences and an average of 300 feet away from the adjacent residences.

Unmitigated noise levels at 300 feet have the potential to reach 67 dBA L_{eq} and 93 dBA L_{max} at the nearest sensitive receptors during grading. Noise levels for the other construction phases would be lower, approximately from 53 to 66 dBA L_{eq} and 86 to 91 dBA L_{max}.

8.2 Construction Vibration

Construction activities can produce vibration that may be felt by adjacent land uses. The construction of the proposed Project would not require the use of equipment such as pile drivers, which are known to generate substantial construction vibration levels. The primary vibration source during construction may be from a vibratory roller. A vibratory roller has a vibration impact of 0.210 inches per second peak particle velocity (PPV) at 25 feet which is perceptible but below any risk to architectural damage.

The fundamental equation used to calculate vibration propagation through average soil conditions and distance is as follows:

$$PPV_{equipment} = PPV_{ref} (100/D_{rec})^n$$

Where: PPV_{ref} = reference PPV at 100ft.
D_{rec} = distance from equipment to receiver in ft.
n = 1.1 (the value related to the attenuation rate through ground)

The thresholds from the Caltrans Transportation and Construction Induced Vibration Guidance Manual in Table 7 (below) provides general thresholds and guidelines as to the vibration damage potential from vibratory impacts.

Table 7: Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: Table 19, Transportation and Construction Vibration Guidance Manual, Caltrans, Sept. 2013.
Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 8 gives approximate vibration levels for particular construction activities. This data provides a reasonable estimate for a wide range of soil conditions.

Table 8: Vibration Source Levels for Construction Equipment[1]

Equipment	Peak Particle Velocity (inches/second) at 25 feet	Approximate Vibration Level LV (dVB) at 25 feet
Pile driver (impact)	1.518 (upper range)	112
	0.644 (typical)	104
Pile driver (sonic)	0.734 upper range	105
	0.170 typical	93
Clam shovel drop (slurry wall)	0.202	94
Hydromill	0.008 in soil	66
(slurry wall)	0.017 in rock	75
Vibratory Roller	0.21	94
Hoe Ram	0.089	87
Large bulldozer	0.089	87
Caisson drill	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

[1] Source: Transit Noise and Vibration Impact Assessment, Federal Transit Administration, May 2006.

At a distance of 25 feet, a vibratory roller would yield a worst-case 0.210 PPV (in/sec) which means the vibration would be perceptible when close to the adjacent residential properties but is below any threshold of damage. Construction vibration is exempt from the vibration standards per 9.22.100(D) of the municipal code, so there is therefore no impact, and no mitigation is required.

8.3 Construction Noise Reduction Policies

Construction operations must follow the City's General Plan and the Noise Ordinance, which states that construction, repair or excavation work performed must occur within the permissible hours. To further ensure that construction activities do not disrupt the adjacent land uses, the following policies shall be taken:

1. Construction shall occur during the permissible hours as defined in Section 5.27.604.
2. During construction, the contractor shall ensure all construction equipment is equipped with appropriate noise attenuating devices.
3. The contractor shall locate equipment staging areas that will create the greatest distance between construction-related noise/vibration sources and sensitive receptors nearest the project site during all project construction.
4. Idling equipment shall be turned off when not in use.
5. Equipment shall be maintained so that vehicles and their loads are secured from rattling and banging.

9.0 References

State of California General Plan Guidelines: 1998. Governor's Office of Planning and Research

Fresno County: General Plan. 2000.

Fresno County: Code of Ordinances. Chapter 8.40.

City of Clovis: General Plan. 2014.

City of Clovis: Municipal Code. Chapter 9.22.080 Noise. Chapter 9.22.100 Vibration.

Kittelson & Associates, Inc. Project Traffic Projections.

Federal Highway Administration. Noise Barrier Design Handbook. June 2017.

Federal Transit Administration. Transit Noise and Vibration Impact Assessment Manual. September 2018

Appendix A:

Photographs and Field Measurement Data

15-Minute Continuous Noise Measurement Datasheet

Project Name:	North Shepherd SOI Expansion		**Site Observations:**
Project: #/Name:	0462-2020-025		39° to 43°, fog, no winds
Site Address/Location:	Duke Ave & Shepherd Ave		
Date:	12/20/2022		
Field Tech/Engineer:	Dennis Jordan / Claire Pincock		
Sound Meter:	XL2, NTI	**SN:** A2A-05967-E0	
Settings:	A-weighted, slow, 1-sec, 15-minute interval		
Site Id:	ST-1, ST-2, ST-3		

MD ACOUSTICS

15-Minute Continuous Noise Measurement Datasheet - Cont.

Project Name: North Shepherd SOI Expansion

Site Address/Location: Duke Ave & Shepherd Ave

Site Id: ST-1, ST-2, ST-3

Figure 1: ST-1 Perrin & Stanford

Figure 2: ST-2 Sunnyside & Shepherd

Figure 3: ST-3 Lexington & Purdue

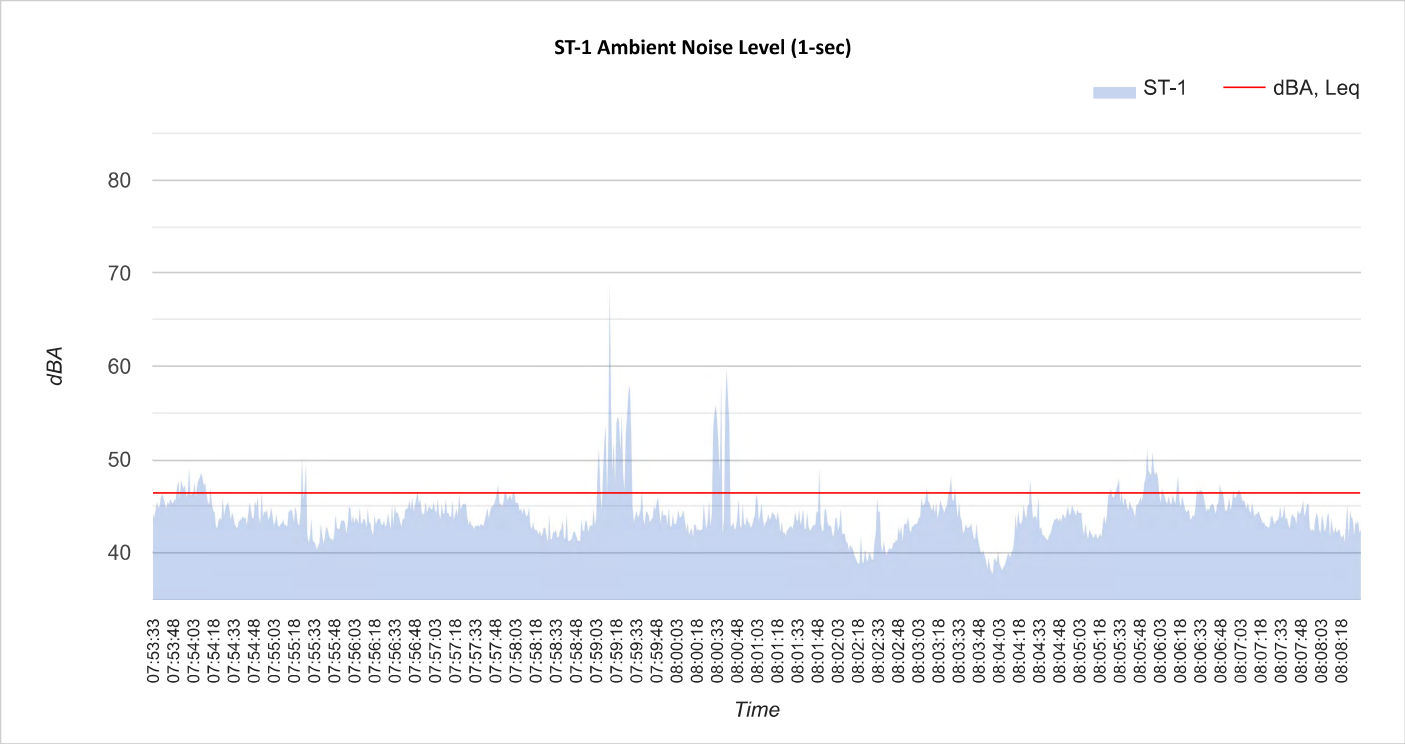
Table 1: Baseline Noise Measurement Summary

Location	Start	Stop	Leq	Lmax	Lmin	L2	L8	L25	L50	L90
ST-1	7:53 AM	8:08 AM	46.4	68.0	38.0	53.3	46.9	45.2	43.9	41.6
ST-2	8:27 AM	8:42 AM	69.1	82.2	55.7	77.4	72	68.7	66.4	62.6
ST-3	9:01 AM	9:16 AM	46	63.5	34.5	56.8	48.8	39.4	37.3	35.6

MD ACOUSTICS

15-Minute Continuous Noise Measurement Datasheet - Cont.

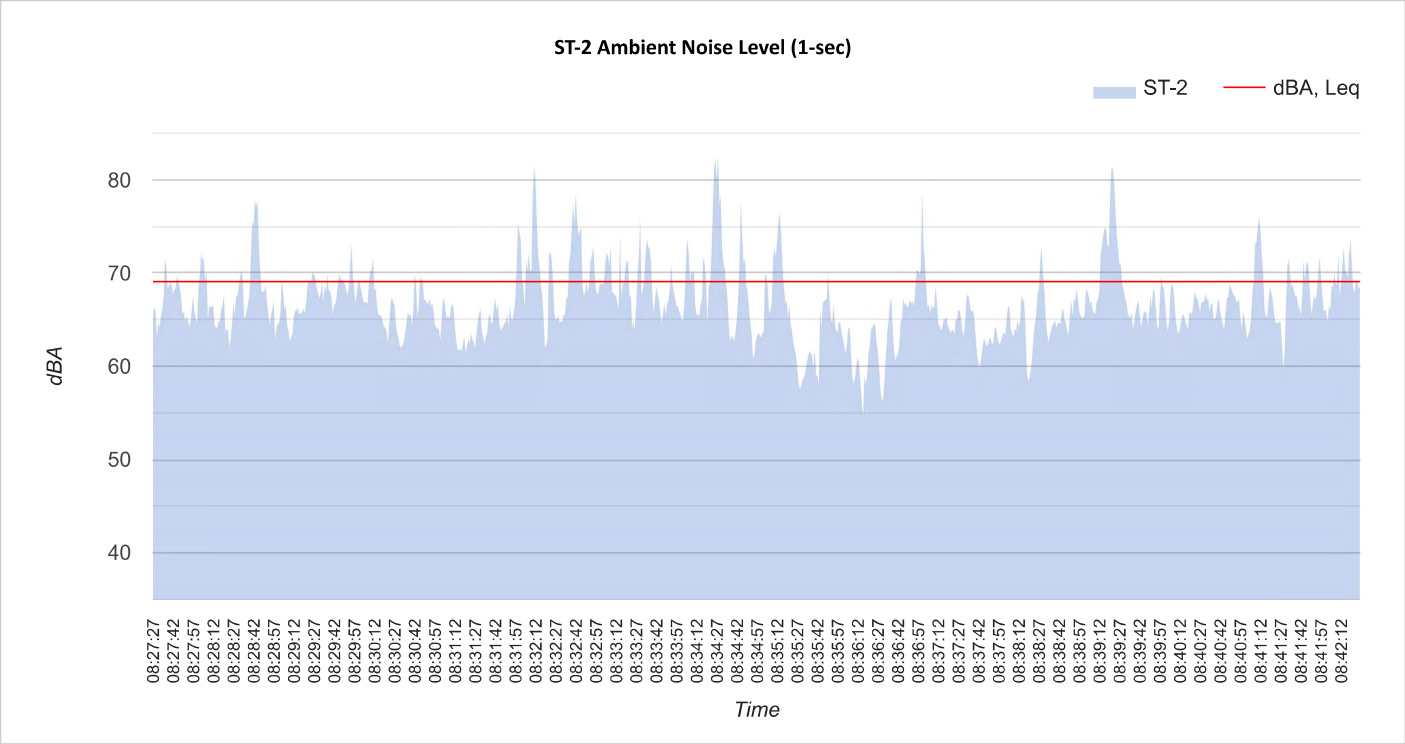
Project Name:	North Shepherd SOI Expansion	**Site Topo:**	Single story housing	**Noise Source(s) w/ Distance:**
Site Address/Location:	Duke Ave & Shepherd Ave	**Meteorological Cond.:**	37°, fog, no wind	Road Noise / fowler ave
Site Id:	ST-1	**Ground Type:**	Housing, Dirt and Vegetation	



MD ACOUSTICS

15-Minute Continuous Noise Measurement Datasheet - Cont.

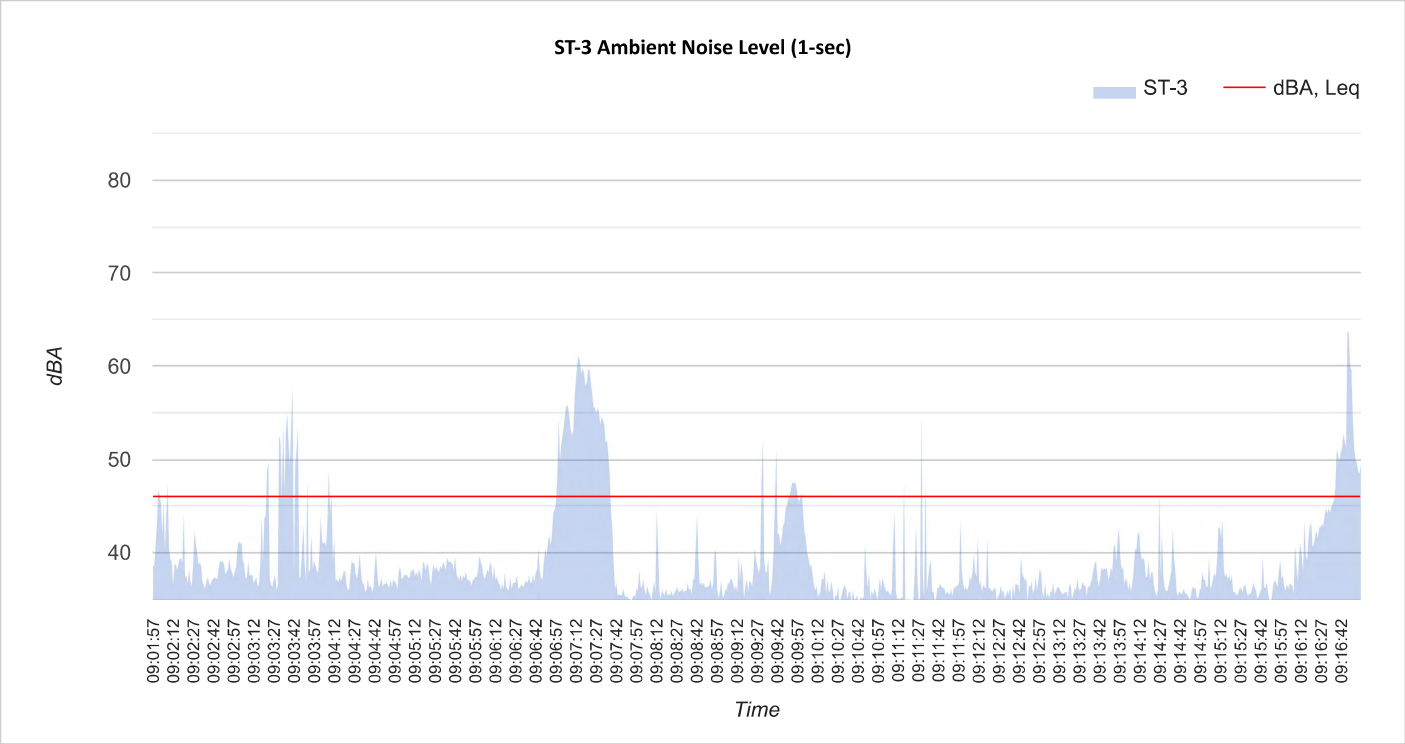
Project Name:	North Shepherd SOI Expansion	**Site Topo:**	Buildings 1 to 2 stories tall	**Noise Source(s) w/ Distance:**
Site Address/Location:	Duke Ave & Shepherd Ave	**Meteorological Cond.:**	39°, fog, no wind	Road Noise / 4-way intersection
Site Id:	ST-2	**Ground Type:**	Buildings, Asphalt, Dirt and Vegetation	



MD ACOUSTICS

15-Minute Continuous Noise Measurement Datasheet - Cont.

Project Name:	North Shepherd SOI Expansion	**Site Topo:**	Single/Two story housing	**Noise Source(s) w/ Distance:**
Site Address/Location:	Duke Ave & Shepherd Ave	**Meteorological Cond.:**	39°, fog, no wind	Road Noise / 2 vehicles drove during reading
Site Id:	ST-3	**Ground Type:**	Housing, Cement, Asphalt, Dirt and Vegetation	



MD ACOUSTICS

15-Minute Continuous Noise Measurement Datasheet

Project Name:	SOI Expansion Vista Ranch		**Site Observations:**
Project: #/Name:	0462-2023-001		39° to 43°, fog, no winds
Site Address/Location:	Vista Ranch SOI Expansion		
Date:	12/20/2022		
Field Tech/Engineer:	Dennis Jordan / Claire Pincock		
Sound Meter:	XL2, NTI	**SN:** A2A-05967-E0	
Settings:	A-weighted, slow, 1-sec, 15-minute interval		
Site Id:	ST - 4, ST - 5, ST - 6, ST - 7, ST - 8, ST - 9		

MD ACOUSTICS

15-Minute Continuous Noise Measurement Datasheet - Cont.

Project Name: SOI Expansion Vista Ranch

Site Address/Location: Vista Ranch SOI Expansion

Site Id: ST - 4, ST - 5, ST - 6, ST - 7, ST - 8, ST - 9

Figure 1: ST-4 End of Perrin

Figure 2: ST-5 Shepherd & Armstrong

Figure 3: ST-6 Shepherd & De Wolf

15-Minute Continuous Noise Measurement Datasheet - Cont.

Project Name: SOI Expansion Vista Ranch

Site Address/Location: Vista Ranch SOI Expansion

Site Id: ST - 4, ST - 5, ST - 6, ST - 7, ST - 8, ST - 9

Figure 4: ST-7 Shepherd & Temperance

Figure 5: ST-8 End of Behymer at gate

Figure 6: ST-9 Behymer & Fowler

15-Minute Continuous Noise Measurement Datasheet - Cont.

Project Name: SOI Expansion Vista Ranch

Site Address/Location: Vista Ranch SOI Expansion

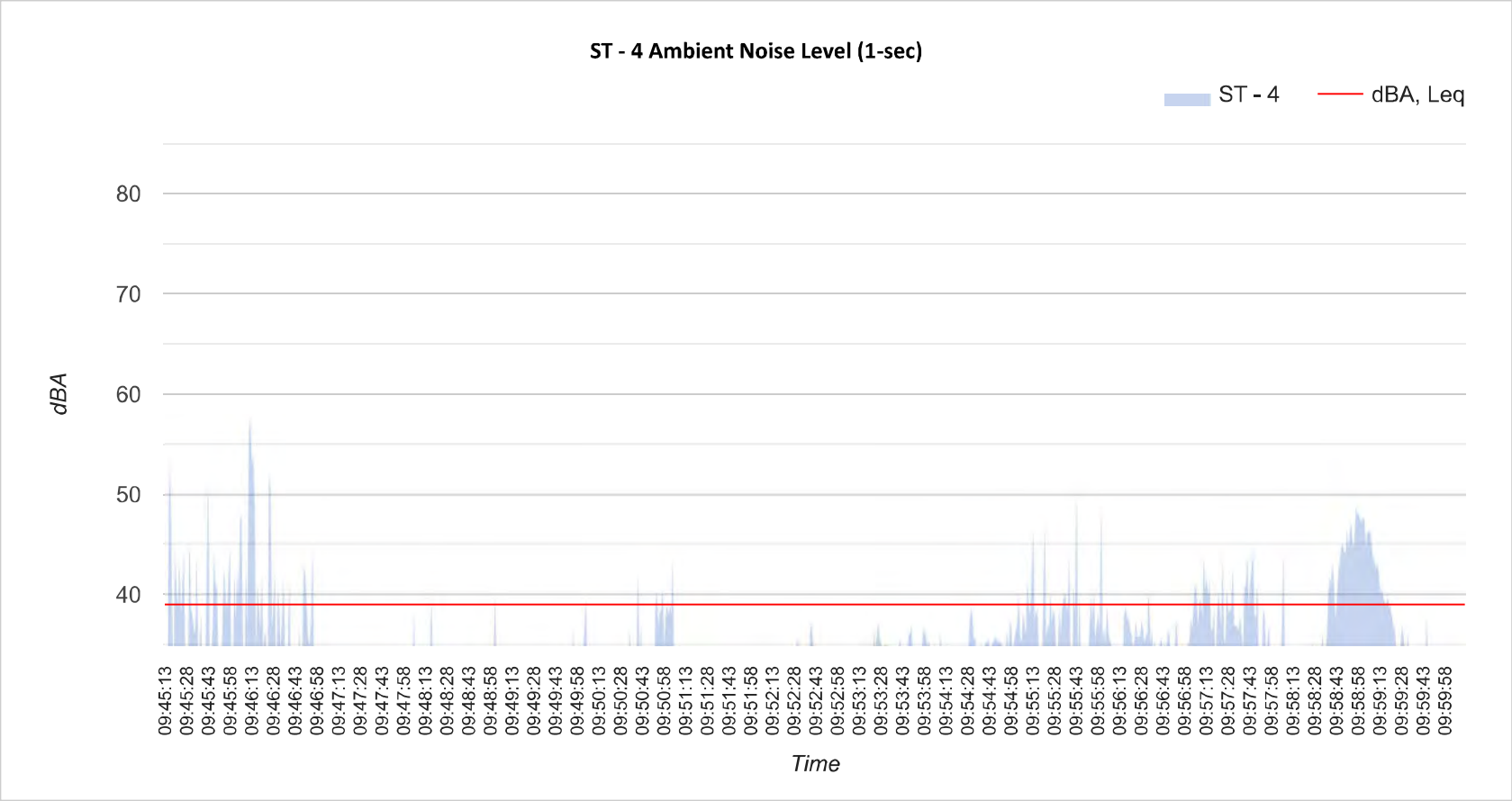
Site Id: ST - 4, ST - 5, ST - 6, ST - 7, ST - 8, ST - 9

Table 1: Baseline Noise Measurement Summary

Location	Start	Stop	Leq	Lmax	Lmin	L2	L8	L25	L50	L90
ST - 4	9:45 AM	10:00 AM	39	57.9	29.0	47.6	41.9	36.7	33.3	30.4
ST - 5	10:08 AM	10:23 AM	69	79.6	43.1	77.5	74.4	69.3	63.7	52.1
ST - 6	11:10 AM	11:25 AM	68.2	81.6	39.7	77.9	74.1	66.5	58.5	47.2
ST - 7	11:48 AM	12:03 PM	45.2	67.2	32.4	53.2	44.7	37.8	36.1	34.1
ST - 8	12:39 PM	12:54 PM	48.7	70.6	32.6	57	50	41.8	38.5	34.8
ST - 9	1:09 PM	1:24 PM	70.1	83.6	39.2	80.3	74.9	67	59.8	47.9

15-Minute Continuous Noise Measurement Datasheet - Cont.

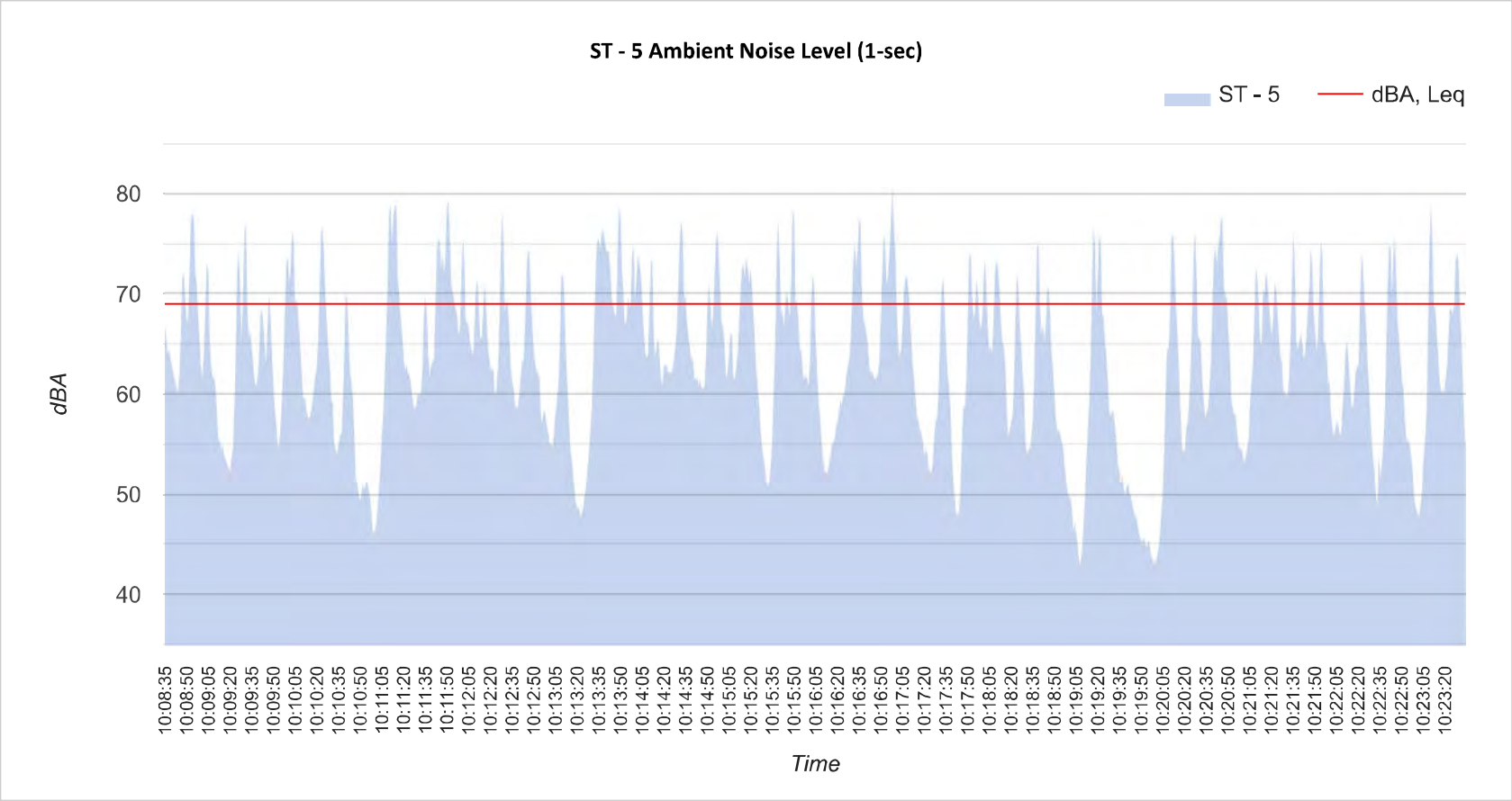
Project Name:	SOI Expansion Vista Ranch	**Site Topo:**	Single/Two story housing	**Noise Source(s) w/ Distance:**
Site Address/Location:	Vista Ranch SOI Expansion	**Meteorological Cond.:**	40°, fog, no winds	Road Noise / None
Site Id:	ST - 4	**Ground Type:**	Housing, Asphalt, Dirt and Vegetation	



MD ACOUSTICS

15-Minute Continuous Noise Measurement Datasheet - Cont.

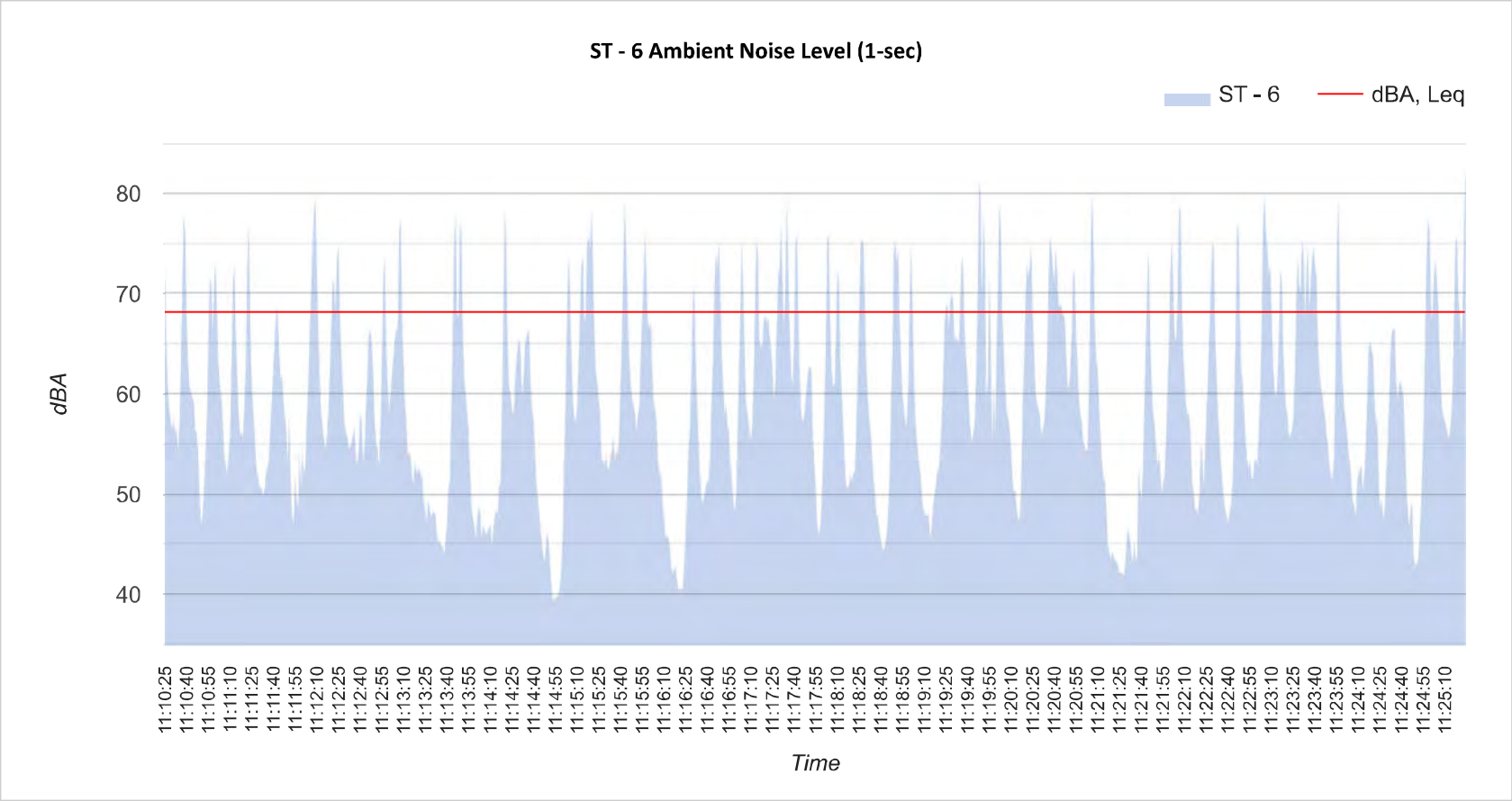
Project Name:	SOI Expansion Vista Ranch	**Site Topo:**	Single/Two story housing	**Noise Source(s) w/ Distance:**
Site Address/Location:	Vista Ranch SOI Expansion	**Meteorological Cond.:**	40°, fog, no winds	Road Noise / 24 ft from roadway
Site Id:	ST - 5	**Ground Type:**	Housing, Cement, Asphalt, Dirt and Vegetation	



MD ACOUSTICS

15-Minute Continuous Noise Measurement Datasheet - Cont.

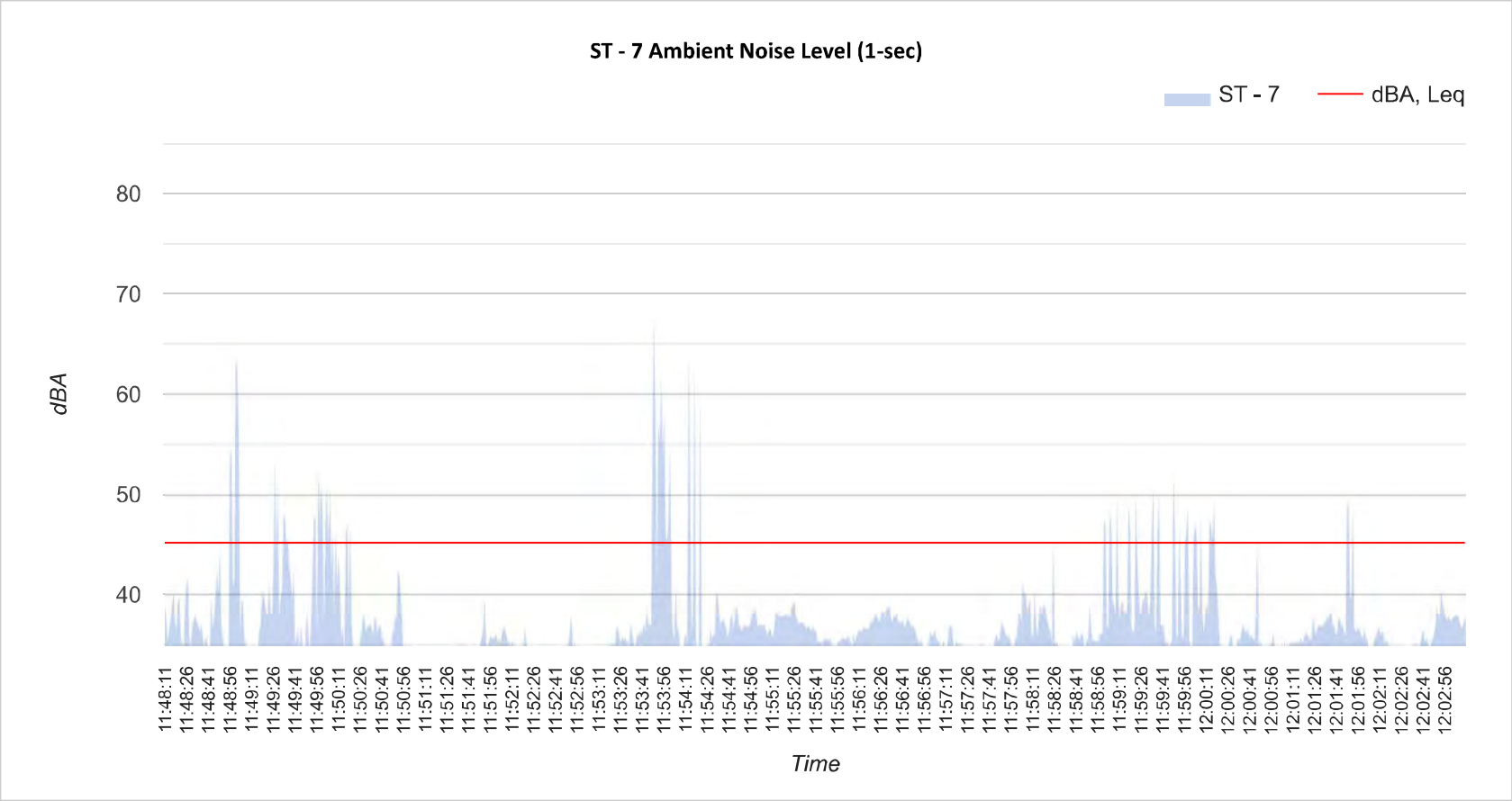
Project Name:	SOI Expansion Vista Ranch	**Site Topo:**	Single/Two story housing	**Noise Source(s) w/ Distance:**
Site Address/Location:	Vista Ranch SOI Expansion	**Meteorological Cond.:**	41°, fog, no winds	Road Noise / 27 ft from roadway
Site Id:	ST - 6	**Ground Type:**	Housing, Cement, Asphalt, Dirt and Vegetation	



MD ACOUSTICS

15-Minute Continuous Noise Measurement Datasheet - Cont.

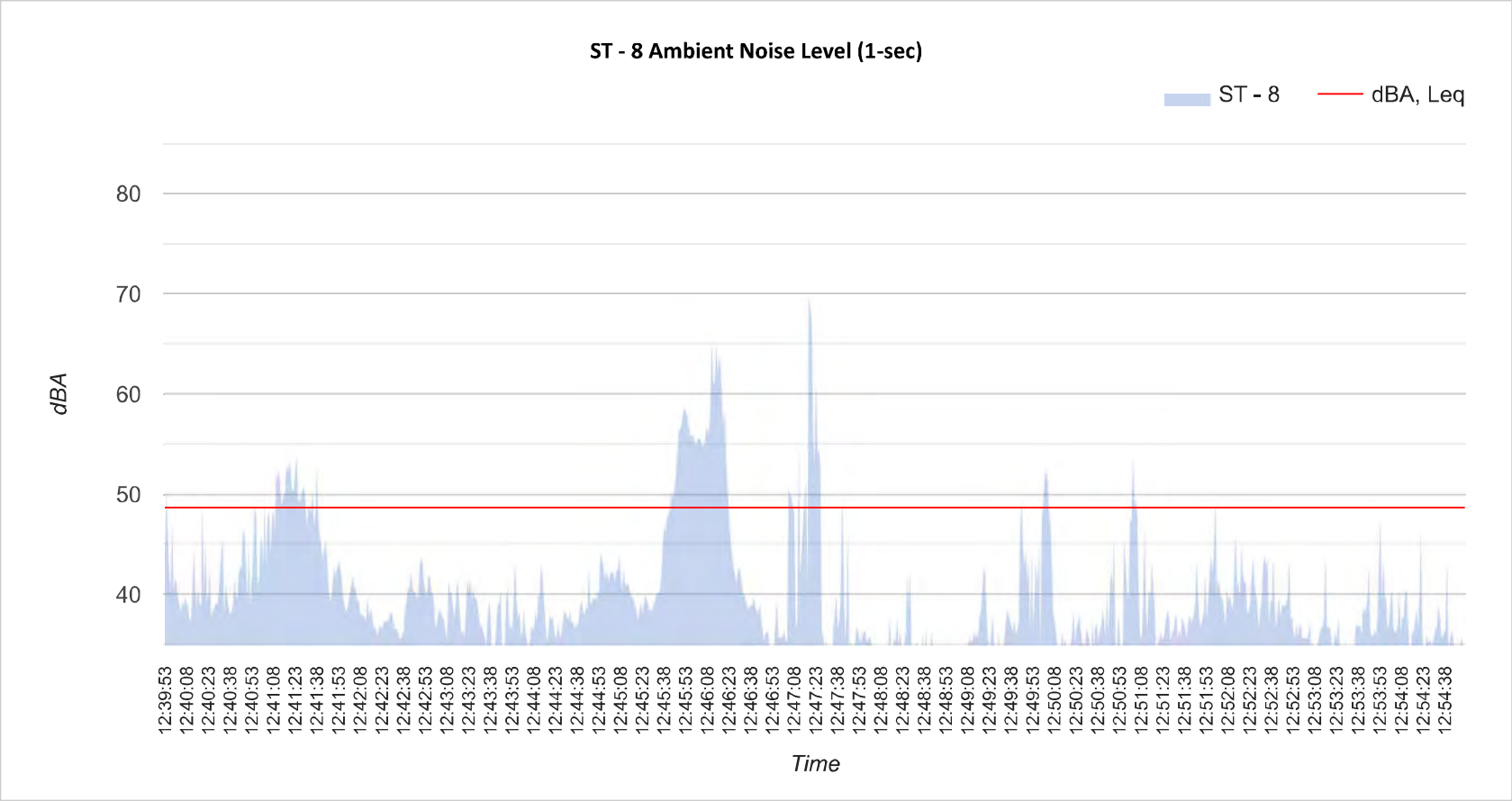
Project Name:	SOI Expansion Vista Ranch	**Site Topo:**	Single/Two story housing	**Noise Source(s) w/ Distance:**
Site Address/Location:	Vista Ranch SOI Expansion	**Meteorological Cond.:**	42°, fog, no winds	Road Noise / None
Site Id:	ST - 7	**Ground Type:**	Housing, Asphalt, Dirt and Vegetation	



MD ACOUSTICS

15-Minute Continuous Noise Measurement Datasheet - Cont.

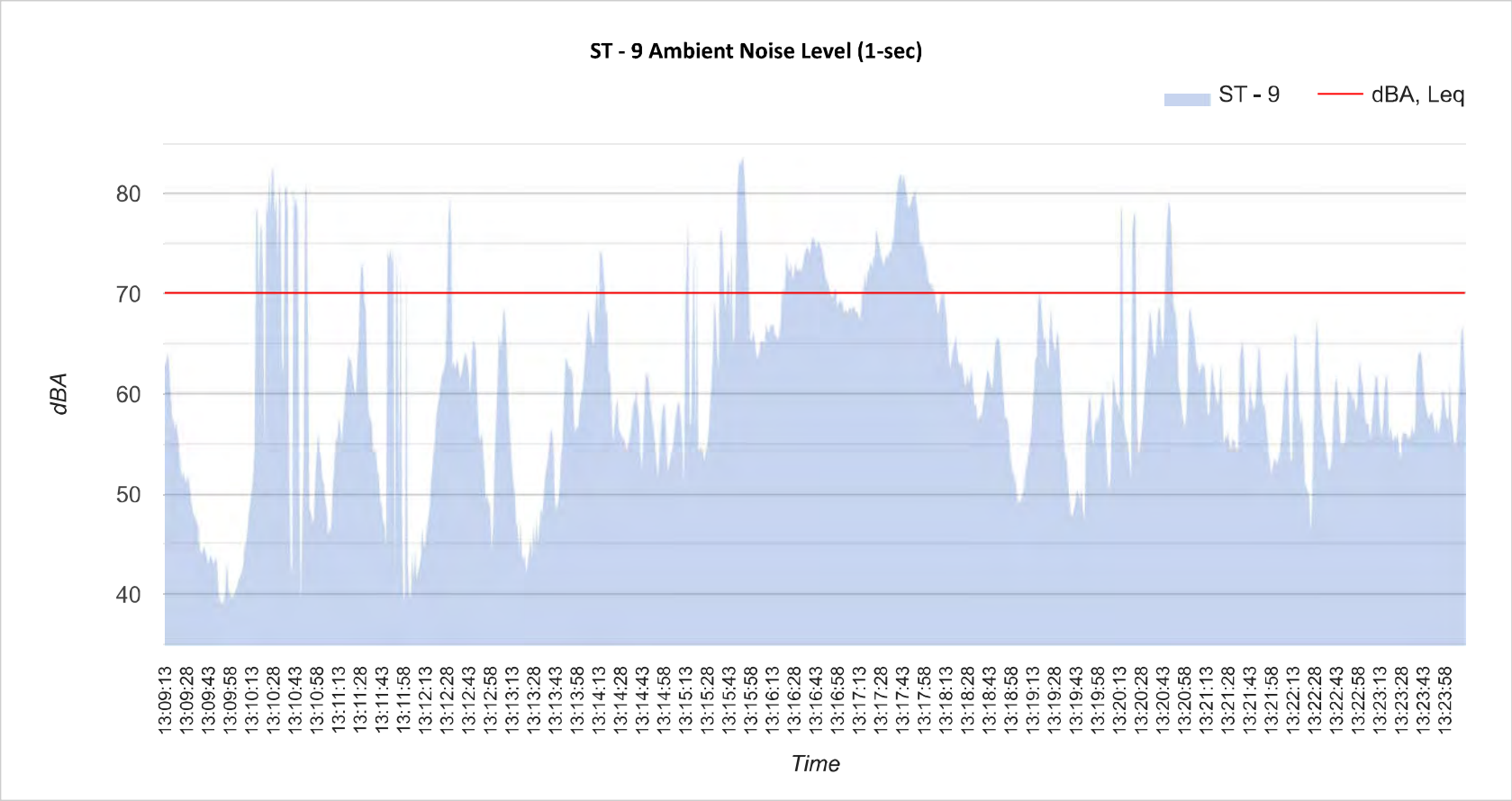
Project Name:	SOI Expansion Vista Ranch	**Site Topo:**	Single/Two story housing	**Noise Source(s) w/ Distance:**
Site Address/Location:	Vista Ranch SOI Expansion	**Meteorological Cond.:**	42°, fog, no winds	Road Noise / Behymer Ave
Site Id:	ST - 8	**Ground Type:**	Housing, Cement, Asphalt, Dirt and Vegetation	



MD ACOUSTICS

15-Minute Continuous Noise Measurement Datasheet - Cont.

Project Name:	SOI Expansion Vista Ranch	**Site Topo:**	Single/Two story housing	**Noise Source(s) w/ Distance:**
Site Address/Location:	Vista Ranch SOI Expansion	**Meteorological Cond.:**	43°, fog, no winds	Road Noise / 4-way intersection
Site Id:	ST - 9	**Ground Type:**	Housing, Cement, Asphalt, Dirt and Vegetation	



MD ACOUSTICS

Appendix B:

Traffic Noise Modeling Output

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

SOFT SITE

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Temperance Avenue and Locan Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	9,860
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	45
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	986

RECEIVER INPUT DATA

RECEIVER DISTANCE =		79
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		79
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	75.8	- -
MEDIUM TRUCKS=	4.00	75.7	- -
HEAVY TRUCKS =	8.01	75.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	64.6	62.7	61.0	54.9	63.5	64.1
MEDIUM TRUCKS	55.1	53.6	47.2	45.7	54.1	54.4
HEAVY TRUCKS	55.3	53.9	44.9	46.1	54.5	54.6
VEHICULAR NOISE	65.5	63.7	61.3	55.9	64.5	**65.0**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	37	79	170	366
LDN	34	73	157	338

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Minnewawa Avenue	DATE:	18-Apr-24
SEGMENT	between Behymer Avenue and Shepherd Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,860
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	586

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.3	64.4	62.7	56.6	65.2	65.9
MEDIUM TRUCKS	56.8	55.3	48.9	47.4	55.8	56.1
HEAVY TRUCKS	57.1	55.6	46.6	47.8	56.2	56.3
VEHICULAR NOISE	67.2	65.4	63.0	57.6	66.2	**66.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	23	74	234	740
LDN	21	66	207	656

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Clovis Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,770
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	577

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	65.6	63.7	61.9	55.9	64.5	65.1
MEDIUM TRUCKS	56.7	55.2	48.8	47.2	55.7	55.9
HEAVY TRUCKS	57.2	55.8	46.8	48.0	56.4	56.5
VEHICULAR NOISE	66.7	64.9	62.3	57.0	65.6	**66.1**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	20	65	204	646
LDN	18	57	182	574

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Clovis Avenue	DATE:	18-Apr-24
SEGMENT	between Nees Avenue and Alluvial Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	11,140
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,114

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.5	66.6	64.8	58.7	67.4	68.0
MEDIUM TRUCKS	59.5	58.0	51.6	50.1	58.6	58.8
HEAVY TRUCKS	60.1	58.6	49.6	50.9	59.2	59.3
VEHICULAR NOISE	69.5	67.7	65.1	59.9	68.5	**69.0**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	39	125	395	1248
LDN	35	111	351	1108

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Clovis Avenue	DATE:	18-Apr-24
SEGMENT	between Alluvial Avenue and Herndon Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	16,510
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,651

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.2	68.3	66.5	60.5	69.1	69.7
MEDIUM TRUCKS	61.2	59.7	53.4	51.8	60.3	60.5
HEAVY TRUCKS	61.8	60.4	51.3	52.6	60.9	61.1
VEHICULAR NOISE	71.2	69.4	66.8	61.6	70.2	**70.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	58	185	585	1849
LDN	52	164	520	1643

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Willow Avenue	DATE:	18-Apr-24
SEGMENT	between International Avenue and Behymer Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	13,120
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	78
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,312

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	31.4	- -
MEDIUM TRUCKS=	4.00	31.3	- -
HEAVY TRUCKS =	8.01	31.4	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	71.8	69.9	68.2	62.1	70.7	71.3
MEDIUM TRUCKS	62.3	60.8	54.4	52.9	61.3	61.6
HEAVY TRUCKS	62.5	61.1	52.1	53.3	61.7	61.8
VEHICULAR NOISE	72.7	70.9	68.5	63.1	71.7	**72.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	83	262	829	2623
LDN	73	232	735	2323

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Willow Avenue	DATE:	18-Apr-24
SEGMENT	between Behymer Avnue and Shepherd Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	14,580
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	75
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,458

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	33.2	- -
MEDIUM TRUCKS=	4.00	33.1	- -
HEAVY TRUCKS =	8.01	33.2	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	72.1	70.2	68.4	62.3	71.0	71.6
MEDIUM TRUCKS	62.5	61.0	54.6	53.1	61.6	61.8
HEAVY TRUCKS	62.8	61.3	52.3	53.6	61.9	62.0
VEHICULAR NOISE	73.0	71.1	68.7	63.3	71.9	**72.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	87	276	872	2759
LDN	77	244	773	2444

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Minnewawa Avenue	DATE:	18-Apr-24
SEGMENT	between International Avenue and Behymer Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	8,420
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	842

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.9	66.0	64.3	58.2	66.8	67.4
MEDIUM TRUCKS	58.4	56.9	50.5	48.9	57.4	57.6
HEAVY TRUCKS	58.6	57.2	48.2	49.4	57.8	57.9
VEHICULAR NOISE	68.8	67.0	64.5	59.2	67.8	**68.3**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	34	106	336	1064
LDN	30	94	298	942

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Sunnyside Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	2,480
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	248

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	61.3	59.4	57.6	51.6	60.2	60.8
MEDIUM TRUCKS	52.3	50.8	44.5	42.9	51.4	51.6
HEAVY TRUCKS	52.9	51.5	42.4	43.7	52.0	52.2
VEHICULAR NOISE	62.3	60.5	58.0	52.7	61.3	**61.8**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	8	24	76	239
LDN	7	21	67	212

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Sunnyside Avenue	DATE:	18-Apr-24
SEGMENT	between Nees Avenue and Alluvial Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	4,420
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	442

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	64.2	62.3	60.5	54.5	63.1	63.7
MEDIUM TRUCKS	55.2	53.7	47.4	45.8	54.3	54.5
HEAVY TRUCKS	55.8	54.4	45.3	46.6	54.9	55.1
VEHICULAR NOISE	65.2	63.4	60.9	55.6	64.2	**64.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	15	47	147	466
LDN	13	41	131	414

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Sunnyside Avenue	DATE:	18-Apr-24
SEGMENT	between Alluvial Avenue and Herndon Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	9,030
SPEED =	40
PK HR % =	10
NEAR LANE/FAR LANE DIST =	37
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	903

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	46.5	- -
MEDIUM TRUCKS=	4.00	46.5	- -
HEAVY TRUCKS =	8.01	46.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	65.7	63.8	62.1	56.0	64.6	65.2
MEDIUM TRUCKS	57.4	55.9	49.6	48.0	56.5	56.7
HEAVY TRUCKS	58.3	56.9	47.9	49.1	57.5	57.6
VEHICULAR NOISE	67.0	65.2	62.4	57.3	65.9	**66.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	22	69	219	692
LDN	20	62	195	617

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Fowler Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Teague Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,630
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	40
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	563

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.9	- -
MEDIUM TRUCKS=	4.00	45.8	- -
HEAVY TRUCKS =	8.01	45.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	65.2	63.3	61.5	55.5	64.1	64.7
MEDIUM TRUCKS	56.2	54.7	48.4	46.8	55.3	55.5
HEAVY TRUCKS	56.8	55.4	46.3	47.6	55.9	56.1
VEHICULAR NOISE	66.2	64.4	61.9	56.6	65.2	**65.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	19	59	186	588
LDN	17	52	165	522

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Fowler Avenue	DATE:	18-Apr-24
SEGMENT	between Teague Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	6,020
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	602

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.5	64.6	62.8	56.7	65.4	66.0
MEDIUM TRUCKS	56.9	55.4	49.0	47.5	56.0	56.2
HEAVY TRUCKS	57.2	55.7	46.7	48.0	56.3	56.4
VEHICULAR NOISE	67.4	65.5	63.1	57.7	66.3	**66.8**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	24	76	240	760
LDN	21	67	213	674

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Fowler Avenue	DATE:	18-Apr-24
SEGMENT	between Nees Avenue and Alluvial Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	9,480
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	948

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.8	65.9	64.1	58.0	66.7	67.3
MEDIUM TRUCKS	58.8	57.3	50.9	49.4	57.9	58.1
HEAVY TRUCKS	59.4	57.9	48.9	50.2	58.5	58.6
VEHICULAR NOISE	68.8	67.0	64.4	59.2	67.8	**68.3**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	34	106	336	1062
LDN	30	94	298	943

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Fowler Avenue	DATE:	18-Apr-24
SEGMENT	between Alluvial Avenue and SR 168 WB Ramps	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	14,200
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,420

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.5	67.6	65.9	59.8	68.4	69.0
MEDIUM TRUCKS	60.6	59.1	52.7	51.2	59.6	59.8
HEAVY TRUCKS	61.1	59.7	50.7	51.9	60.3	60.4
VEHICULAR NOISE	70.6	68.8	66.2	60.9	69.5	**70.0**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	50	159	503	1590
LDN	45	141	447	1413

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Temperance Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	4,950
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	495

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.3	64.4	62.6	56.5	65.2	65.8
MEDIUM TRUCKS	56.7	55.2	48.8	47.3	55.8	56.0
HEAVY TRUCKS	57.0	55.5	46.5	47.8	56.1	56.2
VEHICULAR NOISE	67.2	65.3	62.9	57.5	66.1	**66.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	23	73	230	726
LDN	20	64	203	643

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Temperance Avenue	DATE:	18-Apr-24
SEGMENT	between Nees Avenue and Alluvial Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	11,420
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,142

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.9	68.0	66.2	60.2	68.8	69.4
MEDIUM TRUCKS	60.3	58.8	52.5	50.9	59.4	59.6
HEAVY TRUCKS	60.6	59.2	50.1	51.4	59.7	59.9
VEHICULAR NOISE	70.8	69.0	66.5	61.1	69.7	**70.3**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	53	168	530	1676
LDN	47	148	469	1485

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Temperance Avenue	DATE:	18-Apr-24
SEGMENT	between Alluvial Avenue and SR 168 WB Ramps	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	15,010
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,501

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	71.1	69.2	67.4	61.4	70.0	70.6
MEDIUM TRUCKS	61.5	60.0	53.7	52.1	60.6	60.8
HEAVY TRUCKS	61.8	60.4	51.3	52.6	60.9	61.1
VEHICULAR NOISE	72.0	70.2	67.7	62.3	70.9	**71.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	70	220	697	2203
LDN	62	195	617	1951

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Locan Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	1,670
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	167

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	59.6	57.7	55.9	49.9	58.5	59.1
MEDIUM TRUCKS	50.6	49.1	42.8	41.2	49.7	49.9
HEAVY TRUCKS	51.2	49.8	40.7	42.0	50.3	50.5
VEHICULAR NOISE	60.6	58.8	56.2	51.0	59.6	**60.1**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	5	16	51	161
LDN	5	14	45	143

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	De Wolf Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Owens Mountain Parkway	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	3,350
SPEED =	40
PK HR % =	10
NEAR LANE/FAR LANE DIST =	32
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	335

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	47.5	- -
MEDIUM TRUCKS=	4.00	47.4	- -
HEAVY TRUCKS =	8.01	47.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	61.3	59.4	57.7	51.6	60.2	60.8
MEDIUM TRUCKS	53.1	51.5	45.2	43.6	52.1	52.3
HEAVY TRUCKS	53.9	52.5	43.5	44.7	53.1	53.2
VEHICULAR NOISE	62.6	60.8	58.1	53.0	61.5	**62.0**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	8	25	80	252
LDN	7	22	71	224

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Behymer Avenue	DATE:	18-Apr-24
SEGMENT	between Willow Avenue and Minnewawa Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	4,600
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	460

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	65.3	63.4	61.6	55.6	64.2	64.8
MEDIUM TRUCKS	55.7	54.2	47.9	46.3	54.8	55.0
HEAVY TRUCKS	56.0	54.6	45.5	46.8	55.1	55.3
VEHICULAR NOISE	66.2	64.4	61.9	56.5	65.1	**65.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	18	58	184	581
LDN	16	51	163	515

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Behymer Avenue	DATE:	18-Apr-24
SEGMENT	between Minnewawa Avenue and Fowler Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	7,720
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	772

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.5	65.6	63.9	57.8	66.4	67.1
MEDIUM TRUCKS	58.0	56.5	50.1	48.6	57.0	57.3
HEAVY TRUCKS	58.2	56.8	47.8	49.0	57.4	57.5
VEHICULAR NOISE	68.4	66.6	64.2	58.8	67.4	**67.9**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	31	98	308	975
LDN	27	86	273	864

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Willow Avenue and Minnewawa Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	10,090
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	40
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,009

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.9	- -
MEDIUM TRUCKS=	4.00	45.8	- -
HEAVY TRUCKS =	8.01	45.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.1	67.2	65.4	59.3	68.0	68.6
MEDIUM TRUCKS	59.5	58.0	51.6	50.1	58.5	58.8
HEAVY TRUCKS	59.8	58.3	49.3	50.5	58.9	59.0
VEHICULAR NOISE	69.9	68.1	65.7	60.3	68.9	**69.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	44	138	436	1380
LDN	39	122	387	1223

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Minnewawa Avenue and Clovis Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	9,240
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	924

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.7	66.8	65.0	59.0	67.6	68.2
MEDIUM TRUCKS	59.2	57.6	51.3	49.7	58.2	58.4
HEAVY TRUCKS	59.4	58.0	49.0	50.2	58.6	58.7
VEHICULAR NOISE	69.6	67.8	65.3	60.0	68.5	**69.1**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	40	128	404	1276
LDN	36	113	358	1131

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between De Wolf Avenue and SR 168	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	7,100
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	55
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	710

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	41.9	- -
MEDIUM TRUCKS=	4.00	41.8	- -
HEAVY TRUCKS =	8.01	41.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.9	66.0	64.3	58.2	66.8	67.4
MEDIUM TRUCKS	58.4	56.9	50.5	49.0	57.4	57.7
HEAVY TRUCKS	58.6	57.2	48.2	49.4	57.8	57.9
VEHICULAR NOISE	68.8	67.0	64.5	59.2	67.8	**68.3**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	34	107	337	1065
LDN	30	94	298	944

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Nees Avenue	DATE:	18-Apr-24
SEGMENT	between Clovis Avenue and Sunnyside Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	9,430
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	943

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.1	65.2	63.4	57.4	66.0	66.6
MEDIUM TRUCKS	58.1	56.6	50.3	48.7	57.2	57.4
HEAVY TRUCKS	58.7	57.3	48.2	49.5	57.8	58.0
VEHICULAR NOISE	68.1	66.3	63.8	58.5	67.1	**67.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	29	91	288	909
LDN	26	81	255	808

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Nees Avenue	DATE:	18-Apr-24
SEGMENT	between Sunnyside Avenue and Fowler Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	7,970
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	797

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.8	64.9	63.1	57.0	65.7	66.3
MEDIUM TRUCKS	57.8	56.3	49.9	48.4	56.8	57.1
HEAVY TRUCKS	58.4	56.9	47.9	49.1	57.5	57.6
VEHICULAR NOISE	67.8	66.0	63.4	58.2	66.7	**67.3**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	27	84	266	840
LDN	24	75	236	747

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Nees Avenue	DATE:	18-Apr-24
SEGMENT	between Fowler Avenue and Temperance Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	7,010
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	25
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	701

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	48.5	- -
MEDIUM TRUCKS=	4.00	48.4	- -
HEAVY TRUCKS =	8.01	48.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	65.9	64.0	62.2	56.2	64.8	65.4
MEDIUM TRUCKS	57.0	55.5	49.1	47.5	56.0	56.2
HEAVY TRUCKS	57.5	56.1	47.1	48.3	56.7	56.8
VEHICULAR NOISE	67.0	65.2	62.6	57.3	65.9	**66.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	22	69	219	693
LDN	19	62	195	616

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Nees Avenue	DATE:	18-Apr-24
SEGMENT	between Temperance Avenue and Locan Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	4,380
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	438

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	63.8	61.9	60.1	54.0	62.7	63.3
MEDIUM TRUCKS	54.8	53.3	46.9	45.4	53.9	54.1
HEAVY TRUCKS	55.4	53.9	44.9	46.2	54.5	54.6
VEHICULAR NOISE	64.8	63.0	60.4	55.2	63.8	**64.3**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	13	42	134	422
LDN	12	38	119	375

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Alluvial Avenue	DATE:	18-Apr-24
SEGMENT	between Clovis Avenue and Sunnyside Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	9,760
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	24
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	976

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	48.6	- -
MEDIUM TRUCKS=	4.00	48.5	- -
HEAVY TRUCKS =	8.01	48.6	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.3	65.4	63.7	57.6	66.2	66.8
MEDIUM TRUCKS	58.4	56.9	50.5	49.0	57.4	57.7
HEAVY TRUCKS	58.9	57.5	48.5	49.7	58.1	58.2
VEHICULAR NOISE	68.4	66.6	64.0	58.8	67.3	**67.8**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	30	96	304	962
LDN	27	85	270	855

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Alluvial Avenue	DATE:	18-Apr-24
SEGMENT	between Sunnyside Avenue and Fowler Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	8,330
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	25
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	833

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	48.5	- -
MEDIUM TRUCKS=	4.00	48.4	- -
HEAVY TRUCKS =	8.01	48.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.7	64.8	63.0	56.9	65.6	66.2
MEDIUM TRUCKS	57.7	56.2	49.8	48.3	56.8	57.0
HEAVY TRUCKS	58.3	56.8	47.8	49.1	57.4	57.5
VEHICULAR NOISE	67.7	65.9	63.3	58.1	66.7	**67.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	26	82	260	823
LDN	23	73	231	732

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Clovis Avenue and Sunnyside Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	8,090
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	55
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	809

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	41.9	- -
MEDIUM TRUCKS=	4.00	41.8	- -
HEAVY TRUCKS =	8.01	41.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.5	66.6	64.8	58.8	67.4	68.0
MEDIUM TRUCKS	58.9	57.4	51.1	49.5	58.0	58.2
HEAVY TRUCKS	59.2	57.8	48.7	50.0	58.3	58.5
VEHICULAR NOISE	69.4	67.6	65.1	59.7	68.3	**68.9**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	38	121	384	1214
LDN	34	108	340	1075

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Herndon Avenue	DATE:	18-Apr-24
SEGMENT	between SR 168 and Clovis Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	38,530
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	100
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	3,853

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	3.0	- -
MEDIUM TRUCKS=	4.00	1.0	- -
HEAVY TRUCKS =	8.01	3.0	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	85.4	83.5	81.7	75.7	84.3	84.9
MEDIUM TRUCKS	81.2	79.7	73.3	71.8	80.3	80.5
HEAVY TRUCKS	77.0	75.6	66.5	67.8	76.1	76.3
VEHICULAR NOISE	87.2	85.5	82.4	77.6	86.2	**86.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	2320	7336	23200	73365
LDN	2083	6588	20832	65876

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Sunnyside Avenue and Fowler Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	3,740
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	374

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	64.4	62.5	60.7	54.7	63.3	63.9
MEDIUM TRUCKS	54.8	53.3	47.0	45.4	53.9	54.1
HEAVY TRUCKS	55.1	53.7	44.6	45.9	54.2	54.4
VEHICULAR NOISE	65.3	63.5	61.0	55.6	64.2	**64.8**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	15	47	149	472
LDN	13	42	132	419

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Fowler Avenue and Temperance Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	6,800
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	680

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.4	65.5	63.7	57.7	66.3	66.9
MEDIUM TRUCKS	57.8	56.3	50.0	48.4	56.9	57.1
HEAVY TRUCKS	58.1	56.7	47.6	48.9	57.2	57.4
VEHICULAR NOISE	68.3	66.5	64.0	58.6	67.2	**67.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	30	94	297	939
LDN	26	83	263	832

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Temperance Avenue and Locan Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	4,910
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	45
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	491

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	44.8	- -
MEDIUM TRUCKS=	4.00	44.7	- -
HEAVY TRUCKS =	8.01	44.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.0	64.1	62.4	56.3	64.9	65.5
MEDIUM TRUCKS	56.5	55.0	48.6	47.1	55.5	55.8
HEAVY TRUCKS	56.7	55.3	46.3	47.5	55.9	56.0
VEHICULAR NOISE	66.9	65.1	62.6	57.3	65.9	**66.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	22	69	218	689
LDN	19	61	193	611

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Locan Avenue and De Wolf Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	3,940
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	394

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	65.0	63.1	61.3	55.3	63.9	64.5
MEDIUM TRUCKS	55.5	53.9	47.6	46.0	54.5	54.7
HEAVY TRUCKS	55.7	54.3	45.3	46.5	54.9	55.0
VEHICULAR NOISE	65.9	64.1	61.6	56.3	64.8	**65.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	17	54	172	544
LDN	15	48	152	482

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Alluvial Avenue	DATE:	18-Apr-24
SEGMENT	between Fowler Avenue and Temperance Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,070
SPEED =	40
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	507

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	62.9	61.0	59.3	53.2	61.8	62.4
MEDIUM TRUCKS	54.6	53.1	46.8	45.2	53.7	53.9
HEAVY TRUCKS	55.5	54.1	45.1	46.3	54.7	54.8
VEHICULAR NOISE	64.2	62.4	59.7	54.6	63.1	**63.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	12	36	115	364
LDN	10	32	103	324

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Herndon Avenue	DATE:	18-Apr-24
SEGMENT	between Clovis Avenue and Sunnyside Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	35,690
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	76
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	3,569

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	32.6	- -
MEDIUM TRUCKS=	4.00	32.5	- -
HEAVY TRUCKS =	8.01	32.6	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	74.7	72.8	71.0	65.0	73.6	74.2
MEDIUM TRUCKS	65.8	64.3	57.9	56.3	64.8	65.0
HEAVY TRUCKS	66.3	64.9	55.8	57.1	65.5	65.6
VEHICULAR NOISE	75.7	73.9	71.4	66.1	74.7	**75.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	166	525	1659	5245
LDN	147	466	1474	4660

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Minnewawa Avenue	DATE:	18-Apr-24
SEGMENT	between Behymer Avenue and Shepherd Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,720
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	572

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.2	64.3	62.6	56.5	65.1	65.7
MEDIUM TRUCKS	56.7	55.2	48.8	47.3	55.7	56.0
HEAVY TRUCKS	56.9	55.5	46.5	47.7	56.1	56.2
VEHICULAR NOISE	67.1	65.3	62.9	57.5	66.1	**66.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	23	72	229	723
LDN	20	64	202	640

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Willow Avenue	DATE:	18-Apr-24
SEGMENT	between International Avenue and Behymer Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	12,460
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	78
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,246

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	31.4	- -
MEDIUM TRUCKS=	4.00	31.3	- -
HEAVY TRUCKS =	8.01	31.4	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	71.6	69.7	67.9	61.9	70.5	71.1
MEDIUM TRUCKS	62.1	60.6	54.2	52.7	61.1	61.3
HEAVY TRUCKS	62.3	60.9	51.9	53.1	61.5	61.6
VEHICULAR NOISE	72.5	70.7	68.2	62.9	71.4	**72.0**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	79	249	788	2491
LDN	70	221	698	2207

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Willow Avenue	DATE:	18-Apr-24
SEGMENT	between Behymer Avnue and Shepherd Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	14,820
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	75
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,482

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	33.2	- -
MEDIUM TRUCKS=	4.00	33.1	- -
HEAVY TRUCKS =	8.01	33.2	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	72.1	70.2	68.5	62.4	71.0	71.6
MEDIUM TRUCKS	62.6	61.1	54.7	53.2	61.6	61.9
HEAVY TRUCKS	62.8	61.4	52.4	53.6	62.0	62.1
VEHICULAR NOISE	73.0	71.2	68.7	63.4	72.0	**72.5**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	89	280	887	2804
LDN	79	248	786	2484

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Minnewawa Avenue	DATE:	18-Apr-24
SEGMENT	between International Avenue and Behymer Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	8,990
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	899

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.2	66.3	64.5	58.5	67.1	67.7
MEDIUM TRUCKS	58.6	57.1	50.8	49.2	57.7	57.9
HEAVY TRUCKS	58.9	57.5	48.5	49.7	58.1	58.2
VEHICULAR NOISE	69.1	67.3	64.8	59.5	68.0	**68.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	36	114	359	1136
LDN	32	101	318	1006

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Fowler Avenue	DATE:	18-Apr-24
SEGMENT	between Teague Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA	SCENARIO:	Existing Plus Project

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	7,250
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	725

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.3	65.4	63.6	57.5	66.2	66.8
MEDIUM TRUCKS	57.7	56.2	49.8	48.3	56.8	57.0
HEAVY TRUCKS	58.0	56.6	47.5	48.8	57.1	57.2
VEHICULAR NOISE	68.2	66.3	63.9	58.5	67.1	**67.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	29	92	290	916
LDN	26	81	257	811

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Clovis Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	8,430
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	843

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.3	65.4	63.6	57.5	66.2	66.8
MEDIUM TRUCKS	58.3	56.8	50.4	48.9	57.4	57.6
HEAVY TRUCKS	58.9	57.4	48.4	49.7	58.0	58.1
VEHICULAR NOISE	68.3	66.5	63.9	58.7	67.2	**67.8**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	30	94	299	944
LDN	27	84	265	839

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Clovis Avenue	DATE:	18-Apr-24
SEGMENT	between Nees Avenue and Alluvial Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	11,080
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,108

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.4	66.5	64.8	58.7	67.3	68.0
MEDIUM TRUCKS	59.5	58.0	51.6	50.1	58.5	58.8
HEAVY TRUCKS	60.0	58.6	49.6	50.8	59.2	59.3
VEHICULAR NOISE	69.5	67.7	65.1	59.9	68.4	**68.9**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	39	124	392	1241
LDN	35	110	349	1103

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Clovis Avenue	DATE:	18-Apr-24
SEGMENT	between Alluvial Avenue and Herndon Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	15,570
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,557

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.9	68.0	66.3	60.2	68.8	69.4
MEDIUM TRUCKS	61.0	59.5	53.1	51.6	60.0	60.2
HEAVY TRUCKS	61.5	60.1	51.1	52.3	60.7	60.8
VEHICULAR NOISE	71.0	69.2	66.6	61.3	69.9	**70.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	55	174	551	1744
LDN	49	155	490	1549

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Sunnyside Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	3,920
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	392

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	63.3	61.4	59.6	53.6	62.2	62.8
MEDIUM TRUCKS	54.3	52.8	46.5	44.9	53.4	53.6
HEAVY TRUCKS	54.9	53.5	44.4	45.7	54.0	54.2
VEHICULAR NOISE	64.3	62.5	59.9	54.7	63.3	**63.8**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	12	38	120	378
LDN	11	34	106	336

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Sunnyside Avenue	DATE:	18-Apr-24
SEGMENT	between Nees Avenue and Alluvial Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	7,090
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	709

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.2	64.3	62.6	56.5	65.1	65.8
MEDIUM TRUCKS	57.3	55.8	49.4	47.9	56.3	56.6
HEAVY TRUCKS	57.8	56.4	47.4	48.6	57.0	57.1
VEHICULAR NOISE	67.3	65.5	62.9	57.7	66.2	**66.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	24	75	236	748
LDN	21	66	210	664

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Sunnyside Avenue	DATE:	18-Apr-24
SEGMENT	between Alluvial Avenue and Herndon Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	12,930
SPEED =	40
PK HR % =	10
NEAR LANE/FAR LANE DIST =	37
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,293

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	46.5	- -
MEDIUM TRUCKS=	4.00	46.5	- -
HEAVY TRUCKS =	8.01	46.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.3	65.4	63.6	57.6	66.2	66.8
MEDIUM TRUCKS	59.0	57.5	51.1	49.6	58.0	58.3
HEAVY TRUCKS	59.9	58.5	49.4	50.7	59.0	59.2
VEHICULAR NOISE	68.5	66.7	64.0	58.9	67.5	**68.0**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	31	99	313	991
LDN	28	88	279	884

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Fowler Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Teague Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA	SCENARIO:	Existing Plus Project

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	7,540
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	40
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	754

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.9	- -
MEDIUM TRUCKS=	4.00	45.8	- -
HEAVY TRUCKS =	8.01	45.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.5	64.6	62.8	56.7	65.4	66.0
MEDIUM TRUCKS	57.5	56.0	49.6	48.1	56.6	56.8
HEAVY TRUCKS	58.1	56.6	47.6	48.9	57.2	57.3
VEHICULAR NOISE	67.5	65.7	63.1	57.9	66.5	**67.0**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	25	79	249	787
LDN	22	70	221	699

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Fowler Avenue	DATE:	18-Apr-24
SEGMENT	between Nees Avenue and Alluvial Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	9,410
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	941

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.7	65.8	64.1	58.0	66.6	67.2
MEDIUM TRUCKS	58.8	57.3	50.9	49.4	57.8	58.1
HEAVY TRUCKS	59.3	57.9	48.9	50.1	58.5	58.6
VEHICULAR NOISE	68.8	67.0	64.4	59.2	67.7	**68.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	33	105	333	1054
LDN	30	94	296	936

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Fowler Avenue	DATE:	18-Apr-24
SEGMENT	between Alluvial Avenue and SR 168 WB Ramps	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	14,070
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,407

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.5	67.6	65.8	59.8	68.4	69.0
MEDIUM TRUCKS	60.5	59.0	52.7	51.1	59.6	59.8
HEAVY TRUCKS	61.1	59.7	50.6	51.9	60.2	60.4
VEHICULAR NOISE	70.5	68.7	66.1	60.9	69.5	**70.0**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	50	158	498	1576
LDN	44	140	443	1400

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Temperance Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	7,460
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	746

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.0	66.1	64.4	58.3	66.9	67.6
MEDIUM TRUCKS	58.5	57.0	50.6	49.1	57.5	57.8
HEAVY TRUCKS	58.7	57.3	48.3	49.5	57.9	58.0
VEHICULAR NOISE	68.9	67.1	64.7	59.3	67.9	**68.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	35	109	346	1095
LDN	31	97	307	970

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Temperance Avenue	DATE:	18-Apr-24
SEGMENT	between Nees Avenue and Alluvial Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	13,150
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,315

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.5	68.6	66.8	60.8	69.4	70.0
MEDIUM TRUCKS	61.0	59.4	53.1	51.5	60.0	60.2
HEAVY TRUCKS	61.2	59.8	50.8	52.0	60.4	60.5
VEHICULAR NOISE	71.4	69.6	67.1	61.8	70.3	**70.9**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	61	193	610	1930
LDN	54	171	541	1709

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Temperance Avenue	DATE:	18-Apr-24
SEGMENT	between Alluvial Avenue and SR 168 WB Ramps	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	19,160
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,916

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	72.1	70.2	68.5	62.4	71.0	71.6
MEDIUM TRUCKS	62.6	61.1	54.7	53.2	61.6	61.9
HEAVY TRUCKS	62.8	61.4	52.4	53.6	62.0	62.1
VEHICULAR NOISE	73.0	71.2	68.8	63.4	72.0	**72.5**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	89	281	889	2812
LDN	79	249	788	2491

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Behymer Avenue	DATE:	18-Apr-24
SEGMENT	between Minnewawa Avenue and Fowler Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	10,000
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,000

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.7	66.8	65.0	58.9	67.6	68.2
MEDIUM TRUCKS	59.1	57.6	51.2	49.7	58.2	58.4
HEAVY TRUCKS	59.4	58.0	48.9	50.2	58.5	58.6
VEHICULAR NOISE	69.6	67.7	65.3	59.9	68.5	**69.0**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	40	126	399	1263
LDN	35	112	354	1119

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Willow Avenue and Minnewawa Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	8,340
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	40
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	834

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.9	- -
MEDIUM TRUCKS=	4.00	45.8	- -
HEAVY TRUCKS =	8.01	45.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.2	66.3	64.6	58.5	67.1	67.7
MEDIUM TRUCKS	58.7	57.2	50.8	49.3	57.7	57.9
HEAVY TRUCKS	58.9	57.5	48.5	49.7	58.1	58.2
VEHICULAR NOISE	69.1	67.3	64.8	59.5	68.1	**68.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	36	114	361	1141
LDN	32	101	320	1011

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Minnewawa Avenue and Clovis Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	8,170
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	817

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.2	66.3	64.5	58.5	67.1	67.7
MEDIUM TRUCKS	58.6	57.1	50.8	49.2	57.7	57.9
HEAVY TRUCKS	58.9	57.5	48.4	49.7	58.0	58.2
VEHICULAR NOISE	69.1	67.3	64.8	59.4	68.0	**68.5**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	36	113	357	1129
LDN	32	100	316	1000

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Clovis Avenue and Sunnyside Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	6,480
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	55
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	648

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	41.9	- -
MEDIUM TRUCKS=	4.00	41.8	- -
HEAVY TRUCKS =	8.01	41.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.5	65.6	63.9	57.8	66.4	67.0
MEDIUM TRUCKS	58.0	56.5	50.1	48.6	57.0	57.3
HEAVY TRUCKS	58.2	56.8	47.8	49.0	57.4	57.5
VEHICULAR NOISE	68.4	66.6	64.1	58.8	67.4	**67.9**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	31	97	307	972
LDN	27	86	272	861

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Sunnyside Avenue and Fowler Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	2,280
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	228

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	62.2	60.3	58.6	52.5	61.1	61.8
MEDIUM TRUCKS	52.7	51.2	44.8	43.3	51.7	52.0
HEAVY TRUCKS	53.0	51.5	42.5	43.7	52.1	52.2
VEHICULAR NOISE	63.1	61.3	58.9	53.5	62.1	**62.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	9	29	91	288
LDN	8	26	81	255

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Fowler Avenue and Temperance Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	6,330
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	633

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.1	65.2	63.4	57.3	66.0	66.6
MEDIUM TRUCKS	57.5	56.0	49.6	48.1	56.6	56.8
HEAVY TRUCKS	57.8	56.4	47.3	48.6	56.9	57.0
VEHICULAR NOISE	68.0	66.1	63.7	58.3	66.9	**67.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	28	87	277	874
LDN	24	77	245	775

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Temperance Avenue and Locan Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	8,490
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	45
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	849

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	44.8	- -
MEDIUM TRUCKS=	4.00	44.7	- -
HEAVY TRUCKS =	8.01	44.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.4	66.5	64.7	58.7	67.3	67.9
MEDIUM TRUCKS	58.9	57.3	51.0	49.4	57.9	58.1
HEAVY TRUCKS	59.1	57.7	48.7	49.9	58.3	58.4
VEHICULAR NOISE	69.3	67.5	65.0	59.7	68.2	**68.8**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	38	119	377	1192
LDN	33	106	334	1056

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Locan Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	4,540
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	454

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	63.9	62.0	60.3	54.2	62.8	63.4
MEDIUM TRUCKS	55.0	53.5	47.1	45.6	54.0	54.2
HEAVY TRUCKS	55.5	54.1	45.1	46.3	54.7	54.8
VEHICULAR NOISE	65.0	63.2	60.6	55.3	63.9	**64.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	14	44	138	438
LDN	12	39	123	389

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	De Wolf Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Owens Mountain Parkway	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	4,640
SPEED =	40
PK HR % =	10
NEAR LANE/FAR LANE DIST =	32
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	464

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	47.5	- -
MEDIUM TRUCKS=	4.00	47.4	- -
HEAVY TRUCKS =	8.01	47.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	62.7	60.8	59.1	53.0	61.6	62.3
MEDIUM TRUCKS	54.5	53.0	46.6	45.1	53.5	53.7
HEAVY TRUCKS	55.3	53.9	44.9	46.1	54.5	54.6
VEHICULAR NOISE	64.0	62.2	59.5	54.4	62.9	**63.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	11	35	110	349
LDN	10	31	98	311

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Behymer Avenue	DATE:	18-Apr-24
SEGMENT	between Willow Avenue and Minnewawa Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,560
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	556

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.1	64.2	62.5	56.4	65.0	65.6
MEDIUM TRUCKS	56.6	55.1	48.7	47.1	55.6	55.8
HEAVY TRUCKS	56.8	55.4	46.4	47.6	56.0	56.1
VEHICULAR NOISE	67.0	65.2	62.7	57.4	65.9	**66.5**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	22	70	222	702
LDN	20	62	197	622

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Locan Avenue and De Wolf Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	6,530
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	653

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.2	65.3	63.5	57.5	66.1	66.7
MEDIUM TRUCKS	57.6	56.1	49.8	48.2	56.7	56.9
HEAVY TRUCKS	57.9	56.5	47.5	48.7	57.1	57.2
VEHICULAR NOISE	68.1	66.3	63.8	58.5	67.0	**67.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	29	90	285	902
LDN	25	80	253	799

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between De Wolf Avenue and SR 168	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	7,700
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	55
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	770

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	41.9	- -
MEDIUM TRUCKS=	4.00	41.8	- -
HEAVY TRUCKS =	8.01	41.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.3	66.4	64.6	58.6	67.2	67.8
MEDIUM TRUCKS	58.7	57.2	50.9	49.3	57.8	58.0
HEAVY TRUCKS	59.0	57.6	48.5	49.8	58.1	58.3
VEHICULAR NOISE	69.2	67.4	64.9	59.5	68.1	**68.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	37	116	365	1155
LDN	32	102	324	1024

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Nees Avenue	DATE:	18-Apr-24
SEGMENT	between Clovis Avenue and Sunnyside Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	13,120
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,312

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.5	66.6	64.9	58.8	67.4	68.0
MEDIUM TRUCKS	59.6	58.1	51.7	50.2	58.6	58.9
HEAVY TRUCKS	60.1	58.7	49.7	50.9	59.3	59.4
VEHICULAR NOISE	69.6	67.8	65.2	59.9	68.5	**69.0**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	40	127	400	1265
LDN	36	112	355	1124

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Nees Avenue	DATE:	18-Apr-24
SEGMENT	between Sunnyside Avenue and Fowler Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	9,750
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	975

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.6	65.7	64.0	57.9	66.5	67.1
MEDIUM TRUCKS	58.7	57.2	50.8	49.3	57.7	58.0
HEAVY TRUCKS	59.2	57.8	48.8	50.0	58.4	58.5
VEHICULAR NOISE	68.7	66.9	64.3	59.0	67.6	**68.1**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	33	103	325	1028
LDN	29	91	289	913

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Nees Avenue	DATE:	18-Apr-24
SEGMENT	between Fowler Avenue and Temperance Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	8,670
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	25
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	867

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	48.5	- -
MEDIUM TRUCKS=	4.00	48.4	- -
HEAVY TRUCKS =	8.01	48.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.8	64.9	63.2	57.1	65.7	66.3
MEDIUM TRUCKS	57.9	56.4	50.0	48.5	56.9	57.2
HEAVY TRUCKS	58.4	57.0	48.0	49.2	57.6	57.7
VEHICULAR NOISE	67.9	66.1	63.5	58.3	66.8	**67.3**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	27	86	271	857
LDN	24	76	241	761

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Nees Avenue	DATE:	18-Apr-24
SEGMENT	between Temperance Avenue and Locan Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,140
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	514

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	64.5	62.6	60.8	54.7	63.4	64.0
MEDIUM TRUCKS	55.5	54.0	47.6	46.1	54.6	54.8
HEAVY TRUCKS	56.1	54.6	45.6	46.9	55.2	55.3
VEHICULAR NOISE	65.5	63.7	61.1	55.9	64.4	**65.0**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	16	50	157	496
LDN	14	44	139	440

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Herndon Avenue	DATE:	18-Apr-24
SEGMENT	between SR 168 and Clovis Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	42,370
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	100
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	4,237

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	3.0	- -
MEDIUM TRUCKS=	4.00	1.0	- -
HEAVY TRUCKS =	8.01	3.0	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	85.8	83.9	82.1	76.1	84.7	85.3
MEDIUM TRUCKS	81.6	80.1	73.8	72.2	80.7	80.9
HEAVY TRUCKS	77.4	76.0	67.0	68.2	76.6	76.7
VEHICULAR NOISE	87.6	85.9	82.8	78.1	86.6	**87.1**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	2551	8068	25512	80677
LDN	2291	7244	22908	72442

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Alluvial Avenue	DATE:	18-Apr-24
SEGMENT	between Clovis Avenue and Sunnyside Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	10,270
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	24
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,027

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	48.6	- -
MEDIUM TRUCKS=	4.00	48.5	- -
HEAVY TRUCKS =	8.01	48.6	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.6	65.7	63.9	57.8	66.5	67.1
MEDIUM TRUCKS	58.6	57.1	50.7	49.2	57.7	57.9
HEAVY TRUCKS	59.2	57.7	48.7	50.0	58.3	58.4
VEHICULAR NOISE	68.6	66.8	64.2	59.0	67.6	**68.1**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	32	101	320	1013
LDN	28	90	284	900

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Alluvial Avenue	DATE:	18-Apr-24
SEGMENT	between Sunnyside Avenue and Fowler Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	10,260
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	25
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,026

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	48.5	- -
MEDIUM TRUCKS=	4.00	48.4	- -
HEAVY TRUCKS =	8.01	48.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.6	65.7	63.9	57.8	66.5	67.1
MEDIUM TRUCKS	58.6	57.1	50.7	49.2	57.7	57.9
HEAVY TRUCKS	59.2	57.7	48.7	50.0	58.3	58.4
VEHICULAR NOISE	68.6	66.8	64.2	59.0	67.6	**68.1**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	32	101	321	1014
LDN	28	90	285	901

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Alluvial Avenue	DATE:	18-Apr-24
SEGMENT	between Fowler Avenue and Temperance Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	6,340
SPEED =	40
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	634

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	63.9	62.0	60.2	54.2	62.8	63.4
MEDIUM TRUCKS	55.6	54.1	47.7	46.2	54.7	54.9
HEAVY TRUCKS	56.5	55.1	46.0	47.3	55.6	55.8
VEHICULAR NOISE	65.1	63.4	60.6	55.5	64.1	**64.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	14	45	144	455
LDN	13	41	128	405

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Herndon Avenue	DATE:	18-Apr-24
SEGMENT	between Clovis Avenue and Sunnyside Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Existing Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	38,600
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	76
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	3,860

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	32.6	- -
MEDIUM TRUCKS=	4.00	32.5	- -
HEAVY TRUCKS =	8.01	32.6	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	75.0	73.1	71.4	65.3	73.9	74.6
MEDIUM TRUCKS	66.1	64.6	58.2	56.7	65.1	65.4
HEAVY TRUCKS	66.6	65.2	56.2	57.4	65.8	65.9
VEHICULAR NOISE	76.1	74.3	71.7	66.5	75.0	**75.5**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	179	567	1794	5673
LDN	159	504	1594	5040

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Willow Avenue	DATE:	18-Apr-24
SEGMENT	between International Avenue and Behymer Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	17,950
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	78
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,795

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	31.4	- -
MEDIUM TRUCKS=	4.00	31.3	- -
HEAVY TRUCKS =	8.01	31.4	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	73.2	71.3	69.5	63.5	72.1	72.7
MEDIUM TRUCKS	63.7	62.1	55.8	54.2	62.7	62.9
HEAVY TRUCKS	63.9	62.5	53.4	54.7	63.1	63.2
VEHICULAR NOISE	74.1	72.3	69.8	64.5	73.0	**73.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	113	359	1135	3588
LDN	101	318	1005	3179

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Minnewawa Avenue	DATE:	18-Apr-24
SEGMENT	between Behymer Avenue and Shepherd Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	2,750
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	275

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	63.1	61.2	59.4	53.3	62.0	62.6
MEDIUM TRUCKS	53.5	52.0	45.6	44.1	52.5	52.8
HEAVY TRUCKS	53.8	52.3	43.3	44.6	52.9	53.0
VEHICULAR NOISE	64.0	62.1	59.7	54.3	62.9	**63.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	11	35	110	347
LDN	10	31	97	308

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Willow Avenue	DATE:	18-Apr-24
SEGMENT	between Behymer Avnue and Shepherd Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	19,540
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	75
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,954

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	33.2	- -
MEDIUM TRUCKS=	4.00	33.1	- -
HEAVY TRUCKS =	8.01	33.2	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	73.3	71.4	69.7	63.6	72.2	72.8
MEDIUM TRUCKS	63.8	62.3	55.9	54.4	62.8	63.1
HEAVY TRUCKS	64.0	62.6	53.6	54.8	63.2	63.3
VEHICULAR NOISE	74.2	72.4	69.9	64.6	73.2	**73.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	117	370	1169	3697
LDN	104	328	1036	3275

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Minnewawa Avenue	DATE:	18-Apr-24
SEGMENT	between International Avenue and Behymer Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	4,610
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	461

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	65.3	63.4	61.6	55.6	64.2	64.8
MEDIUM TRUCKS	55.7	54.2	47.9	46.3	54.8	55.0
HEAVY TRUCKS	56.0	54.6	45.6	46.8	55.2	55.3
VEHICULAR NOISE	66.2	64.4	61.9	56.6	65.1	**65.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	18	58	184	582
LDN	16	52	163	516

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Clovis Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	12,260
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,226

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.9	67.0	65.2	59.2	67.8	68.4
MEDIUM TRUCKS	59.9	58.4	52.1	50.5	59.0	59.2
HEAVY TRUCKS	60.5	59.1	50.0	51.3	59.6	59.8
VEHICULAR NOISE	69.9	68.1	65.5	60.3	68.9	**69.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	43	137	434	1373
LDN	39	122	386	1220

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Clovis Avenue	DATE:	18-Apr-24
SEGMENT	between Nees Avenue and Alluvial Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	15,910
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,591

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.0	68.1	66.3	60.3	68.9	69.5
MEDIUM TRUCKS	61.1	59.6	53.2	51.7	60.1	60.3
HEAVY TRUCKS	61.6	60.2	51.2	52.4	60.8	60.9
VEHICULAR NOISE	71.1	69.3	66.7	61.4	70.0	**70.5**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	56	178	564	1782
LDN	50	158	501	1583

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Clovis Avenue	DATE:	18-Apr-24
SEGMENT	between Alluvial Avenue and Herndon Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	21,620
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	2,162

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	71.3	69.4	67.7	61.6	70.2	70.9
MEDIUM TRUCKS	62.4	60.9	54.5	53.0	61.4	61.7
HEAVY TRUCKS	62.9	61.5	52.5	53.7	62.1	62.2
VEHICULAR NOISE	72.4	70.6	68.0	62.8	71.3	**71.9**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	77	242	766	2422
LDN	68	215	680	2151

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Sunnyside Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,890
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	589

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	65.0	63.2	61.4	55.3	64.0	64.6
MEDIUM TRUCKS	56.1	54.6	48.2	46.7	55.1	55.4
HEAVY TRUCKS	56.7	55.2	46.2	47.4	55.8	55.9
VEHICULAR NOISE	66.1	64.3	61.7	56.5	65.0	**65.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	18	57	180	568
LDN	16	50	160	505

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Sunnyside Avenue	DATE:	18-Apr-24
SEGMENT	between Nees Avenue and Alluvial Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	10,710
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,071

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.0	66.1	64.4	58.3	66.9	67.5
MEDIUM TRUCKS	59.1	57.6	51.2	49.7	58.1	58.4
HEAVY TRUCKS	59.6	58.2	49.2	50.4	58.8	58.9
VEHICULAR NOISE	69.1	67.3	64.7	59.5	68.0	**68.5**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	36	113	357	1129
LDN	32	100	317	1003

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Sunnyside Avenue	DATE:	18-Apr-24
SEGMENT	between Alluvial Avenue and Herndon Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	11,970
SPEED =	40
PK HR % =	10
NEAR LANE/FAR LANE DIST =	37
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,197

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	46.5	- -
MEDIUM TRUCKS=	4.00	46.5	- -
HEAVY TRUCKS =	8.01	46.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.9	65.0	63.3	57.2	65.8	66.5
MEDIUM TRUCKS	58.7	57.2	50.8	49.3	57.7	57.9
HEAVY TRUCKS	59.5	58.1	49.1	50.3	58.7	58.8
VEHICULAR NOISE	68.2	66.4	63.7	58.6	67.1	**67.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	29	92	290	917
LDN	26	82	259	818

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Fowler Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Teague Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	11,540
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	40
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,154

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.9	- -
MEDIUM TRUCKS=	4.00	45.8	- -
HEAVY TRUCKS =	8.01	45.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.3	66.4	64.7	58.6	67.2	67.8
MEDIUM TRUCKS	59.4	57.9	51.5	49.9	58.4	58.6
HEAVY TRUCKS	59.9	58.5	49.5	50.7	59.1	59.2
VEHICULAR NOISE	69.4	67.6	65.0	59.7	68.3	**68.8**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	38	120	381	1205
LDN	34	107	339	1070

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Fowler Avenue	DATE:	18-Apr-24
SEGMENT	between Teague Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	11,750
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,175

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.4	67.5	65.7	59.6	68.3	68.9
MEDIUM TRUCKS	59.8	58.3	51.9	50.4	58.9	59.1
HEAVY TRUCKS	60.1	58.7	49.6	50.9	59.2	59.3
VEHICULAR NOISE	70.3	68.4	66.0	60.6	69.2	**69.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	47	148	469	1484
LDN	42	131	416	1315

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Fowler Avenue	DATE:	18-Apr-24
SEGMENT	between Nees Avenue and Alluvial Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	14,910
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,491

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.7	67.8	66.1	60.0	68.6	69.2
MEDIUM TRUCKS	60.8	59.3	52.9	51.4	59.8	60.1
HEAVY TRUCKS	61.3	59.9	50.9	52.1	60.5	60.6
VEHICULAR NOISE	70.8	69.0	66.4	61.2	69.7	**70.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	53	167	528	1670
LDN	47	148	469	1484

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Fowler Avenue	DATE:	18-Apr-24
SEGMENT	between Alluvial Avenue and SR 168 WB Ramps	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	17,790
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,779

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.5	68.6	66.8	60.8	69.4	70.0
MEDIUM TRUCKS	61.5	60.0	53.7	52.1	60.6	60.8
HEAVY TRUCKS	62.1	60.7	51.6	52.9	61.3	61.4
VEHICULAR NOISE	71.5	69.7	67.2	61.9	70.5	**71.0**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	63	199	630	1993
LDN	56	177	560	1770

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Temperance Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	7,600
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	760

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.1	66.2	64.5	58.4	67.0	67.6
MEDIUM TRUCKS	58.6	57.1	50.7	49.2	57.6	57.8
HEAVY TRUCKS	58.8	57.4	48.4	49.6	58.0	58.1
VEHICULAR NOISE	69.0	67.2	64.7	59.4	68.0	**68.5**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	35	112	353	1115
LDN	31	99	312	988

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Temperance Avenue	DATE:	18-Apr-24
SEGMENT	between Nees Avenue and Alluvial Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	9,840
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	984

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.2	67.3	65.6	59.5	68.1	68.8
MEDIUM TRUCKS	59.7	58.2	51.8	50.3	58.7	59.0
HEAVY TRUCKS	60.0	58.5	49.5	50.7	59.1	59.2
VEHICULAR NOISE	70.1	68.3	65.9	60.5	69.1	**69.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	46	144	457	1444
LDN	40	128	404	1279

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Temperance Avenue	DATE:	18-Apr-24
SEGMENT	between Alluvial Avenue and SR 168 WB Ramps	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	18,680
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,868

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	72.0	70.1	68.4	62.3	70.9	71.5
MEDIUM TRUCKS	62.5	61.0	54.6	53.1	61.5	61.8
HEAVY TRUCKS	62.7	61.3	52.3	53.5	61.9	62.0
VEHICULAR NOISE	72.9	71.1	68.6	63.3	71.9	**72.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	87	274	867	2741
LDN	77	243	768	2428

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Locan Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	1,910
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	191

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	60.2	58.3	56.5	50.4	59.1	59.7
MEDIUM TRUCKS	51.2	49.7	43.3	41.8	50.3	50.5
HEAVY TRUCKS	51.8	50.3	41.3	42.6	50.9	51.0
VEHICULAR NOISE	61.2	59.4	56.8	51.6	60.1	**60.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	6	18	58	184
LDN	5	16	52	164

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	De Wolf Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Owens Mountain Parkway	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	3,690
SPEED =	40
PK HR % =	10
NEAR LANE/FAR LANE DIST =	32
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	369

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	47.5	- -
MEDIUM TRUCKS=	4.00	47.4	- -
HEAVY TRUCKS =	8.01	47.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	61.7	59.8	58.1	52.0	60.7	61.3
MEDIUM TRUCKS	53.5	52.0	45.6	44.1	52.5	52.7
HEAVY TRUCKS	54.4	52.9	43.9	45.1	53.5	53.6
VEHICULAR NOISE	63.0	61.2	58.5	53.4	61.9	**62.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	9	28	88	277
LDN	8	25	78	247

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Behymer Avenue	DATE:	18-Apr-24
SEGMENT	between Willow Avenue and Minnewawa Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	7,270
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	727

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.3	65.4	63.6	57.6	66.2	66.8
MEDIUM TRUCKS	57.7	56.2	49.9	48.3	56.8	57.0
HEAVY TRUCKS	58.0	56.6	47.5	48.8	57.1	57.3
VEHICULAR NOISE	68.2	66.4	63.9	58.5	67.1	**67.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	29	92	290	918
LDN	26	81	257	814

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Behymer Avenue	DATE:	18-Apr-24
SEGMENT	between Minnewawa Avenue and Fowler Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	8,670
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	867

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.0	66.1	64.4	58.3	66.9	67.6
MEDIUM TRUCKS	58.5	57.0	50.6	49.1	57.5	57.8
HEAVY TRUCKS	58.8	57.3	48.3	49.5	57.9	58.0
VEHICULAR NOISE	68.9	67.1	64.7	59.3	67.9	**68.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	35	110	346	1095
LDN	31	97	307	970

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Willow Avenue and Minnewawa Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	16,710
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	40
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,671

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.9	- -
MEDIUM TRUCKS=	4.00	45.8	- -
HEAVY TRUCKS =	8.01	45.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	71.2	69.3	67.6	61.5	70.1	70.7
MEDIUM TRUCKS	61.7	60.2	53.8	52.3	60.7	61.0
HEAVY TRUCKS	61.9	60.5	51.5	52.7	61.1	61.2
VEHICULAR NOISE	72.1	70.3	67.9	62.5	71.1	**71.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	72	229	723	2286
LDN	64	202	640	2025

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Minnewawa Avenue and Clovis Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	12,210
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,221

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.9	68.0	66.3	60.2	68.8	69.4
MEDIUM TRUCKS	60.4	58.9	52.5	51.0	59.4	59.6
HEAVY TRUCKS	60.6	59.2	50.2	51.4	59.8	59.9
VEHICULAR NOISE	70.8	69.0	66.5	61.2	69.8	**70.3**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	53	169	533	1687
LDN	47	149	473	1494

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Clovis Avenue and Sunnyside Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	15,250
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	55
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,525

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	41.9	- -
MEDIUM TRUCKS=	4.00	41.8	- -
HEAVY TRUCKS =	8.01	41.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	71.2	69.3	67.6	61.5	70.1	70.8
MEDIUM TRUCKS	61.7	60.2	53.8	52.3	60.7	61.0
HEAVY TRUCKS	62.0	60.5	51.5	52.7	61.1	61.2
VEHICULAR NOISE	72.1	70.3	67.9	62.5	71.1	**71.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	72	229	724	2288
LDN	64	203	641	2027

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Sunnyside Avenue and Fowler Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	7,000
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	700

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.1	65.2	63.5	57.4	66.0	66.6
MEDIUM TRUCKS	57.6	56.1	49.7	48.1	56.6	56.8
HEAVY TRUCKS	57.8	56.4	47.4	48.6	57.0	57.1
VEHICULAR NOISE	68.0	66.2	63.7	58.4	66.9	**67.5**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	28	88	280	884
LDN	25	78	248	783

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Fowler Avenue and Temperance Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	10,320
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,032

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.2	67.3	65.5	59.5	68.1	68.7
MEDIUM TRUCKS	59.6	58.1	51.8	50.2	58.7	58.9
HEAVY TRUCKS	59.9	58.5	49.4	50.7	59.0	59.2
VEHICULAR NOISE	70.1	68.3	65.8	60.4	69.0	**69.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	45	143	451	1426
LDN	40	126	399	1263

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Temperance Avenue and Locan Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	6,280
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	45
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	628

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	44.8	- -
MEDIUM TRUCKS=	4.00	44.7	- -
HEAVY TRUCKS =	8.01	44.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.1	65.2	63.4	57.4	66.0	66.6
MEDIUM TRUCKS	57.5	56.0	49.7	48.1	56.6	56.8
HEAVY TRUCKS	57.8	56.4	47.4	48.6	57.0	57.1
VEHICULAR NOISE	68.0	66.2	63.7	58.4	66.9	**67.5**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	28	88	279	882
LDN	25	78	247	781

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Locan Avenue and De Wolf Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,190
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	519

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.2	64.3	62.5	56.5	65.1	65.7
MEDIUM TRUCKS	56.6	55.1	48.8	47.2	55.7	55.9
HEAVY TRUCKS	56.9	55.5	46.5	47.7	56.1	56.2
VEHICULAR NOISE	67.1	65.3	62.8	57.5	66.0	**66.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	23	72	227	717
LDN	20	64	201	635

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between De Wolf Avenue and SR 168	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	8,080
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	55
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	808

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	41.9	- -
MEDIUM TRUCKS=	4.00	41.8	- -
HEAVY TRUCKS =	8.01	41.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.5	66.6	64.8	58.8	67.4	68.0
MEDIUM TRUCKS	58.9	57.4	51.1	49.5	58.0	58.2
HEAVY TRUCKS	59.2	57.8	48.7	50.0	58.3	58.5
VEHICULAR NOISE	69.4	67.6	65.1	59.7	68.3	**68.8**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	38	121	383	1212
LDN	34	107	340	1074

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Nees Avenue	DATE:	18-Apr-24
SEGMENT	between Clovis Avenue and Sunnyside Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	14,300
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,430

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.9	67.0	65.2	59.2	67.8	68.4
MEDIUM TRUCKS	59.9	58.4	52.1	50.5	59.0	59.2
HEAVY TRUCKS	60.5	59.1	50.0	51.3	59.7	59.8
VEHICULAR NOISE	69.9	68.1	65.6	60.3	68.9	**69.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	44	138	436	1379
LDN	39	122	387	1225

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Nees Avenue	DATE:	18-Apr-24
SEGMENT	between Sunnyside Avenue and Fowler Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	10,080
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,008

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.8	65.9	64.1	58.1	66.7	67.3
MEDIUM TRUCKS	58.8	57.3	50.9	49.4	57.9	58.1
HEAVY TRUCKS	59.4	58.0	48.9	50.2	58.5	58.6
VEHICULAR NOISE	68.8	67.0	64.4	59.2	67.8	**68.3**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	34	106	336	1063
LDN	30	94	299	944

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Nees Avenue	DATE:	18-Apr-24
SEGMENT	between Fowler Avenue and Temperance Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	8,520
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	25
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	852

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	48.5	- -
MEDIUM TRUCKS=	4.00	48.4	- -
HEAVY TRUCKS =	8.01	48.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.8	64.9	63.1	57.0	65.7	66.3
MEDIUM TRUCKS	57.8	56.3	49.9	48.4	56.9	57.1
HEAVY TRUCKS	58.4	56.9	47.9	49.2	57.5	57.6
VEHICULAR NOISE	67.8	66.0	63.4	58.2	66.8	**67.3**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	27	84	266	842
LDN	24	75	237	748

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Nees Avenue	DATE:	18-Apr-24
SEGMENT	between Temperance Avenue and Locan Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	4,070
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	407

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	63.4	61.5	59.8	53.7	62.3	63.0
MEDIUM TRUCKS	54.5	53.0	46.6	45.1	53.5	53.8
HEAVY TRUCKS	55.0	53.6	44.6	45.8	54.2	54.3
VEHICULAR NOISE	64.5	62.7	60.1	54.9	63.4	**63.9**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	12	39	124	392
LDN	11	35	110	349

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Alluvial Avenue	DATE:	18-Apr-24
SEGMENT	between Clovis Avenue and Sunnyside Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	9,530
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	24
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	953

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	48.6	- -
MEDIUM TRUCKS=	4.00	48.5	- -
HEAVY TRUCKS =	8.01	48.6	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.2	65.3	63.6	57.5	66.1	66.7
MEDIUM TRUCKS	58.3	56.8	50.4	48.9	57.3	57.6
HEAVY TRUCKS	58.8	57.4	48.4	49.6	58.0	58.1
VEHICULAR NOISE	68.3	66.5	63.9	58.7	67.2	**67.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	30	94	297	940
LDN	26	83	264	835

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Alluvial Avenue	DATE:	18-Apr-24
SEGMENT	between Sunnyside Avenue and Fowler Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	8,390
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	25
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	839

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	48.5	- -
MEDIUM TRUCKS=	4.00	48.4	- -
HEAVY TRUCKS =	8.01	48.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.7	64.8	63.0	57.0	65.6	66.2
MEDIUM TRUCKS	57.7	56.2	49.9	48.3	56.8	57.0
HEAVY TRUCKS	58.3	56.9	47.8	49.1	57.4	57.6
VEHICULAR NOISE	67.7	65.9	63.4	58.1	66.7	**67.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	26	83	262	829
LDN	23	74	233	737

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Alluvial Avenue	DATE:	18-Apr-24
SEGMENT	between Fowler Avenue and Temperance Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	7,730
SPEED =	40
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	773

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	64.8	62.9	61.1	55.0	63.7	64.3
MEDIUM TRUCKS	56.5	55.0	48.6	47.1	55.5	55.8
HEAVY TRUCKS	57.4	55.9	46.9	48.2	56.5	56.6
VEHICULAR NOISE	66.0	64.2	61.5	56.4	65.0	**65.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	18	55	175	555
LDN	16	49	156	494

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Herndon Avenue	DATE:	18-Apr-24
SEGMENT	between SR 168 and Clovis Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	48,810
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	100
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	4,881

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	3.0	- -
MEDIUM TRUCKS=	4.00	1.0	- -
HEAVY TRUCKS =	8.01	3.0	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	86.4	84.5	82.8	76.7	85.3	85.9
MEDIUM TRUCKS	82.2	80.7	74.4	72.8	81.3	81.5
HEAVY TRUCKS	78.0	76.6	67.6	68.8	77.2	77.3
VEHICULAR NOISE	88.3	86.5	83.5	78.7	87.2	**87.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	2939	9294	29390	92939
LDN	2639	8345	26390	83452

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Herndon Avenue	DATE:	18-Apr-24
SEGMENT	between Clovis Avenue and Sunnyside Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	38,210
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	76
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	3,821

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	32.6	- -
MEDIUM TRUCKS=	4.00	32.5	- -
HEAVY TRUCKS =	8.01	32.6	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	75.0	73.1	71.3	65.3	73.9	74.5
MEDIUM TRUCKS	66.1	64.5	58.2	56.6	65.1	65.3
HEAVY TRUCKS	66.6	65.2	56.1	57.4	65.7	65.9
VEHICULAR NOISE	76.0	74.2	71.7	66.4	75.0	**75.5**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	178	562	1776	5616
LDN	158	499	1578	4989

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Willow Avenue	DATE:	18-Apr-24
SEGMENT	between International Avenue and Behymer Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	17,290
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	78
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,729

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	31.4	- -
MEDIUM TRUCKS=	4.00	31.3	- -
HEAVY TRUCKS =	8.01	31.4	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	73.0	71.1	69.4	63.3	71.9	72.5
MEDIUM TRUCKS	63.5	62.0	55.6	54.1	62.5	62.8
HEAVY TRUCKS	63.7	62.3	53.3	54.5	62.9	63.0
VEHICULAR NOISE	73.9	72.1	69.7	64.3	72.9	**73.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	109	346	1093	3456
LDN	97	306	968	3062

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Minnewawa Avenue	DATE:	18-Apr-24
SEGMENT	between Behymer Avenue and Shepherd Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	2,610
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	261

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	62.8	60.9	59.2	53.1	61.7	62.3
MEDIUM TRUCKS	53.3	51.8	45.4	43.9	52.3	52.6
HEAVY TRUCKS	53.5	52.1	43.1	44.3	52.7	52.8
VEHICULAR NOISE	63.7	61.9	59.4	54.1	62.7	**63.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	10	33	104	330
LDN	9	29	92	292

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Willow Avenue	DATE:	18-Apr-24
SEGMENT	between Behymer Avnue and Shepherd Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	19,780
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	75
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,978

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	33.2	- -
MEDIUM TRUCKS=	4.00	33.1	- -
HEAVY TRUCKS =	8.01	33.2	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	73.4	71.5	69.7	63.7	72.3	72.9
MEDIUM TRUCKS	63.8	62.3	56.0	54.4	62.9	63.1
HEAVY TRUCKS	64.1	62.7	53.6	54.9	63.2	63.4
VEHICULAR NOISE	74.3	72.5	70.0	64.6	73.2	**73.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	118	374	1183	3743
LDN	105	332	1048	3315

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Minnewawa Avenue	DATE:	18-Apr-24
SEGMENT	between International Avenue and Behymer Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,180
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	518

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	65.8	63.9	62.1	56.1	64.7	65.3
MEDIUM TRUCKS	56.3	54.7	48.4	46.8	55.3	55.5
HEAVY TRUCKS	56.5	55.1	46.1	47.3	55.7	55.8
VEHICULAR NOISE	66.7	64.9	62.4	57.1	65.6	**66.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	21	65	207	654
LDN	18	58	183	580

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Fowler Avenue	DATE:	18-Apr-24
SEGMENT	between Teague Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	12,980
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,298

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.8	67.9	66.1	60.1	68.7	69.3
MEDIUM TRUCKS	60.2	58.7	52.4	50.8	59.3	59.5
HEAVY TRUCKS	60.5	59.1	50.0	51.3	59.7	59.8
VEHICULAR NOISE	70.7	68.9	66.4	61.1	69.6	**70.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	52	164	519	1640
LDN	46	145	459	1453

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Clovis Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	14,920
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,492

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.7	67.8	66.1	60.0	68.6	69.2
MEDIUM TRUCKS	60.8	59.3	52.9	51.4	59.8	60.1
HEAVY TRUCKS	61.3	59.9	50.9	52.1	60.5	60.6
VEHICULAR NOISE	70.8	69.0	66.4	61.2	69.7	**70.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	53	167	528	1671
LDN	47	148	469	1485

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Clovis Avenue	DATE:	18-Apr-24
SEGMENT	between Nees Avenue and Alluvial Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	15,850
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,585

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.0	68.1	66.3	60.3	68.9	69.5
MEDIUM TRUCKS	61.0	59.5	53.2	51.6	60.1	60.3
HEAVY TRUCKS	61.6	60.2	51.1	52.4	60.7	60.9
VEHICULAR NOISE	71.0	69.2	66.7	61.4	70.0	**70.5**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	56	178	561	1775
LDN	50	158	499	1577

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Clovis Avenue	DATE:	18-Apr-24
SEGMENT	between Alluvial Avenue and Herndon Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	20,680
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	2,068

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	71.2	69.3	67.5	61.4	70.1	70.7
MEDIUM TRUCKS	62.2	60.7	54.3	52.8	61.2	61.5
HEAVY TRUCKS	62.8	61.3	52.3	53.5	61.9	62.0
VEHICULAR NOISE	72.2	70.4	67.8	62.6	71.1	**71.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	73	232	732	2316
LDN	65	206	651	2058

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Sunnyside Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	7,330
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	733

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.0	64.1	62.3	56.3	64.9	65.5
MEDIUM TRUCKS	57.0	55.5	49.2	47.6	56.1	56.3
HEAVY TRUCKS	57.6	56.2	47.1	48.4	56.7	56.9
VEHICULAR NOISE	67.0	65.2	62.7	57.4	66.0	**66.5**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	22	71	224	707
LDN	20	63	199	628

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Sunnyside Avenue	DATE:	18-Apr-24
SEGMENT	between Nees Avenue and Alluvial Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	13,380
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,338

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.0	67.1	65.3	59.3	67.9	68.5
MEDIUM TRUCKS	60.0	58.5	52.2	50.6	59.1	59.3
HEAVY TRUCKS	60.6	59.2	50.1	51.4	59.8	59.9
VEHICULAR NOISE	70.0	68.2	65.7	60.4	69.0	**69.5**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	45	141	446	1411
LDN	40	125	396	1253

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Sunnyside Avenue	DATE:	18-Apr-24
SEGMENT	between Alluvial Avenue and Herndon Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	15,870
SPEED =	40
PK HR % =	10
NEAR LANE/FAR LANE DIST =	37
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,587

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	46.5	- -
MEDIUM TRUCKS=	4.00	46.5	- -
HEAVY TRUCKS =	8.01	46.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.2	66.3	64.5	58.4	67.1	67.7
MEDIUM TRUCKS	59.9	58.4	52.0	50.5	58.9	59.2
HEAVY TRUCKS	60.8	59.4	50.3	51.6	59.9	60.0
VEHICULAR NOISE	69.4	67.6	64.9	59.8	68.4	**68.9**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	38	122	385	1216
LDN	34	108	343	1084

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Fowler Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Teague Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	13,450
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	40
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,345

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.9	- -
MEDIUM TRUCKS=	4.00	45.8	- -
HEAVY TRUCKS =	8.01	45.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.0	67.1	65.3	59.3	67.9	68.5
MEDIUM TRUCKS	60.0	58.5	52.2	50.6	59.1	59.3
HEAVY TRUCKS	60.6	59.2	50.1	51.4	59.7	59.9
VEHICULAR NOISE	70.0	68.2	65.6	60.4	69.0	**69.5**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	44	140	444	1404
LDN	39	125	395	1248

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Fowler Avenue	DATE:	18-Apr-24
SEGMENT	between Nees Avenue and Alluvial Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	14,840
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,484

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.7	67.8	66.0	60.0	68.6	69.2
MEDIUM TRUCKS	60.8	59.3	52.9	51.3	59.8	60.0
HEAVY TRUCKS	61.3	59.9	50.9	52.1	60.5	60.6
VEHICULAR NOISE	70.8	69.0	66.4	61.1	69.7	**70.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	53	166	526	1662
LDN	47	148	467	1477

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Fowler Avenue	DATE:	18-Apr-24
SEGMENT	between Alluvial Avenue and SR 168 WB Ramps	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	17,660
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,766

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.5	68.6	66.8	60.7	69.4	70.0
MEDIUM TRUCKS	61.5	60.0	53.6	52.1	60.6	60.8
HEAVY TRUCKS	62.1	60.6	51.6	52.9	61.2	61.3
VEHICULAR NOISE	71.5	69.7	67.1	61.9	70.5	**71.0**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	63	198	626	1978
LDN	56	176	556	1757

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Temperance Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	10,110
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,011

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.4	67.5	65.7	59.6	68.3	68.9
MEDIUM TRUCKS	59.8	58.3	51.9	50.4	58.9	59.1
HEAVY TRUCKS	60.1	58.6	49.6	50.9	59.2	59.3
VEHICULAR NOISE	70.3	68.4	66.0	60.6	69.2	**69.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	47	148	469	1484
LDN	42	131	416	1314

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Temperance Avenue	DATE:	18-Apr-24
SEGMENT	between Nees Avenue and Alluvial Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	11,570
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,157

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.9	68.1	66.3	60.2	68.9	69.5
MEDIUM TRUCKS	60.4	58.9	52.5	51.0	59.4	59.7
HEAVY TRUCKS	60.7	59.2	50.2	51.4	59.8	59.9
VEHICULAR NOISE	70.8	69.0	66.6	61.2	69.8	**70.3**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	54	170	537	1698
LDN	48	150	476	1504

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Temperance Avenue	DATE:	18-Apr-24
SEGMENT	between Alluvial Avenue and SR 168 WB Ramps	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	22,830
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	52
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	2,283

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	42.8	- -
MEDIUM TRUCKS=	4.00	42.7	- -
HEAVY TRUCKS =	8.01	42.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	72.9	71.0	69.2	63.2	71.8	72.4
MEDIUM TRUCKS	63.3	61.8	55.5	53.9	62.4	62.6
HEAVY TRUCKS	63.6	62.2	53.1	54.4	62.8	62.9
VEHICULAR NOISE	73.8	72.0	69.5	64.2	72.7	**73.3**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	106	335	1059	3350
LDN	94	297	938	2968

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Behymer Avenue	DATE:	18-Apr-24
SEGMENT	between Minnewawa Avenue and Fowler Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	10,950
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,095

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.1	67.2	65.4	59.3	68.0	68.6
MEDIUM TRUCKS	59.5	58.0	51.6	50.1	58.5	58.8
HEAVY TRUCKS	59.8	58.3	49.3	50.6	58.9	59.0
VEHICULAR NOISE	70.0	68.1	65.7	60.3	68.9	**69.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	44	138	437	1383
LDN	39	123	388	1225

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Willow Avenue and Minnewawa Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	14,960
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	40
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,496

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.9	- -
MEDIUM TRUCKS=	4.00	45.8	- -
HEAVY TRUCKS =	8.01	45.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.8	68.9	67.1	61.0	69.7	70.3
MEDIUM TRUCKS	61.2	59.7	53.3	51.8	60.3	60.5
HEAVY TRUCKS	61.5	60.0	51.0	52.3	60.6	60.7
VEHICULAR NOISE	71.7	69.8	67.4	62.0	70.6	**71.1**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	65	205	647	2046
LDN	57	181	573	1813

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Minnewawa Avenue and Clovis Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	11,140
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,114

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.5	67.6	65.9	59.8	68.4	69.0
MEDIUM TRUCKS	60.0	58.5	52.1	50.6	59.0	59.2
HEAVY TRUCKS	60.2	58.8	49.8	51.0	59.4	59.5
VEHICULAR NOISE	70.4	68.6	66.1	60.8	69.4	**69.9**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	49	154	487	1539
LDN	43	136	431	1363

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Clovis Avenue and Sunnyside Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	13,640
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	55
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,364

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	41.9	- -
MEDIUM TRUCKS=	4.00	41.8	- -
HEAVY TRUCKS =	8.01	41.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.8	68.9	67.1	61.0	69.7	70.3
MEDIUM TRUCKS	61.2	59.7	53.3	51.8	60.3	60.5
HEAVY TRUCKS	61.5	60.0	51.0	52.3	60.6	60.7
VEHICULAR NOISE	71.7	69.8	67.4	62.0	70.6	**71.1**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	65	205	647	2047
LDN	57	181	573	1813

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Sunnyside Avenue and Fowler Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,540
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	554

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.1	64.2	62.4	56.4	65.0	65.6
MEDIUM TRUCKS	56.5	55.0	48.7	47.1	55.6	55.8
HEAVY TRUCKS	56.8	55.4	46.3	47.6	56.0	56.1
VEHICULAR NOISE	67.0	65.2	62.7	57.4	65.9	**66.5**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	22	70	221	700
LDN	20	62	196	620

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Fowler Avenue and Temperance Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	9,850
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	985

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.0	67.1	65.3	59.3	67.9	68.5
MEDIUM TRUCKS	59.4	57.9	51.6	50.0	58.5	58.7
HEAVY TRUCKS	59.7	58.3	49.2	50.5	58.8	59.0
VEHICULAR NOISE	69.9	68.1	65.6	60.2	68.8	**69.3**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	43	136	430	1361
LDN	38	121	381	1205

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Temperance Avenue and Locan Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	9,860
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	45
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	986

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	44.8	- -
MEDIUM TRUCKS=	4.00	44.7	- -
HEAVY TRUCKS =	8.01	44.8	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.1	67.2	65.4	59.3	68.0	68.6
MEDIUM TRUCKS	59.5	58.0	51.6	50.1	58.6	58.8
HEAVY TRUCKS	59.8	58.3	49.3	50.6	58.9	59.0
VEHICULAR NOISE	70.0	68.1	65.7	60.3	68.9	**69.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	44	138	438	1384
LDN	39	123	388	1226

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Locan Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Nees Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	4,780
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	478

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	64.1	62.2	60.5	54.4	63.0	63.7
MEDIUM TRUCKS	55.2	53.7	47.3	45.8	54.2	54.5
HEAVY TRUCKS	55.7	54.3	45.3	46.5	54.9	55.0
VEHICULAR NOISE	65.2	63.4	60.8	55.6	64.1	**64.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	15	46	146	461
LDN	13	41	129	409

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between De Wolf Avenue and SR 168	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	8,680
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	55
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	868

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	41.9	- -
MEDIUM TRUCKS=	4.00	41.8	- -
HEAVY TRUCKS =	8.01	41.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.8	66.9	65.1	59.1	67.7	68.3
MEDIUM TRUCKS	59.2	57.7	51.4	49.8	58.3	58.5
HEAVY TRUCKS	59.5	58.1	49.0	50.3	58.7	58.8
VEHICULAR NOISE	69.7	67.9	65.4	60.1	68.6	**69.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	41	130	412	1303
LDN	36	115	365	1154

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Nees Avenue	DATE:	18-Apr-24
SEGMENT	between Clovis Avenue and Sunnyside Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	17,990
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,799

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.9	68.0	66.2	60.2	68.8	69.4
MEDIUM TRUCKS	60.9	59.4	53.1	51.5	60.0	60.2
HEAVY TRUCKS	61.5	60.1	51.0	52.3	60.6	60.8
VEHICULAR NOISE	70.9	69.1	66.6	61.3	69.9	**70.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	55	173	549	1735
LDN	49	154	487	1541

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Nees Avenue	DATE:	18-Apr-24
SEGMENT	between Sunnyside Avenue and Fowler Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	11,860
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,186

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.5	66.6	64.8	58.8	67.4	68.0
MEDIUM TRUCKS	59.5	58.0	51.7	50.1	58.6	58.8
HEAVY TRUCKS	60.1	58.7	49.6	50.9	59.2	59.4
VEHICULAR NOISE	69.5	67.7	65.1	59.9	68.5	**69.0**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	40	125	395	1251
LDN	35	111	351	1111

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Nees Avenue	DATE:	18-Apr-24
SEGMENT	between Fowler Avenue and Temperance Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	10,180
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	25
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,018

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	48.5	- -
MEDIUM TRUCKS=	4.00	48.4	- -
HEAVY TRUCKS =	8.01	48.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.5	65.6	63.9	57.8	66.4	67.0
MEDIUM TRUCKS	58.6	57.1	50.7	49.2	57.6	57.9
HEAVY TRUCKS	59.1	57.7	48.7	49.9	58.3	58.4
VEHICULAR NOISE	68.6	66.8	64.2	59.0	67.5	**68.0**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	32	101	318	1006
LDN	28	89	283	894

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Nees Avenue	DATE:	18-Apr-24
SEGMENT	between Temperance Avenue and Locan Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	4,830
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	483

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	64.2	62.3	60.5	54.5	63.1	63.7
MEDIUM TRUCKS	55.2	53.7	47.4	45.8	54.3	54.5
HEAVY TRUCKS	55.8	54.4	45.3	46.6	54.9	55.1
VEHICULAR NOISE	65.2	63.4	60.9	55.6	64.2	**64.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	15	47	147	466
LDN	13	41	131	414

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Alluvial Avenue	DATE:	18-Apr-24
SEGMENT	between Clovis Avenue and Sunnyside Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	10,040
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	24
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,004

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	48.6	- -
MEDIUM TRUCKS=	4.00	48.5	- -
HEAVY TRUCKS =	8.01	48.6	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.5	65.6	63.8	57.7	66.4	67.0
MEDIUM TRUCKS	58.5	57.0	50.6	49.1	57.6	57.8
HEAVY TRUCKS	59.1	57.6	48.6	49.9	58.2	58.3
VEHICULAR NOISE	68.5	66.7	64.1	58.9	67.5	**68.0**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	31	99	313	990
LDN	28	88	278	879

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Alluvial Avenue	DATE:	18-Apr-24
SEGMENT	between Sunnyside Avenue and Fowler Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	10,320
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	25
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,032

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	48.5	- -
MEDIUM TRUCKS=	4.00	48.4	- -
HEAVY TRUCKS =	8.01	48.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.6	65.7	63.9	57.9	66.5	67.1
MEDIUM TRUCKS	58.6	57.1	50.8	49.2	57.7	57.9
HEAVY TRUCKS	59.2	57.8	48.7	50.0	58.3	58.5
VEHICULAR NOISE	68.6	66.8	64.3	59.0	67.6	**68.1**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	32	102	323	1020
LDN	29	91	287	906

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	De Wolf Avenue	DATE:	18-Apr-24
SEGMENT	between Shepherd Avenue and Owens Mountain Parkway	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA	SCENARIO:	Cumulative Plus Project

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	4,980
SPEED =	40
PK HR % =	10
NEAR LANE/FAR LANE DIST =	32
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	498

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	47.5	- -
MEDIUM TRUCKS=	4.00	47.4	- -
HEAVY TRUCKS =	8.01	47.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	63.0	61.2	59.4	53.3	62.0	62.6
MEDIUM TRUCKS	54.8	53.3	46.9	45.4	53.8	54.1
HEAVY TRUCKS	55.7	54.2	45.2	46.4	54.8	54.9
VEHICULAR NOISE	64.3	62.5	59.8	54.7	63.2	**63.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	12	37	118	374
LDN	11	33	106	334

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Herndon Avenue	DATE:	18-Apr-24
SEGMENT	between SR 168 and Clovis Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	52,650
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	100
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	5,265

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	3.0	- -
MEDIUM TRUCKS=	4.00	1.0	- -
HEAVY TRUCKS =	8.01	3.0	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	86.8	84.9	83.1	77.0	85.7	86.3
MEDIUM TRUCKS	82.6	81.1	74.7	73.2	81.6	81.8
HEAVY TRUCKS	78.4	76.9	67.9	69.1	77.5	77.6
VEHICULAR NOISE	88.6	86.8	83.8	79.0	87.6	**88.0**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	3170	10025	31702	100251
LDN	2847	9002	28466	90018

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Behymer Avenue	DATE:	18-Apr-24
SEGMENT	between Willow Avenue and Minnewawa Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	8,230
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	823

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.8	65.9	64.2	58.1	66.7	67.3
MEDIUM TRUCKS	58.3	56.8	50.4	48.8	57.3	57.5
HEAVY TRUCKS	58.5	57.1	48.1	49.3	57.7	57.8
VEHICULAR NOISE	68.7	66.9	64.4	59.1	67.7	**68.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	33	104	329	1040
LDN	29	92	291	921

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Shepherd Avenue	DATE:	18-Apr-24
SEGMENT	between Locan Avenue and De Wolf Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	7,780
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	42
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	778

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.5	- -
MEDIUM TRUCKS=	4.00	45.4	- -
HEAVY TRUCKS =	8.01	45.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.0	66.1	64.3	58.2	66.9	67.5
MEDIUM TRUCKS	58.4	56.9	50.5	49.0	57.5	57.7
HEAVY TRUCKS	58.7	57.2	48.2	49.5	57.8	57.9
VEHICULAR NOISE	68.9	67.0	64.6	59.2	67.8	**68.3**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	34	107	340	1075
LDN	30	95	301	952

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Alluvial Avenue	DATE:	18-Apr-24
SEGMENT	between Fowler Avenue and Temperance Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	9,000
SPEED =	40
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	900

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	49.7	- -
MEDIUM TRUCKS=	4.00	49.6	- -
HEAVY TRUCKS =	8.01	49.7	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	65.4	63.5	61.8	55.7	64.3	64.9
MEDIUM TRUCKS	57.1	55.6	49.3	47.7	56.2	56.4
HEAVY TRUCKS	58.0	56.6	47.6	48.8	57.2	57.3
VEHICULAR NOISE	66.7	64.9	62.1	57.0	65.6	**66.1**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	20	65	204	646
LDN	18	58	182	576

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT:	Vista Ranch SOI Expansion	JOB #:	0462-2020-25
ROADWAY	Herndon Avenue	DATE:	18-Apr-24
SEGMENT	between Clovis Avenue and Sunnyside Avenue	ENGINEER:	C. Pincock
LOCATION:	City of Clovis, CA SCENARIO: Cumulative Plus Project		

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	41,120
SPEED =	45
PK HR % =	10
NEAR LANE/FAR LANE DIST =	76
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	4,112

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	10	
MED TRUCKS	10	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	10	

WALL INFORMATION

HTH WALL =	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.775	0.129	0.096	0.974
MEDIUM TRUCKS	0.848	0.049	0.103	0.018
HEAVY TRUCKS	0.865	0.027	0.108	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	32.6	- -
MEDIUM TRUCKS=	4.00	32.5	- -
HEAVY TRUCKS =	8.01	32.6	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	75.3	73.4	71.7	65.6	74.2	74.8
MEDIUM TRUCKS	66.4	64.9	58.5	57.0	65.4	65.7
HEAVY TRUCKS	66.9	65.5	56.5	57.7	66.1	66.2
VEHICULAR NOISE	76.4	74.6	72.0	66.7	75.3	**75.8**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	191	604	1911	6043
LDN	170	537	1698	5369

Appendix C:

Construction Noise Modeling Output

Receptor - Residences 300 ft to the west

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Edge of Site to Receptor, feet	Center of Site to Receptor, feet	Item Usage Percent[1]	Ground Factor[2]	Usage Factor	Receptor Item Lmax, dBA	Recptor. Item Leq, dBA
SITE PREP									
Grader	0	85	25	300	40	0.66	0.40	0.0	0.0
Tractor	4	84	25	300	40	0.66	0.40	92.0	59.3
Dozer	3	82	25	300	40	0.66	0.40	90.0	57.3
Scraper	0	84	25	300	40	0.66	0.40	0.0	0.0
							Log Sum	92.0	65.3
GRADE									
Dozer	1	82	25	300	40	0.66	0.40	90.0	57.3
Tractor	2	84	25	300	40	0.66	0.40	92.0	59.3
Grader	1	85	25	300	40	0.66	0.40	93.0	60.3
Excavator	2	81	25	300	40	0.66	0.40	89.0	56.3
Scraper	2	84	25	300	40	0.66	0.40	92.0	59.3
								93.0	67.0
BUILD									
Crane	1	81	25	300	16	0.66	0.16	89.0	52.3
Man lift	3	75	25	300	20	0.66	0.20	83.0	47.3
Tractor	3	84	25	300	40	0.66	0.40	92.0	59.3
Welder/Torch	1	74	25	300	40	0.66	0.40	82.0	49.3
Generator	1	81	25	300	50	0.66	0.50	89.0	57.3
								92.0	65.5
PAVE									
Paver	2	77	25	300	50	0.66	0.50	85.0	53.3
Concrete Mixer Truck	0	79	25	300	40	0.66	0.40	0.0	0.0
Roller	2	80	25	300	20	0.66	0.20	88.0	52.3
Tractor	0	84	25	300	40	0.66	0.40	0.0	0.0
Compactor (ground)	2	83	25	300	20	0.66	0.20	91.0	55.3
								91.0	61.6
ARCH COAT									
Compressor (air)	1	78	25	300	40	0.66	0.40	86.0	53.3
								86.0	53.3

[1]FHWA Construction Noise Handbook: Table 9.1 RCNM Default Noise Emission Reference Levels and Usage Factors

VIBRATION LEVEL IMPACT

Project:	Vista Ranch		Date: 4/18/24
Source:	Roller		
Scenario:	Unmitigated		
Location:	Adjacent residences		
Address:	Clovis		
PPV = PPVref(25/D)^n (in/sec)			

DATA INPUT

Equipment = Type	1	Vibratory Roller	INPUT SECTION IN BLUE
PPVref =	0.21	Reference PPV (in/sec) at 25 ft.	
D =	25.00	Distance from Equipment to Receiver (ft)	
n =	1.10	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

DATA OUT RESULTS

PPV =	**0.210**	IN/SEC	OUTPUT IN RED

Appendix I

Traffic

KITTELSON & ASSOCIATES
155 Grand Avenue, Suite 505
Oakland, CA 94612
P 510.839.1742

TECHNICAL MEMORANDUM

June 27, 2024 Project# 28949

To: Mr. Sean Smith, Supervising Civil Engineer
City of Clovis
1033 Fifth Street
Clovis, CA 93612

From: Aaron Elias, T.E., Lee Miller, Qiming Sun, Mike Aronson, P.E.

CC: Steve McMurtry, De Novo Planning Group

RE: Clovis Vista Ranch CEQA Transportation Evaluation

Introduction

The California Environmental Quality Act (CEQA) transportation analysis for the Vista Ranch Project (Project) in Clovis, CA, evaluates the transportation impact areas that may be considered in environmental documentation for the project. A separate Local Transportation Analysis (LTA) evaluates other transportation issues such as roadway and intersection capacity which are not part of the environmental evaluation under CEQA.

The CEQA checklist for transportation includes four questions that this memo will evaluate. These four questions include:

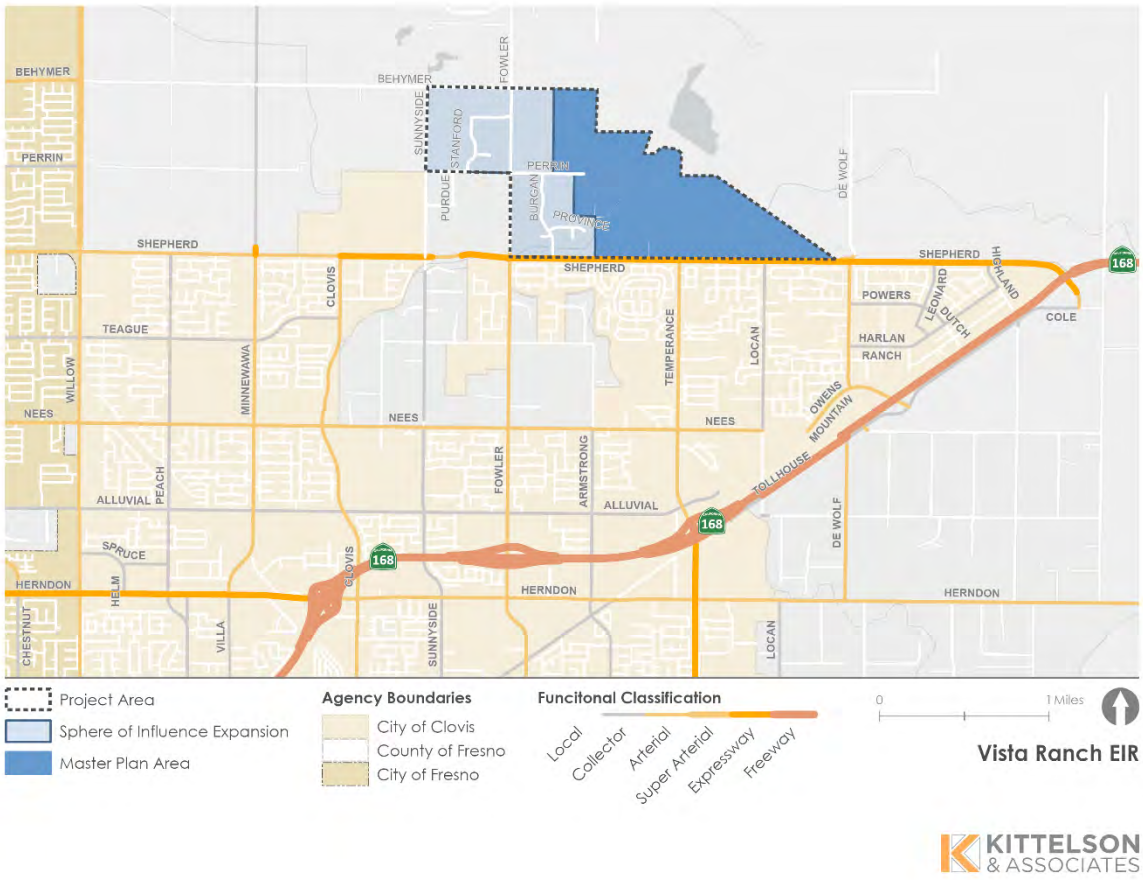
a. Would the project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?
b. Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)? (vehicle miles of travel (VMT) assessment)
c. Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
d. Would the project result in inadequate emergency access?

The following sections include a brief description of the Project, existing transportation conditions in the Project area, regulations and policies which apply to the CEQA evaluation, and an assessment of each of the four CEQA transportation questions.

PROJECT DESCRIPTION

The Project includes approximately 952 acres located within the city's planning area and is bounded on the north by Behymer Avenue, on the east by the Big Dry Creek Reservoir, on the south by Shepherd and Perrin Avenues, and on the west by North Fowler and North Sunnyside Avenues. The project contains both a master plan area and a non-development sphere of influence expansion. Figure 1 shows the Project and study area.

Figure 1: Vista Ranch Project and Study Area



The Master Plan area is approximately 507 acres and proposes the construction of up to 3,286 residential units, approximately 48 acres of commercial/mixed uses, approximately 19 acres for an elementary school, and approximately 57 acres of parks, trails, and open space. The non-development area is approximately 445 acres and will not receive any entitlements other than to be included in the Sphere of Influence (SOI) expansion.

The Project's planning area is separated into three distinct areas which include:

- MPArea1, approximately 368 acres including:
    - Up to 1,268 medium density residential dwelling units (Zoned R-1-MD)
    - Up to 1,039 medium high density residential dwelling units (Zoned R-2)
    - Up to 500 very high density residential dwelling units (Zoned R-4)
    - Up to 85,000 square feet of gateway commercial (Zoned C-1)
    - An accessible public park of 2.74 acres
- MPArea2, approximately 139 acres including:
    - Up to 137 low density residential dwelling units (Zoned R-1)
    - Up to 224 medium density residential dwelling units (Zoned R-1-MD)
    - Up to 115,000 square feet of gateway commercial (Zoned C-1)
    - Mini self-storage facility with up to 421,356 square feet of building (Zoned M-1)
    - Elementary school with up to 750 students or an additional 118 medium density residential units (Zoned R-1-MD)
- Non-Development Area, approximately 445 acres that have not requested any entitlements at this time other than to be included in the proposed SOI expansion.

Existing Conditions

This section provides a description of the existing roadway, transit, bicycle, and pedestrian components of the transportation system within the Project study area shown in Figure 1.

ROADWAY NETWORK

The existing roadway network in the Project study area is composed of freeways, super arterials, arterials, and collector roads. Roadway classifications listed are from Fresno County to account for roadways currently outside the city of Clovis.

Freeways

State Route 168 (SR 168) is a divided four-lane highway running northeast to southwest through the study area. It provides connection from the intercity Fresno area to the Sierra Nevada Mountain range. Access points to SR 168 are located at Herndon Avenue, Fowler Avenue, Temperance Avenue, Owens Mountain Parkway and Shepherd Avenue. Most sections in the study area have limited access but sections near Owens Mountain Parkway and Shepherd Avenue have at-grade intersections. The speed limit is generally set at 65 miles per hour (mph) within the study area.

Expressway

Shepherd Avenue is an east to west running roadway that ranges from a two lane road to a four lane divided by a median roadway near the Project where it provides the southern boundary for the Project. Newer sections of the road are the four lane divided sections while the older unimproved sections are the two lane areas. Sidewalks are along the developed south side of the roadway, and conventional bike lanes on each side. Shepherd Avenue connects SR 168 to Willow Avenue at the western edge of the study area. A half mile segment of Shepherd Avenue between Fowler Avenue and Sunnyside Avenue is not improved and classified as an arterial. The speed limit ranges from 50 mph on the divided sections to 40 mph in the two-lane highway section.

Super Arterials

Willow Avenue runs north to south along the western edge of the study area from Behymer Avenue to Herdon Avenue. Willow Avenue has six lanes divided by a center median. From Shepherd Avenue south, the majority of Willow Avenue has bike lanes and sidewalks on both sides. The Clovis Old Town Trail runs along the Willow Avenue right-of-way (ROW) from Behymer Avenue to just south of Teague Avenue where it crosses under Willow Avenue heading southeast. Willow Avenue provides access to central Clovis to the south and the Clovis Community College campus to the north. The speed limit in the vicinity of the Project (near Shepherd) is 50 mph.

Arterials

NORTH-SOUTH

Clovis Avenue is located west of the Master Plan Area, beginning north of Shepherd Avenue, and connecting south to Herndon Avenue. Clovis Avenue is four lanes with a center median with sidewalk and bike lanes on each side. Between Teague Avenue and Alluvial Avenue, the Dry Creek Trail shared use path shares the ROW along the east side of the corridor. The speed limit is approximately 45 mph.

Fowler Avenue runs through the study area classified as a local street, changing to an arterial from Shepherd Avenue south to SR 168. The roadway configuration on Fowler Avenue is mixed due to fronting land uses and undeveloped parcels.

- From Shepherd Avenue to Teague Avenue there are two lanes in the southbound direction and one lane northbound. A bike lane and sidewalk are located along the majority of this section. The Enterprise shared use path crosses Fowler Avenue south of Shepherd Avenue and connects with a shared use path on the west side of Fowler Avenue from the Enterprise trail crossing to Teague Avenue. The speed limit in this section is 45 mph.
- From Teague Avenue to Nees Avenue the ROW narrows and includes one lane in each direction with no sidewalk and bike facilities. The speed limit remains 45 mph.
- From Nees Avenue to SR 168, the cross-section includes four lanes with a center median, and includes bike lanes and sidewalks on each side. The speed limit in this section is 45 mph.

Temperance Avenue begins in the center of the Master Plan Area and runs south to SR 168 and a collection of commercial land uses. The roadway is a four lane divided road with bike lanes and sidewalks on each side. The speed limit is 50 mph.

De Wolf Avenue runs from Shepherd Avenue south to Owens Mountain Parkway on the eastern edge of the Master Plan Area. The roadway cross section generally has a single lane in each direction with a center median allowing for turn lanes. Bicycle lanes and sidewalks are provided on each side. De Wolf Avenue provides access from the Master Plan Area to the SR 168 freeway via Owens Mountain Parkway. The posted speed limit is 40 mph.

EAST-WEST

Shepherd Avenue has a small section from Fowler Avenue to Sunnyside Avenue that is classified as an arterial rather than an expressway. The roadway narrows to two lanes without a median and no bike or walking facilities. Future development in this area will improve this segment of Shepherd Avenue to be consistent with the rest of the roadway. The speed limit in this section is 40 mph.

Owens Mountain Parkway connects to SR 168 and terminates prior to Nees Avenue without providing a connection under existing conditions. Future plans would extend this roadway to connect to Temperance Avenue at Alluvial Avenue. Owens Mountain Parkway is one lane in each direction with a center median and bike lanes on each side. Sidewalks are intermittent where existing development is located on the western section. The roadway pairs with De Wolf Avenue to provide access from the Master Plan Area to SR 168. There are currently no observed posted speed limit signs.

Nees Avenue runs through the center of the study area, cutting through suburban neighborhoods where the land use shifts east of Clovis Avenue to a more rural and undeveloped landscape. From Willow Avenue to Minnewawa Avenue the corridor has four lanes with a center turn lane and sidewalk on the majority of both sides. East of Minnewawa Avenue, the corridor is varied with some two lane undivided sections, divided two lane sections, and divided three lane sections. Posted speed limits range from 40 mph to 45 mph.

Herndon Avenue is at the southern edge of the study area and connects SR 168 and the northern parts of Fresno to the west. Herndon Avenue is six lanes with a center turn lane. The corridor has sporadic sidewalks adjacent to areas of newer development. The posted speed limit is 45 mph.

Collectors

The collector streets vary greatly in their configuration and character, as many traverse through developed neighborhoods and undeveloped land. Collector roadways within the study area are listed in Table 1. Each street condition is listed as one of the following:

- **Improved –** The majority of the street cross section has been brought up to current stands and includes sidewalk and bicycle facilities based on context.
- **Unimproved –** The majority of the street cross section has not been brought to current standards and may not include curbs, sidewalk, or bicycle facilities.

- **Mixed –** The street cross section is mixed between improved and unimproved condition, based primarily on frontage of a developed neighborhood or commercial tract.

- **Table 1: Collector Streets**

	Street Name	Condition
North/South	Sunnyside Avenue	Mixed
	Locan Avenue	Mixed
	Peach Avenue	Improved
	Armstrong Avenue	Mixed
	Leonard Avenue	Improved
	Minnewawa Avenue	Improved
East/West	Teague Avenue	Mixed
	Powers Avenue / Dutch Avenue	Improved
	Harlan Ranch Avenue	Improved
	Highland Avenue	Improved
	Tollhouse Rd.	Unimproved
	Alluvial Avenue	Mixed

Local Streets

Within the study area, there are many local streets providing access to residential single family housing. Many of the local streets within neighborhood developments do have sidewalks on both sides of the street, however streets in less dense residential or undeveloped areas do not.

MASTER PLAN AREA

Within the Master Plan Area, which is currently outside of the city of Clovis, there are several local streets serving residents. The major local streets within the Master Plan Area are described below.

Behymer Avenue connects the north edge of the Master Plan Area west to Willow Avenue. It has two lanes and no sidewalk or bike facilities. Behymer Avenue is in a rural residential context and is posted at 45 mph.

Fowler Avenue changes character significantly north of Shepherd Avenue. It runs through the center of the Master Plan Area and provides rural residential access. Fowler Avenue is two lanes without sidewalk or bike facilities and is posted at 45 mph. It connects the city of Clovis to the south with Behymer Avenue to the north.

Perrin Avenue is a short east to west connecting street providing rural residential access. It is two lanes, without a center stripe, and does not have sidewalk or bike facilities. It is also split into two sections, divided by parcels in the center. It connects to Sunnyside Avenue and Fowler Avenue. There are no posted speed limit signs.

Sunnyside Avenue north of Shepherd Avenue maintains a rural residential context, but does not have a center stripe, nor does it have sidewalk or bike facilities. It connects north to Perrin Avenue. There are no posted speed limit signs but there is an "end 45 speed limit" sign indicating the speed limit is 55 mph per its roadway classification.

Burgan Avenue connects Perrin Avenue south to Shepherd Avenue. It provides rural residential access, with two lanes, no center stripe and does not have sidewalk or bike facilities. No speed limit is posted.

TRANSIT

The following section describes existing transit services near the study area. These routes are shown graphically in Figure 2. Detailed information on served areas and hours of operation are found in Table 2.

Fresno Area Express (FAX)

FAX provides fixed route transit services serving the city of Fresno and a portion of the City of Clovis and is the largest transit service provider in the region with almost seven million annual boardings. Handy Ride is the paratransit service provider for the FAX system.

Route 3 serves the western edge of the study area along Willow Avenue terminating at Clovis Community College. Service runs every 30 minutes each day of the week.

Clovis Transit

Clovis Transit is the principal transit service in the city of Clovis and provides fixed route and paratransit services. Clovis Transit connects with Fresno Area Express (FAX). Round Up is the paratransit service for the Clovis Transit system.

Route 10 is a circulator route that provides service to the western portion of Clovis and connects to the Clovis Civic Center.

Route 50 is a circulator route serving the northeast and southeast section of Clovis.

Route 80 provides local services from central Clovis to the Buchanan education complex.

Fresno County Rural Transit Agency (FCRTA)

FCRTA provides general public transit service to rural communities throughout Fresno County. FCRTA provides both scheduled, fixed route services with designated bus stops along specific routes, as well as reservation-based, demand responsive service that offers curb-to-curb transportation.

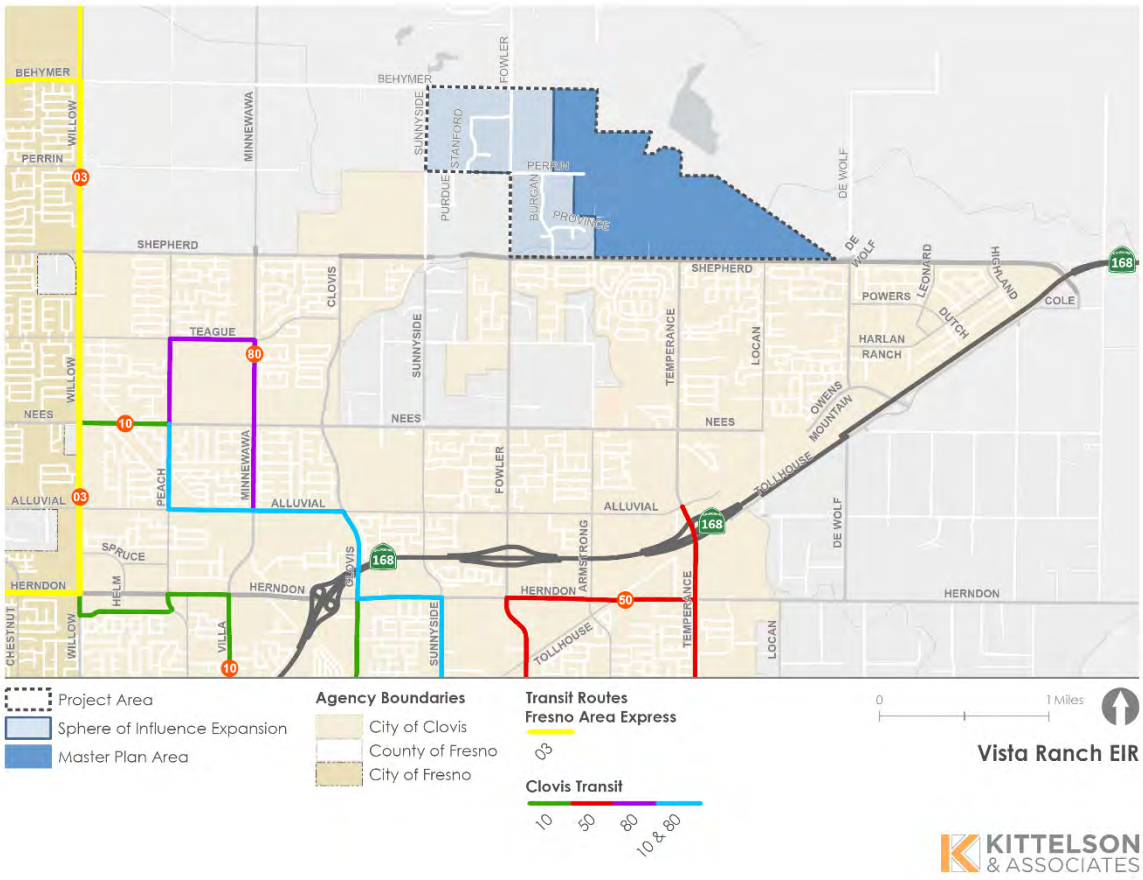
Auberry Route

The Auberry transit route provides connection from Clovis to the Auberry area foothill communities northeast of Clovis. The service is demand responsive and operates one day per week with 24-hr advanced notice.

Table 2: Bus Routes Serving the Study Area

	Route	Serving	Day	Times		Frequency
Existing	**Fresno Area Express**					
	3	Route 3 connects Clovis Community College to Herdon. The route provides access to several shopping centers and medical facilities along the route.	Mon – Fri	5:45am	8:45am	30min
			Sat – Sun	6:45am	6:15pm	30min
	Clovis Transit					
	10	Route 10 connects north Clovis to Fresno State University, serving Clovis Civic Center, and Peachwood Medical Center.	Mon – Fri	6:15am	6:30pm	30min
			Sat	7:30am	3:30pm	30min
	50	Route 50 connects medial facilities near Herdon Avenue to Clovis Civic Center, and south to several schools and shopping centers.	Mon – Fri	6:05am	5:35pm	30min
			Sat	7:35am	2:05pm	60min
	80	Route 80 serves the Buchanan Education complex and connects to Clovis Civic Center, passing several parks and shopping centers including Bicentennial Park and Walmart, respectively.	Mon – Fri	6:15am	6:30pm	30min
			Sat	7:30am	3:30pm	30min
	Fresno County Rural Transit Agency					
	Auberry	The Auberry transit route provides connection between the foothill communities in Northeast Fresno County and the intercity area of Clovis and Fresno.	Tues	8am	5pm	On demand
	Source: www.fresno.gov/fax, www.ruraltransit.org/route-services, https://clovistransit.com, accessed Jan 26, 2024					

Figure 2: Existing Transit Service in the Study Area



BICYCLE AND PEDESTRIAN FACILITIES

Bicycle and pedestrian facilities are important components of the transportation network in the study area. They not only offer non-vehicular opportunities for both commute and recreational trips but also provide connections to the Clovis transit network and opportunities to shop, dine, and accomplish other daily needs without using a car.

Existing Bicycle Facilities

Bicycle facilities are defined by the following four classes[1]:

- Class I – Provides a completely separated facility designed for the exclusive use of bicyclists and pedestrians with crossing points minimized.
- Class II – Provides a restricted right-of-way designated lane for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and crossflows by pedestrians and motorists permitted.
- Class III – Provides a right-of-way designated by signs or permanent markings and shared with pedestrians and motorists.
- Class IV – Provides a restricted right-of-way designated lane for the exclusive use of bicyclists that is separated by a vertical element to provide further separation from motor vehicle traffic.

In Fall 2023, the City of Clovis adopted their Active Transportation Plan (ATP), which provides a clear vision for the active transportation network and provides strategies to implement the planned network. The following bikeways are currently present within the study area, but many are at intermittent locations on the listed roads. They are shown graphically in Figure 3.

- Class I Bike Paths
  - Dry Creek Trail (Clovis Avenue)
  - Enterprise Trail
  - Multiple Neighborhood trails on east end of Study Area
- Class II Bike Lanes
  - Shepherd Avenue
  - Teague Avenue
  - Alluvial Avenue
  - Herndon Avenue
  - Willow Avenue
  - Peach Avenue
  - Clovis Avenue
  - Sunnyside Avenue
  - Fowler Avenue
  - Temperance Avenue
  - Locan Avenue
  - DeWolf Avenue

[1] As detailed in Chapter 1000 of the Highway Design Manual (Caltrans, 2020).

Planned and Proposed Bicycle Facilities

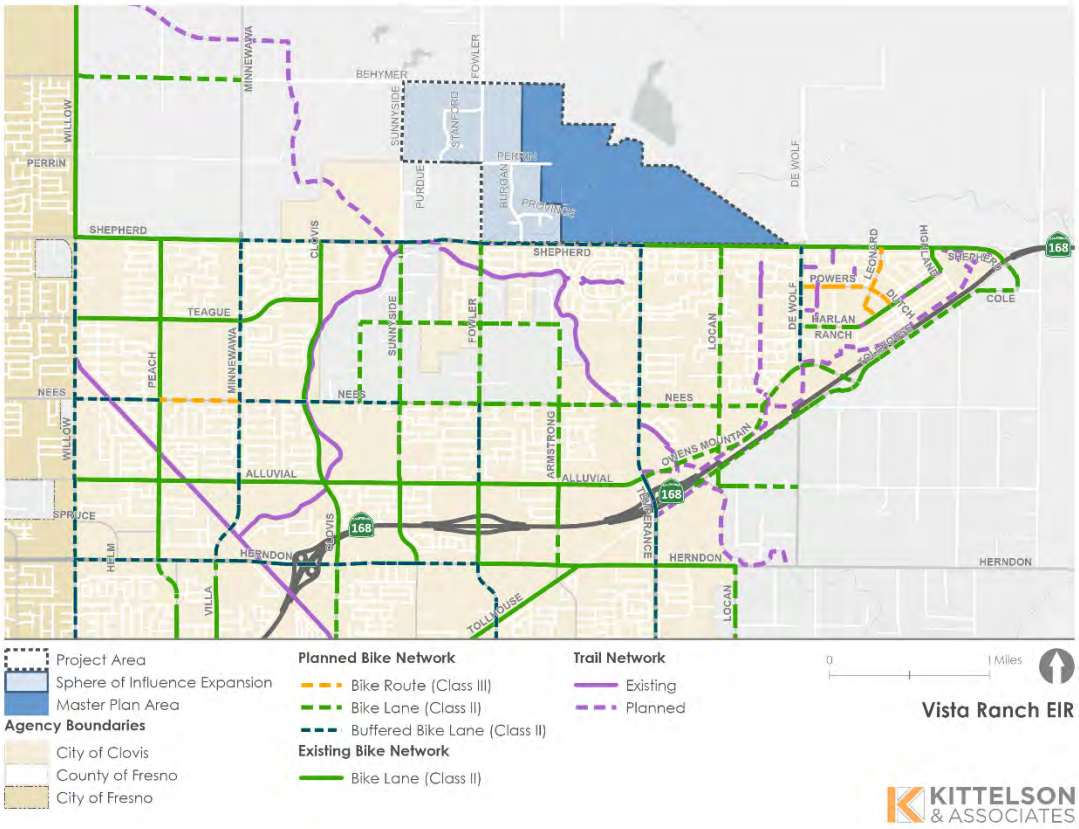
The Clovis ATP includes proposed bike facilities in the study area. They are listed below and shown in Figure 3. The planned alignments aim to fill gaps in the existing network and enhance safety and comfort for people biking.

- Class I Bike Paths
  - Various connections that fill gaps in the existing Class I network are proposed.
- Class II Bike Lanes

Conventional Bike Lane (No Buffer)	Buffered Bike Lane
o Behymer Avenue	o Shepherd Avenue
o Teague Avenue	o Nees Avenue
o Nees Avenue	o Herndon Avenue
o Alluvial Avenue	o Willow Avenue
o Clovis Avenue	o Minnewawa Avenue
o Marion Avenue	o Fowler Avenue
o Sunnyside Avenue	o Temperance Avenue
o Fowler Avenue	o DeWolf Avenue
o Armstrong Avenue	
o Locan Avenue	
o Owens Mountain Pkwy.	
o Harlan Ranch Blvd.	

- Class III Bike Routes
  - o Nees Avenue
  - o Powers/Dutch Avenue
  - o Leonard Avenue

Figure 3: Existing and Proposed Bike Facilities in the Study Area



Pedestrian Facilities

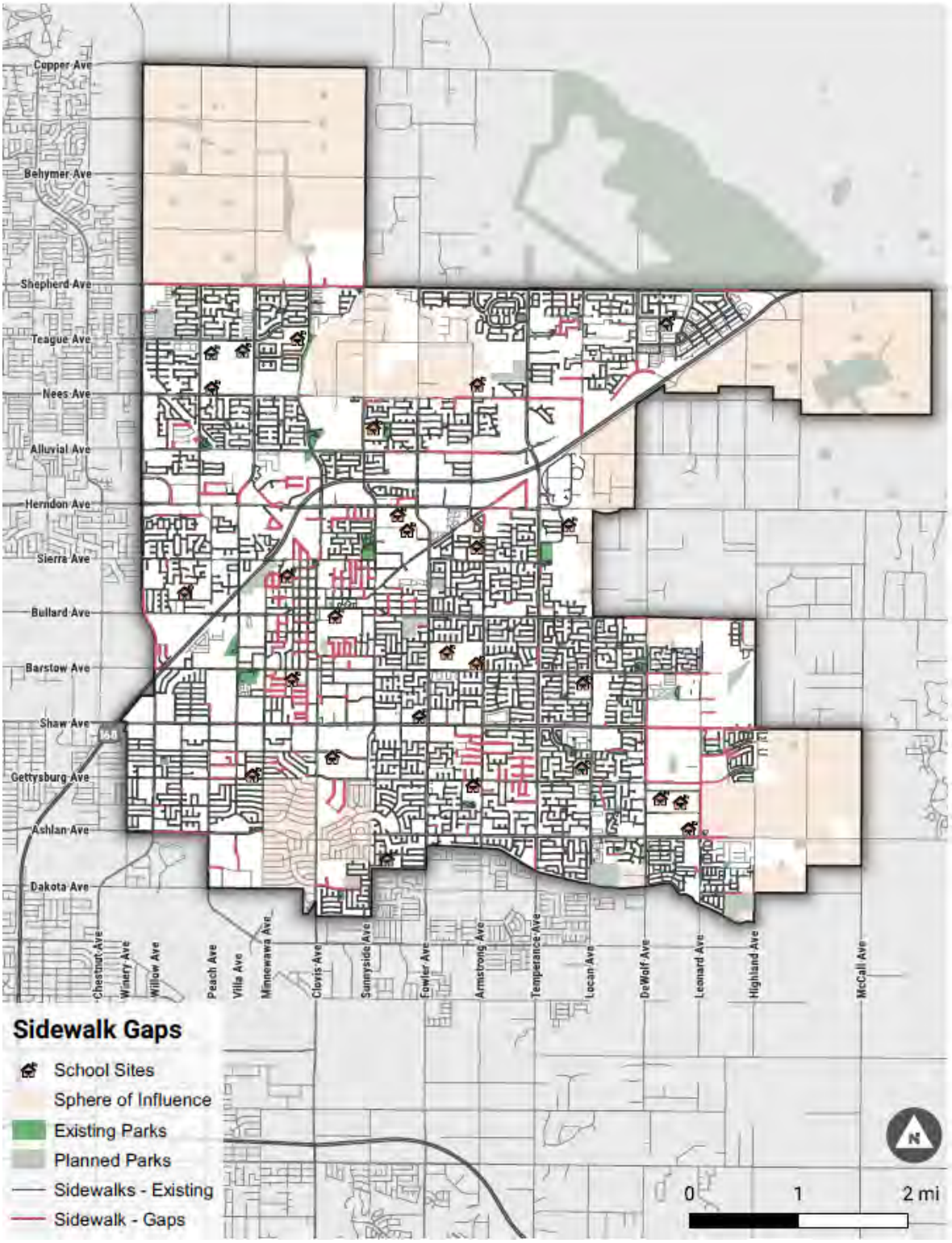
The Clovis ATP assesses and recommends pedestrian facility enhancements as well as bicycle facilities. Pedestrian facilities are present throughout the study area, however there are sidewalk gaps present intermittently along some roadways. Longer gaps on collector and arterial roadways include:

- Shepherd Avenue between Willow Avenue and Sunnyside Avenue
- Nees Avenue between Armstrong and Locan Avenue
- Alluvial Avenue between Fowler Avenue and Armstrong Avenue

Existing sidewalk and sidewalk gaps are shown below in Figure 4. The Clovis ATP provides a prioritized list of sidewalk infill segments. Those within the Study Area are listed below:

- Nees Avenue from Whittier Avenue to Armstrong Avenue (0.25 miles)
- Alluvial Avenue from Fordham Avenue to West of Renn Avenue (0.14 miles)

Figure 4: Existing and Missing Sidewalks in the Study Area



Regulatory Setting

This section summarizes applicable federal, state, regional, and local plans, laws, and regulations that are relevant to this analysis. This information provides a context for the discussion related to the Project's consistency with applicable policies, plans, laws, and regulations.

FEDERAL

No federal plans, policies, regulations, or laws pertaining to transportation have been determined to be applicable to this Project.

STATE

Senate Bill 743 (SB 743) was signed into law in September 2013. SB 743 (Steinberg, 2013) required changes to the CEQA Guidelines regarding the analysis of transportation impacts. Historically, CEQA transportation analyses of individual projects determined impacts in the circulation system in terms of roadway delay and/or capacity at specific locations. SB 743 changes include the elimination of auto delay, level of service (LOS), and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts. Those proposed changes identify vehicle miles traveled (VMT) as the most appropriate metric to evaluate a project's transportation impacts. Since the bill has gone into effect, automobile delay, as measured by "level of service" and other similar metrics, no longer constitutes a significant environmental effect under CEQA. Auto-mobility (often expressed as "LOS") may continue to be a measure for planning purposes.[2]

In December 2018, the California Governor's Office of Planning and Research (OPR) and the State Natural Resources Agency submitted updated CEQA Guidelines to the Office of Administrative Law for final approval to implement SB 743. The Office of Administrative Law approved the updated CEQA Guidelines, thus implementing SB 743 and making VMT the primary metric used to analyze transportation impacts. The final text, final statement of reasons, and related materials are posted at http://resources.ca.gov/ceqa. The changes have been approved by the Office of Administrative Law and are now in effect. For land use and transportation projects, SB 743-compliant CEQA analysis became mandatory on July 1, 2020.

REGIONAL

Fresno Council of Governments Regional Transportation Plan

The Fresno COG is a voluntary association of local governments and a regional planning agency comprised of 16 member jurisdictions, including the city of Clovis. The members are represented by a Policy Board consisting of mayors of each incorporated city, and the Chairperson of the County Board of

[2] Governor's Office of Planning and Research, "Technical Advisory on Evaluating Transportation Impacts in CEQA," December, 2018.

Supervisors, or their designated elected official. The Fresno COG's purpose is to establish a consensus on the needs of the Fresno County area and further action plans for issues related to the Fresno County region. The current regional transportation plan, known as the Regional Transportation Plan & Sustainable Communities Strategy (RTP), was adopted in 2022. The RTP addresses GHG emissions reductions and other air emissions related to transportation, with the goal of preparing for future growth in a sustainable way. The plan specifies how funding will be sourced and financed for the region's planned transportation investments, ongoing operations, and maintenance. The goals, objectives, and policies of the RTP are established to direct the courses of action that will provide efficient, integrated multimodal transportation systems to serve the mobility needs of people, including accessible pedestrian and bicycle facilities, and freight, while fostering economic prosperity and development, and minimizing mobile sources of air pollution. The five main goals of the RTP include:

- GOAL 1: Improved mobility and accessibility for all
- GOAL 2: Vibrant communities that are accessible by sustainable transportation options.
- GOAL 3: A safe, well-maintained, efficient, and climate-resilient multimodal transportation network
- GOAL 4: A transportation network that supports a sustainable and vibrant economy.
- GOAL 5: A region embracing clean transportation, technology, and innovation.

Fresno Council of Governments Multijurisdictional Local Road Safety Plan (MLRSP)

The MLRSP was completed in 2022 and provides an in depth look at areas of safety concern within the city of Clovis and other cities within the planning area. The report identifies priority segments and intersections in the city of Clovis and potential crash reduction treatments to apply. The plan also provides strategies for education, enforcement, engineering, and emergency services to improve safety outcomes. Intersections near the Master Plan Area which were identified in the 95th percentile of Crash Severity Scores include:

- Shepherd Avenue at Minnewawa Avenue
- Shepherd Avenue at De Wolf Avenue (western intersection)

Fresno County Congestion Management Process

In June 1990, California voters approved legislation that required Congestion Management Plans be developed in urbanized counties to address congestion on California's highways and roads.
The Fresno County Congestion Management Process (CMP) implements this requirement, and its responsibilities include providing information on transportation system performance and assessing alternative strategies for alleviating congestion and improving mobility for people and goods to levels that meet State and local needs. The Fresno County CMP identifies four general objectives:

1. Optimize the transportation facilities through efficient system management;
2. Invest in strategies that reduce travel demand, improve system performance, increase safety, and provide effective incident management;
3. Reduce VMT by encouraging alternative modes of transportation and promotion of sustainable land use development; and

4. improve public transit, extend bicycle and pedestrian systems, and promote car-sharing and bike-sharing programs to facilitate the development of an integrated multimodal transportation system in the Fresno region.

LOCAL

City of Clovis General Plan – Circulation Element

The City of Clovis adopted the General Plan[3] in August 2014 as an update to the previous General Plan approved in 1993. It serves as the City's guide for the continued development, enhancement, and revitalization of the City of Clovis. The following policies related to transportation and circulation are applicable to the Project:

- **Policy 1.1: Multimodal network.** The city shall plan, design, operate, and maintain the transportation network to promote safe and convenient travel for all users: pedestrians, bicyclists, transit riders, freight, and motorists.
- **Policy 1.2: Transportation decisions.** Decisions should balance the comfort, convenience, and safety of pedestrians, bicyclists, and motorists.
- **Policy 1.3: Age and mobility.** The design of roadways shall consider all potential users, including children, seniors, and persons with disabilities.
- **Policy 1.4: Jobs and housing.** Encourage infill development that would provide jobs and services closer to housing, and vice versa, to reduce citywide vehicle miles travelled and effectively utilize the existing transportation infrastructure.
- **Policy 1.5: Neighborhood connectivity.** The transportation network shall provide multimodal access between neighborhoods and neighborhood-serving uses (educational, recreational, or neighborhood commercial uses).
- **Policy 1.6: Internal circulation.** New development shall utilize a grid or modified-grid street pattern. Areas designated for residential and mixed-use village developments should feature short block lengths of 200 to 600 feet.
- **Policy 1.7: Narrow streets.** The city may permit curb-to-curb dimensions that are narrower than current standards on local streets to promote pedestrian and bicycle connectivity and enhance safety.
- **Policy 2.2: Multimodal LOS.** Monitor the evolution of multimodal level of service (MMLOS) standards. The city may adopt MMLOS standards when appropriate.
- **Policy 2.3: Fair share costs.** New development shall pay its fair share of the cost for circulation improvements in accordance with the city's traffic fee mitigation program.
- **Policy 2.4: Right-of-way dedication.** The city may require right-of-way dedication essential to the circulation system in conjunction with any development or annexation. The City shall request the County of Fresno to apply the same requirements in the Clovis planning area.
- **Policy 3.1**: **Traffic calming**. Employ traffic-calming measures in new developments and existing neighborhoods to control traffic speeds and maintain safety.

[3] City of Clovis General Plan, August 25, 2014.

- **Policy 3.4: Road diets.** Minimize roadway width as feasible to serve adjacent neighborhoods while maintaining sufficient space for public safety services.
- **Policy 3.5: Roadway widening.** Only consider street widening or intersection expansions after considering multimodal alternative improvements to non-automotive facilities.
- **Policy 3.6: Soundwalls.** Design roadway networks to disperse traffic to minimize traffic levels. Discourage soundwalls along new collector and local streets when feasible.
- **Policy 3.7: Conflict points.** Minimize the number of and enhance safety at vehicular, pedestrian, and bicycle conflict points.
- **Policy 3.8: Access management.** Minimize access points and curb cuts along arterials and prohibit them within 200 feet of an intersection where possible. Eliminate and/or consolidate driveways when new development occurs or when traffic operation or safety warrants.
- **Policy 3.9: Park-once.** Encourage "park-once" designs where convenient, centralized public parking areas are accompanied by safe, visible, and well-marked access to sidewalks and businesses.
- **Policy 3.10: Pedestrian access and circulation.** Entrances at signalized intersections should provide sidewalks on both sides of the entrance that connect to an internal pedestrian pathway to businesses and throughout nonresidential parking lots larger than 50 spaces.
- **Policy 3.11: Right-of-way design.** Design landscaped parkways, medians, and rights-of-way as aesthetic buffers to improve the community's appearance and encourage non-motorized transportation.
- **Policy 3.12: Residential orientation.** Where feasible, residential development should face local and collector streets to increase visibility and safety of travelers along the streets and encourage pedestrian and bicycle access.
- **Policy 5.2: Development-funded facilities.** Require development to fund and construct facilities as shown in the Bicycle Transportation Plan when facilities are in or adjacent to the development.
- **Policy 5.3: Pathways.** Encourage pathways and other pedestrian amenities in Urban Centers and new developments of 10 acres or larger.
- **Policy 5.4: Homeowner associations.** The city may require homeowner associations to maintain pathways and other bicycle and pedestrian facilities within the homeowner association area.
- **Policy 5.5: Pedestrian access.** Require sidewalks, paths, and crosswalks to provide access to schools, parks, and other activity centers and to provide general pedestrian connectivity throughout the city.

The General Plan has policies related to maintaining acceptable Levels of Service (LOS) outside of some permitted exceptions. However, LOS can no longer be used for CEQA evaluations and is therefore not relevant to this memorandum focusing on CEQA impacts. Additional analyses of the Master Plan Area will be documented in another report that will detail LOS.

City of Clovis Active Transportation Plan (ATP)

The Clovis ATP was adopted in fall of 2023 and provides a vision for Clovis to complete a network of walking, biking and shared use trail facilities that are convenient, safe, and easy to use. The network should support and encourage travel between and within neighborhoods. The plan developed recommended bicycle, pedestrian and trail networks, and prioritized projects to meet the most need, more quickly. These prioritized projects were guided by the goals of the plan, which are listed below:

- Safety and Comfort – Improve the safety of people walking and biking.

- Connectivity – Develop a well-connected network of trails, walkways, and bikeways.
- Mode Shift – Increase the share of people who walk or ride a bike to get to work, school, shopping, and other activities.
- Equity – Create a network that allows people of all physical abilities and socioeconomic circumstances the ability to travel safely throughout the city without a car.
- Recreation – Increase access to recreation by providing access to trails, walkways, and bikeways.

CEQA Transportation Analysis

The transportation analysis assesses how the study area's transportation system would operate with the implementation of the proposed Master Plan. This analysis includes effects that would result in significant impacts under the California Environmental Quality Act (CEQA) guidelines.

CEQA Significance Criteria

The Project's impact is not considered to be significant unless it would:

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 Guideline section 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.

Significance criteria "b" is related to the implementation of vehicle miles traveled (VMT) as the primary performance metric. The following criteria are used to assess a significant impact related to VMT consistent with the city of Clovis "Transportation Impact Analysis Guidelines" dated September 15, 2022:

- **Residential** – A proposed project exceeding a level of 13 percent below existing average VMT per capita in Fresno County.
    - Regional Average: 16.1 VMT/capita
    - Impact Threshold: 14.1 VMT/capita
- **Office** – A proposed project exceeding a level of 13 percent below existing average VMT per employee in Fresno County.
    - Regional Average: 25.6 VMT/employee
    - Impact Threshold: 22.3 VMT/employee
- **Retail** – A net increase in total VMT. The total VMT for the region without and with the project is calculated. The difference between the two scenarios is the net change in total VMT that is attributable to the project.

CEQA PROJECT IMPACTS AND PROPOSED MITIGATIONS

TRAF-1	The proposed project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. This would be considered a less than significant impact.

The Proposed Project and its effects were compared against local, regional, and state programs, plans, ordinances, and policies addressing the circulation system, as described previously. The documents governing the plans and policies addressing the circulation system in the area and a discussion of whether the Proposed Project would conflict with them include:

- Fresno Council of Governments Regional Transportation Plan (RTP)
    - The goals, objectives, and policies of the RTP are established to direct the courses of action that will provide efficient, integrated multimodal transportation systems to serve the mobility needs of people, including accessible pedestrian and bicycle facilities, and freight, while fostering economic prosperity and development, and minimizing mobile sources of air pollution.

      The Project objectives include providing infrastructure that meets City standards and is integrated with existing and planned facilities while also providing a strong pedestrian network to link local commercial and neighborhood together. This is consistent with the RTP since it would be accessible, provide a safe multimodal transportation network, and support a sustainable and vibrant economy by providing housing types, sizes, and densities that provide for local and regional housing needs.

- Fresno Council of Governments Multijurisdictional Local Road Safety Plan (MLRSP)
    - This plan identifies priority intersections and segments and potential reduction treatments to improve the safety of transportation infrastructure with the highest crash severity scores. Two of the intersections identified are within the study area for the transportation analysis. Since the Project is not proposing modification at the two identified intersections, the Project would not interfere with the implementation of the MLRSP.

- Fresno County Congestion Management Plan (CMP)
    - The CMP is responsible for monitoring the transportation infrastructure and developing deficiency plans to improve the transportation infrastructure that is not meeting standards. The Project is proposing development in a master plan area and is not anticipated to affect intersections and roadway segments that are not internal or abutting the Project. There are no anticipated design features that would prevent the normal analysis and deficiency reporting for the CMP.

- City of Clovis General Plan

  - The overarching goal of the General Plan circulation element is to create a comprehensive and well-maintained multimodal circulation system that provides for the safe and efficient movement of people and goods. This includes goals for "complete streets," making bicycle and transit networks a functional alternative, and a complete system of trails and pathways assessable to all. This aligns with the Project objectives which call for a Project that integrates and supports active and public transportation, encourage walkability and safe pedestrian/bicycle routes to all land uses, and a system of trails, parks, and open spaces that connect logically with greater Clovis.

- City of Clovis Active Transportation Plan (ATP)
  - The ATP identifies roadways where planned bicycle and pedestrian infrastructure will be implemented. In addition to providing internal roadways that provide multimodal streets per the General Plan, the Project would be required to improve its frontage which would help the ATP in filling in gaps in the bicycle and pedestrian network such as along Shepherd Avenue. The Project is not anticipated to affect transportation infrastructure away from the boundaries in a way that would prevent the proposed network in the ATP from being completed.

Based on this assessment, the Project is not anticipated to conflict with policies, plans, and programs addressing the circulation system for alternative modes. Therefore, the impact would be **less than significant,** and no mitigation measures would be required.

TRAF-2	The proposed project would conflict with or be inconsistent with CEQA Guideline section 15064.3, subdivision (b). This would be considered a significant and unavoidable impact.

The Fresno COG activity-based travel demand model was used to estimate base year (2019) VMT for the transportation analysis zones (TAZs) that comprise the Project. Table 3 presents VMT per capita and VMT per employee findings for base year conditions in Fresno County and for the Project at buildout. The Project is considered to have a significant impact if the VMT per capita or VMT per employee of the Project exceeds a threshold based on 13 percent below the regional averages for Fresno County.

Table 3: VMT Per Capita and Per Employee

	VMT per Capita	VMT per Employee
Fresno County	16.1	25.6
Impact Threshold (13% below regional average)	14.1	22.3
Project Area	30.4	44.3
Percent Compared to Impact Threshold	+116%	+99%
Significant Impact	**Yes**	**Yes**

Source: Kittelson & Associates, 2024, based on Fresno COG travel model and VMT calculation tool

Table 4 lists the total regional daily VMT for the base year with the Project, without the retail commercial component and with the retail commercial component. The total regional VMT is projected to decrease with the addition of retail commercial uses within the Project. This indicates that the proposed retail uses would provide services close to residents and reduce the need to make longer trips to access services.

The Project would exceed the impact thresholds for both residential and employment land uses. This would have a **significant impact** for residential and employment uses. The Project retail uses would decrease total regional VMT. This would have a **less than significant impact** for retail uses.

Table 4: Regional VMT Without and With Retail

	Total Regional Daily VMT
With Project Without Retail	22,029,977
With Project With Retail	22,026,474
Difference	-3,503
Significant Impact	**No**

Source: Kittelson & Associates, 2024, based on Fresno COG travel model

Mitigation

Mitigation for VMT impacts for residential and employment uses would include mitigation measures TRAF-2-1 through TRAF-2-5. The potential effectiveness of mitigation measures for VMT has been estimated using the CAPCOA *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*[4].

Mitigation Measure TRAF-2-1: Future employers within the Project shall implement a commute trip reduction program, consistent with other trip reduction programs in the City of Clovis. The program would include the following components:

- trip reduction targets
- measures to discourage single occupancy vehicles while encouraging alternative modes of transportation such as carpooling, ridesharing, vanpooling, subsidized transit passes and other benefits,
- include a guaranteed ride home for eligible employers,
- establish applicable fees and funding mechanisms,
- define monitoring measures and frequency, and strategies for non-compliance.

The CAPCOA Handbook Measure T-5 estimates that a voluntary commute trip reduction program can reduce commute VMT by up to 4.0 percent with full participation of all eligible employees. Commute VMT to and from employers within Vista Ranch is projected to account for a maximum of 7.5 percent of total VMT. Therefore, the maximum VMT reduction from a commute trip reduction program would be 4.0 percent times 7.5 percent or 0.3 percent VMT reduction.

Mitigation Measure TRAF-2-2: Provide bicycle facilities that include bike parking and bike lockers. The CAPCOA Handbook Measure T-10 estimates that provision of end-of-trip bicycle facilities can reduce commute VMT by up to 4.4 percent depending on the existing propensity for commuters to use bicycles. The potential VMT reduction for employers in Clovis is estimated at 0.61 percent. Commute VMT to and from employers within Vista Ranch is projected to account for a maximum of 7.5 percent of total VMT. Therefore, the maximum VMT reduction from bicycle end-of-trip facilities would be 0.61 percent times 7.5 percent or 0.05 percent VMT reduction.

Mitigation Measure TRAF-2-3: Provide a well-connected street network, particularly for non-motorized connections. Characteristics of street network connectivity include short block lengths, numerous three and four-way intersections, and minimal dead-ends (cul-de-sacs). Street connectivity helps to facilitate shorter vehicle trips and greater numbers of walk and bike trips and thus a reduction in VMT. CAPCOA Handbook Measure T-17 uses increased vehicle intersection density as a proxy for street connectivity improvements. The CAPCOA Handbook estimates that VMT can be reduced up to 30 percent if a development provides a street grid that has much greater density (up to about three times) of streets and

[4] California Air Pollution Control Officers Association (CAPCOA), *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*, December, 2021, https://www.airquality.org/ClimateChange/Documents/Final%20Handbook_AB434.pdf

street intersections than the average American street grid density of 36 street intersections per square mile.

Based on the Vista Ranch Illustrative Plan in the September 15, 2023 Draft of the Vista Ranch Master Development Plan, there would be approximately 53 intersections within the Master Plan area that would provide direct network connectivity connecting clusters of housing with other clusters and the main street network. The total Master Plan area is approximately 507 acres (0.79 square miles), resulting in an average intersection density of about 67 street intersections per square mile providing street network connectivity for all modes of travel. The proposed intersection density would be 86 percent higher than the American average. Therefore, the proposed street grid would be expected to provide up to a 12 percent reduction in VMT compared to typical development areas.

The proposed site plan shows that many of the local streets and residences would be separated from the collectors and arterials within the site by walls or fencing except at a relatively small number of vehicle access intersections. Adding additional bicycle and pedestrian access points through these walls or fences to facilitate more direct pedestrian and bicycle connections has the potential to reduce VMT by providing more direct paths of travel between the various neighborhoods for non-auto modes.

Mitigation Measure TRAF-2-4: Increase the length of the area bicycle network, including separated trails available to bicycles as well as on-street bike lanes. The Project proposes to add 4.5 miles of Class I separated trails. This would increase the mileage of bicycle facilities in Clovis from the existing 21.2 miles to 25.7 miles, an increase of 21 percent. The CAPCOA Handbook Measure T-20 estimates that a 21 percent increase in bike network mileage could reduce citywide VMT by 0.01 percent. The total daily VMT generated in Clovis is approximately 4,285,900, so the Project bike network would reduce daily VMT by approximately 350. This would represent a 0.2 percent reduction from the unmitigated Project total daily VMT of 188,900. Note that these VMT reductions would occur citywide and would not exclusively affect Project trips.

Mitigation Measure TRAF-2-5: Contribute to implementation of expanded transit service in Clovis, including potentially service to the Project area. Implementation of expanded transit service would require both capital expenditures for support facilities, including construction of transit stops and facilitating extensions of future transit routes. The CAPCOA Handbook Measure T-25 estimates that a 25 percent increase in transit service hours could reduce citywide VMT by 0.3 percent. The total daily VMT generated in Clovis is approximately 4,285,900, so the expanded transit network would reduce daily VMT by approximately 12,600. This would represent a 6.7 percent reduction from the unmitigated Project total daily VMT of 188,900. Note that these VMT reductions would occur citywide and would not exclusively affect Project trips.

SIGNIFICANCE AFTER MITIGATION

VMT reduction depends on factors such as actual implementation of planned land use development, demographic change, household preferences for housing types and locations, the cost of fuel, and the competitiveness of transit relative to driving, which relates to congestion along vehicular commute routes that are not under the Project's jurisdiction, as well as transit provided by parties other than the Project or the city of Clovis. The feasibility and effectiveness of the mitigation measures is either insufficient or unknown at this time. The Project cannot demonstrate definitively that implementation of these policies

would achieve VMT reductions to meet the VMT per capita or VMT per employee thresholds. With implementation of the Project and the recommended mitigation measures, this impact would remain **significant and unavoidable.**

TRAF-3	The proposed project would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). This would be considered a less than significant impact.

The Master Plan Area implements a desire for a mixed use planned community as depicted in the city of Clovis General Plan and proposed an amended Focus Area 13a. The proposed Master Plan will be a designated land use of Mixed Use Village, with multiple zoned districts, within focus area 13a. The Master Plan Area includes the following guiding principles related to transportation and hazards:

- Provide infrastructure that meets City standards and is integrated with existing and planned facilities and connections.
- Develop a strong pedestrian network that links activities, recreational amenities, local commercial and neighborhoods together.
- Establish a logical phasing plan designed to ensure that each phase of development would include necessary public improvements required to meet City standards.

Buildout of the proposed Master Plan would result in some changes to the City's circulation network in the vicinity of the project but would not increase hazards or incompatible uses due to design features. All future roadway system improvements associated with development activities under the Master Plan would be designed in accordance with the established roadway design standards, and as depicted in the Circulation Element of the General Plan.

These improvements will be subject to review and future consideration by the city of Clovis. An evaluation of the roadway alignments, intersection geometrics, and traffic control features will be needed during development application. Roadway improvements would have to be made in accordance with the City's Circulation Plan, roadway functional design guidelines, and would have to meet design guidelines such as the accessibility requirements of Title 24 (California Building Code), ADA and PROWAG standards, California Manual of Uniform Traffic Control Devices (MUTCD), and the Caltrans Roadway Design Manual.

Implementation of the Master Plan would not result in hazardous conditions or create conflicting uses. With implementation of policies and ordinance listed in this report, and application of the conditions of approval at the time of review of land development projects, the Master Plan would be designed to ensure that no hazardous circulation conditions are created as a result of implementation of the proposed project. The Master Plan would implement components of the roadway system consistent with the City's standards and guidelines. Therefore, potential impacts related to hazards due to a geometric design feature or incompatible uses would be **less than significant**, and no mitigation measures would be required.

TRAF-4	The proposed project would result in adequate emergency access. This would be considered a less than significant impact.

Emergency response requires a balance of emergency response time and evacuation needs with other community concerns, such as urban design, walking and biking needs, and traffic calming. Future roadway improvements associated with buildout of the Master Plan Area would be made in accordance with the city of Clovis General Plan Circulation Element and roadway functional design guidelines.

With the application of the conditions of approval at the time of review of land development projects, the Master Plan Area would be designed to ensure that adequate emergency access is provided. The Master Plan would implement components of the roadway system consistent with the City's General Plan. Therefore, impacts related to inadequate emergency access would be **less than significant**, and no mitigation measures would be required.

Appendix J

Wastewater

CITY OF CLOVIS

TECHNICAL MEMORANDUM

Wastewater Hydraulic
Modeling Study

VISTA RANCH DEVELOPMENT

FINAL

May 2024

REGISTERED PROFESSIONAL ENGINEER
ANTOINE A AKEL
C 041682
CIVIL
STATE OF CALIFORNIA
5/01/24

AKEL
ENGINEERING GROUP, INC.

AKEL
ENGINEERING GROUP, INC.

Smart Planning Our Water Resources

FINAL

May 1, 2024

City of Clovis
155 N. Sunnyside Avenue
Clovis, CA 93611

Attention: Mr. Kevin Tuttle, P.E., Project Manager

Subject: Vista Ranch Wastewater Hydraulic Modeling Study – Technical Memorandum

Dear Kevin,

We are pleased to submit this Technical Memorandum (TM) summarizing the wastewater hydraulic analysis for the Vista Ranch Development in the City of Covis. This TM is organized as follows:

1. Purpose and Scope
2. Study Area
3. Flow Projections
4. Hydraulic Model Updates
5. Servicing Alternatives
6. Capacity Evaluation
7. Recommendations

We are extending our thanks to you and other City staff whose courtesy and cooperation were valuable components in completing this study.

Sincerely,

AKEL ENGINEERING GROUP, INC.

Tony Akel, P.E., D. WRE.
President
Enclosure: Technical Memorandum

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TABLE OF CONTENTS PAGE NO.

1.0 PURPOSE AND SCOPE 1
2.0 STUDY AREA 1
3.0 FLOW PROJECTIONS 2
4.0 HYDRAULIC MODEL UPDATES 2
5.0 SERVICING ALTERNATIVES 3
5.1 EXISTING WASTEWATER COLLECTION SYSTEM 3
5.2 HYDRAULIC MODEL SCENARIOS 3
6.0 CAPACITY EVALUATION 5
6.1 DESIGN CRITERIA 5
6.2 CAPACITY EVALUATION RESULTS 5
7.0 RECOMMENDATIONS 7

LIST OF FIGURES

Figure 1 Proposed Land Uses
Figure 2 Development Phases
Figure 3 Alternative A
Figure 4 Alternative B
Figure 5 Alternative A Improvement Recommendations
Figure 6 Alternative B Improvement Recommendations

LIST OF TABLES

Table 1 Average Wastewater Flow Projections
Table 2 Average and Peak Wastewater Flow Projections By Phases
Table 3 Hydraulic Model Scenarios
Table 4 Design Criteria
Table 5 Alternative A Improvement Recommendations
Table 6 Alternative B Improvement Recommendations

LIST OF APPENDICES

Appendix A Alternative A Capacity Evaluation Results (Scenario 1 to 3)
Appendix B Alternative B Capacity Evaluation Results (Scenario 4 to 5)

LIST OF ABBREVIATIONS

2017 WCSMP	2017 Wastewater Collection System Master Plan
ADWF	Average Dry Weather Flow
Akel	Akel Engineering Group, Inc.
City	City of Clovis
d/D	Depth of Flow to Pipe Diameter Ratio
DU	Dwelling Units
EDU	Equivalent Dwelling Units
Firm Capacity	Available capacity with the largest pump out-of-service
fps	Feet per Second
ft	Feet
HGL	Hydraulic Grade Line
mgd	Million Gallons per Day
PDWF	Peak Dry Weather Flow
PWWF	Peak Wet Weather Flow
ROW	Right-of-Way
RWRF	Fresno-Clovis Regional Wastewater Reclamation Facility
SOI	Sphere of Influence
Spillway	Big Dry Creek Spillway
ST/WRF	Clovis Sewage Treatment – Water Reuse Facility

1.0 PURPOSE AND SCOPE

The City of Clovis (City) is currently planning to provide wastewater collection service to the Vista Ranch development located immediately north of the City limit. The purpose of this study is to evaluate wastewater servicing alternatives and recommend infrastructure improvements to connect this development to the City's existing collection system. The scope of work for this study included the following tasks:

- Describe the study area and proposed land uses.
- Estimate wastewater flows from the proposed development.
- Update the City's existing hydraulic model to include on-site infrastructure.
- Identify servicing alternatives and develop hydraulic model scenarios.
- Evaluate system capacity based on the City's design criteria.
- Recommend infrastructure improvements needed to maintain the target level of service.

2.0 STUDY AREA

The Vista Ranch project proposes to develop 508 acres of land located within the City's Sphere of Influence (SOI), immediately north of the City limit. The development area is bound by East Behymer Avenue to the north, Big Dry Creek Reservoir to the east, Shepherd Avenue to the south, and Sunnyside and Fowler Avenues to the west.

According to the conceptual plan received from the developer, the Vista Ranch project will consist of 30 distinct planning areas, as illustrated on **Figure 1**. The proposed land uses will include a mix of residential, commercial and office spaces, described as follows:

- **Residential**. This land use includes a maximum of 3,286 dwelling units (DU) varying in density from Medium (4.1 to 7 DU per acre), Medium High (7.1 to 15 DU per acre), to Very High (25.1 to 43 DU per acre). The total residential area is quantified at 376 acres, which accounts for 74 percent of the development.
- **Non-Residential**. This land use consists of commercial, recreational, and professional office space with a total area of approximately 48 acres. Non-residential land use represents 9 percent of the development.
- **Parks and Open Space**. This land use features public parks, trails, and an open space corridor with a total area of approximately 59 acres. This land use accounts for 12 percent of the development.

- **Major Roadways**. This land use enhances connectivity by providing access for public transportation and promoting the use of bike lanes. These public roadways encompass an area of approximately 25 acres and represent 5 percent of the development.

The study area is separated into two distinct phases based on site topography. The area southeast of the Big Dry Creek Spillway (Spillway) is identified as Phase 1 whereas the area northwest of the Spillway is identified as Phase 2. Additionally, the City's Planning and Development Services Department also identified 170 acres of potential Medium Density residential sites (Phase 3) surrounding Vista Ranch. These 3 development phases are illustrated on **Figure 2** and included in the subsequent analysis.

3.0 FLOW PROJECTIONS

Average wastewater flow projections for the 30 distinct planning areas are quantified on **Table 1**, and were established from the unit factors provided in the City's 2017 Wastewater Collection System Master Plan (2017 WCSMP). These projections represent maximum development flows that account for the construction of flexibility units in areas that can accommodate additional growth. In total, the Average Dry Weather Flow (ADWF) from Vista Ranch (Phase 1 and 2) is estimated at approximately 0.513 mgd. The ADWF for Phase 3 is estimated at approximately 0.152 mgd.

For evaluation and modeling purposes, wastewater flow projections were grouped into the three development phases listed on **Table 2**. Peak wastewater flow projections are also documented on **Table 2** and were estimated from diurnal peaking factors in the City's 2017 WCSMP. A peaking factor of 1.9 was applied to residential areas whereas a peaking factor of 1.7 was applied to non-residential areas. The study area will contribute a total peak dry weather flow of 1.26 million gallons per day (mgd) into the City's existing collection system.

Peak Dry Weather Flow Distribution

- Phase 1 – 0.62 mgd (49% of Total)
- Phase 2 – 0.35 mgd (28% of Total)
- Phase 3 – 0.29 mgd (23% of Total)
- **Total – 1.26 mgd**

4.0 HYDRAULIC MODEL UPDATES

The City's existing wastewater collection system hydraulic model was developed as part of the 2017 WCSMP and used in this study for capacity evaluation. Key physical and operational elements of the hydraulic model were updated as follows:

- **GIS Database**. The physical model was updated for consistency with the City's latest GIS database, which included recently constructed gravity pipes along Shepherd Avenue and Willow Avenue.
- **Proposed Wastewater Infrastructure**. The physical model was also updated to include new on-site and off-site infrastructure required to convey Vista Ranch flows into the City's existing collection system.
- **Flow Allocation**. Average dry weather flow (ADWF) from Table 2 was allocated to on-site manholes and assigned peaking patterns to simulate a peak dry weather flow (PDWF) scenario.

5.0 SERVICING ALTERNATIVES

This section provides an overview of the existing wastewater collection system and hydraulic model scenarios considered in this study.

5.1 EXISTING WASTEWATER COLLECTION SYSTEM

The City owns and maintains a wastewater collection system comprised of 428 miles of pipes and 5 lift stations. Currently, most of the wastewater flows are conveyed to the Clovis/Fresno Regional Trunk System through 5 major trunks located along Herndon Avenue, Sierra Avenue, Peach Avenue, Clovis Avenue and Fowler Avenue. These trunk systems are equipped with a permanent flow meter and ultimately discharge into the Fresno-Clovis Regional Wastewater Reclamation Facility (RWRF) for treatment. The remaining flows from the City's southeast service area are conveyed to the Clovis Sewage Treatment – Water Reuse Facility (ST/WRF) located west of McCall Avenue and Ashlan Avenue.

5.2 HYDRAULIC MODEL SCENARIOS

Potential servicing strategies discussed with the City were mostly constrained by site topography. Phase 1 area is situated at a higher elevation than Phase 2, and therefore Phase 2 requires a lift station or routing to a separate trunk system. As such, this study considered two alternatives:

- **Alternative A.** This alternative consists of routing flows south into the existing 12-inch pipe at Armstrong Avenue and Everglade Avenue, as shown on Figure 3. Three hydraulic model scenarios were developed to simulate this alternative:
    - **Scenario 1** (Phase 1 Only). Routing Phase 1 flows south along Armstrong Avenue via gravity pipes.

  - **Scenario 2** (Phase 1 + Phase 2). Includes Scenario 1 with Phase 2 flows connected via an on-site lift station.
  - **Scenario 3** (Phase 1 + Phase 2 + Phase 3). Includes Scenario 2 with Phase 3 gravity pipes connected to the Phase 2 system.

- **Alternative B.** This alternative consists of routing flows south and southwest into two separate trunk systems. Phase 1 flows will be conveyed into the City's existing 12-inch pipe at Armstrong Avenue and Everglade Avenue, while the remaining flows will be conveyed into the City's existing 15-inch pipe at Shepherd Avenue and Fowler Avenue. The proposed on-site and off-site infrastructure required for this alternative are shown on **Figure 4**. Two hydraulic model scenarios were developed to simulate this alternative:
  - **Scenario 4** (Phase 1 + Phase 2). Routing Phase 1 flows south along Armstrong Avenue via gravity pipes and routing Phase 2 flows southwest along Shepherd Avenue via gravity pipes.
  - **Scenario 5** (Phase 1 + Phase 2 + Phase 3). Includes Scenario 4 with Phase 3 gravity pipes connected to the Phase 2 system.

Both servicing alternatives and corresponding hydraulic model scenarios are also listed on **Table 3**. **Alternative A** conveys all flows south along Armstrong Avenue and ultimately connects into the 36-inch Fowler Avenue Trunk. In contrast, **Alternative B** conveys flows from Phase 1 into the Fowler Avenue Trunk with the remaining flows discharging southwest into the 33-inch Herndon Avenue Trunk.

It should be noted that the development area within Phase 3, generally located 500 feet (ft) southeast of Sunnyside Avenue and Behymer Avenue may be routed east towards Vista Ranch or west towards Sunnyside Avenue. This study assumes these flows are routed east along Behymer Avenue and included in the Vista Ranch study area.

This study also accounts for flows from Tract 6205 and Tract 6343. It is likely that these developments occur prior to initiation of the Vista Ranch development, and will impact the downstream Shepherd Avenue Trunk, especially when considering **Alternative B**. Accordingly, ADWF for Tract 6343 were included and estimated at 0.110 mgd (PDWF at 0.209 mgd), while ADWF from Tract 6205 were included at 0.116 mgd (PDWF at 0.220 mgd). These tracts are graphically shown on **Figure 4** with their respective flow projections.

6.0 CAPACITY EVALUATION

This section documents the City's design criteria and capacity evaluation results for each scenario.

6.1 DESIGN CRITERIA

The design criteria used for capacity evaluation is listed on Table 4 and was established from the City's 2017 WCSMP. According to the criteria, the maximum allowable depth-to-diameter ratio (d/D) for existing gravity pipes should not exceed 0.82 during peak dry weather flow conditions. Similarly, the d/D ratio for new gravity pipes should not exceed 0.65 during peak dry weather flow conditions.

Additionally, the criteria stipulates that lift stations shall be designed to convey the peak wet weather flow (PWWF) with the largest pump out-of-service (firm capacity). The force main velocities should also be within 3 to 8 feet per second (fps) during varying flow conditions.

Pipe alignments, invert elevations, and ground elevations of all proposed infrastructure were provided by the City and conform to the minimum slopes established in the design criteria. Where necessary, Google Earth was used to infer manhole ground elevations and estimate a typical manhole cover depth. The final design of all infrastructure shall comply with the requirements specified in the City's Design Guidelines. Potential utility conflicts, geotechnical constraints and constructability issues should be investigated during subsequent design phases of the development. A topographic survey is also strongly recommended prior to implementing capital improvements.

6.2 CAPACITY EVALUATION RESULTS

The hydraulic grade line (HGL) profiles illustrating pipe capacity for **Alternative A** are provided in Appendix A and HGL profiles for **Alternative B** are shown in Appendix B. The capacity evaluation results for each scenario are summarized as follows, and can be cross-referenced with the plan view shown on Figure 3 and Figure 4:

Alternative A

- **Scenario 1** (Phase 1 Only). The hydraulic model results illustrated on Figure A1 indicate that the existing system is adequately sized to accommodate Phase 1 flows from Vista Ranch. A maximum d/D ratio of 0.78 is observed in the existing 12-inch gravity pipes located near the Enterprise Canal, south of Armstrong Avenue and Teague Avenue. Based on the results, the developer will need to construct 600 ft of new off-site 12-inch gravity pipes along Armstrong Avenue, from Shepherd Avenue to Everglade Avenue.

- **Scenario 2** (Phase 1 + Phase 2). The HGL profile of the Armstrong Avenue Trunk shown on **Figure A2** indicates several gravity pipe deficiencies. A d/D ratio of 1.0 is observed along the length of this profile, resulting in surcharged conditions and potential risk of overflows. When compared to Scenario 1, Phase 2 triggers additional off-site improvements that require the developer to construct 600 ft of new 15-inch gravity pipes and upsize 6,000 ft of existing 12-inch gravity pipes to 15-inch, as illustrated on **Figure A3**. The on-site lift station northwest of the spillway will also require a minimum pumping capacity of 0.35 mgd to convey Phase 2 flows.

- **Scenario 3** (Phase 1 + Phase 2 + Phase 3). Hydraulic analysis results provided on **Figure A4** indicate a peak d/D ratio of 1.0 along the profile and a substantial risk of overflows. These deficiencies can be attributed to high wastewater flows as well as backwater effects. In comparison to Scenario 2, Phase 3 requires the developer to construct 600 ft of new off-site 18-inch gravity pipes and upsize 6,000 ft of existing 12-inch gravity pipes to 18-inch, as displayed on **Figure A5**. A minimum pumping capacity of 0.65 mgd is also needed at the on-site lift station to convey Phase 2 and Phase 3 flows.

Alternative B

- **Scenario 4** (Phase 1 + Phase 2). The capacity evaluation results for this scenario indicate that the existing collection system is adequately sized to accommodate Phase 1 flows routed south (Armstrong Avenue) and Phase 2 flows routed southwest (Shepherd Avenue). This scenario requires new off-site infrastructure at three locations:

    - Construct 600 ft of new off-site 12-inch gravity pipes along Armstrong Avenue from Shepherd Avenue to Everglade Avenue. These new pipes will exhibit a peak d/D ratio of 0.58 according to the HGL profile shown on **Figure A1**. The downstream Armstrong Avenue Trunk will exhibit a peak d/D ratio of 0.78 near the Enterprise Canal Crossing.

    - Construct 4,700 ft of new off-site 12-inch gravity pipes along Perrin Avenue and Fowler Avenue from the Phase 2 development area to Shepherd Avenue. Based on the HGL profile shown on **Figure B1**, these new pipes will exhibit a peak d/D ratio of 0.45, satisfying the City's design criteria.

    - Construct 2,400 ft of new off-site 15-inch gravity pipes along Shepherd Avenue from approximately 800 ft west of Fowler Avenue to 500 ft west of Sunnyside Avenue. The HGL profile on **Figure B1** indicates that these pipes will have a peak d/D ratio of 0.37 while the existing 18-inch gravity pipes located further downstream along Shepherd Avenue will have a peak d/D of 0.48.

- **Scenario 5** (Phase 1 + Phase 2 + Phase 3). Similar to Scenario 4, Scenario 5 results indicate that the existing collection system is adequately sized to meet the City's design criteria. The HGL profiles provided on **Figure A1** and **Figure B2** indicate the following:
    - A Peak d/D ratio of 0.58 in the new off-site 12-inch gravity pipes along Armstrong Avenue, from Shepherd Avenue to Everglade Avenue. The most critical section near the Enterprise Canal will have a d/D of 0.78 (**Figure A1**).
    - A Peak d/D ratio of 0.58 in the new off-site 12-inch gravity pipes along Perrin Avenue and Fowler Avenue, from the Phase 2 development area to Shepherd Avenue (**Figure B2**).
    - A Peak d/D ratio of 0.45 in the new off-site 15-inch gravity pipes along Shepherd Avenue, from approximately 800 ft west of Fowler Avenue to 500 ft west of Sunnyside Avenue The existing 18-inch Shepherd Avenue Trunk downstream will exhibit a d/D ratio of 0.52 (**Figure B2**).

7.0 RECOMMENDATIONS

Alternative A improvement recommendations are shown on **Figure 5** with unique identifiers and proposed pipe sizes that can be cross-referenced with **Table 5**. **Alternative B** improvement recommendations are also shown on **Figure 6** with corresponding improvement IDs listed on **Table 6**.

Overall, to minimize capital costs and potential constructability issues associated with a lift station, **Alternative B** is recommended as the preferred servicing strategy. This alternative consists of a gravity-based system and does not require upsizing existing infrastructure.

Alternative A

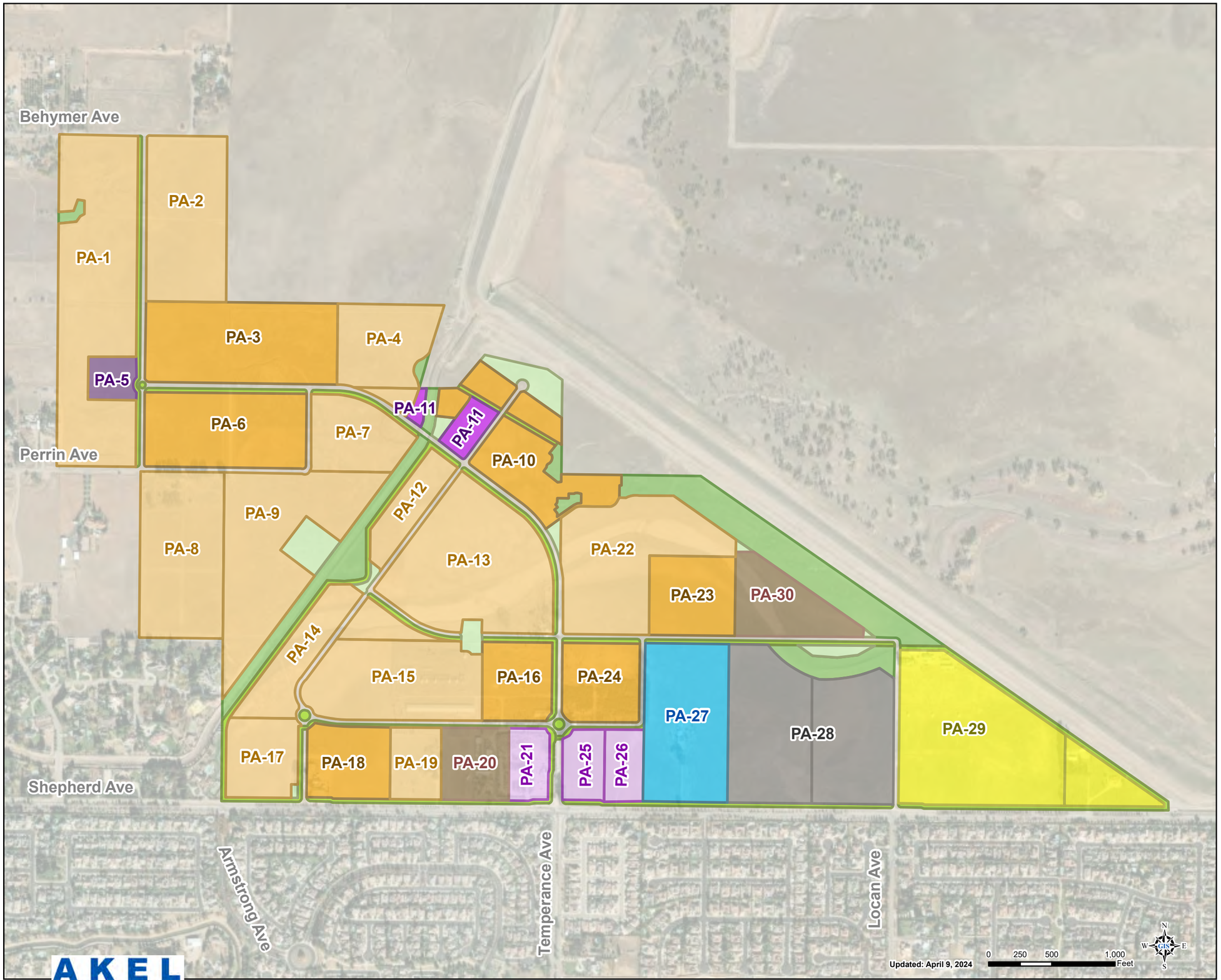
- On-site Lift Station Required
- Construct 600 ft of new off-site 12-inch gravity pipes
- Upsize 6,000 ft of existing 12-inch gravity pipes to 18-inch (Includes Enterprise Canal Crossing)

Alternative B

- Gravity-only System
- Construct 600 ft of new off-site 12-inch gravity pipes
- Construct 4,700 ft of new off-site 12-inch gravity pipes
- Construct 2,400 ft of new off-site 15-inch gravity pipes

It should be noted that there may be competing interest for available wastewater flow capacity in the downstream collection system and including major wastewater facilities. This analysis only evaluates the potential wastewater service implications of the proposed development in the context of the current Master Plan and noted changes in this report. It does not consider the effect of other potential allocations of available wastewater flow capacity, whether temporary or permanent, as may be allowed by the City for other proposed developments or for other purposes.

FIGURES



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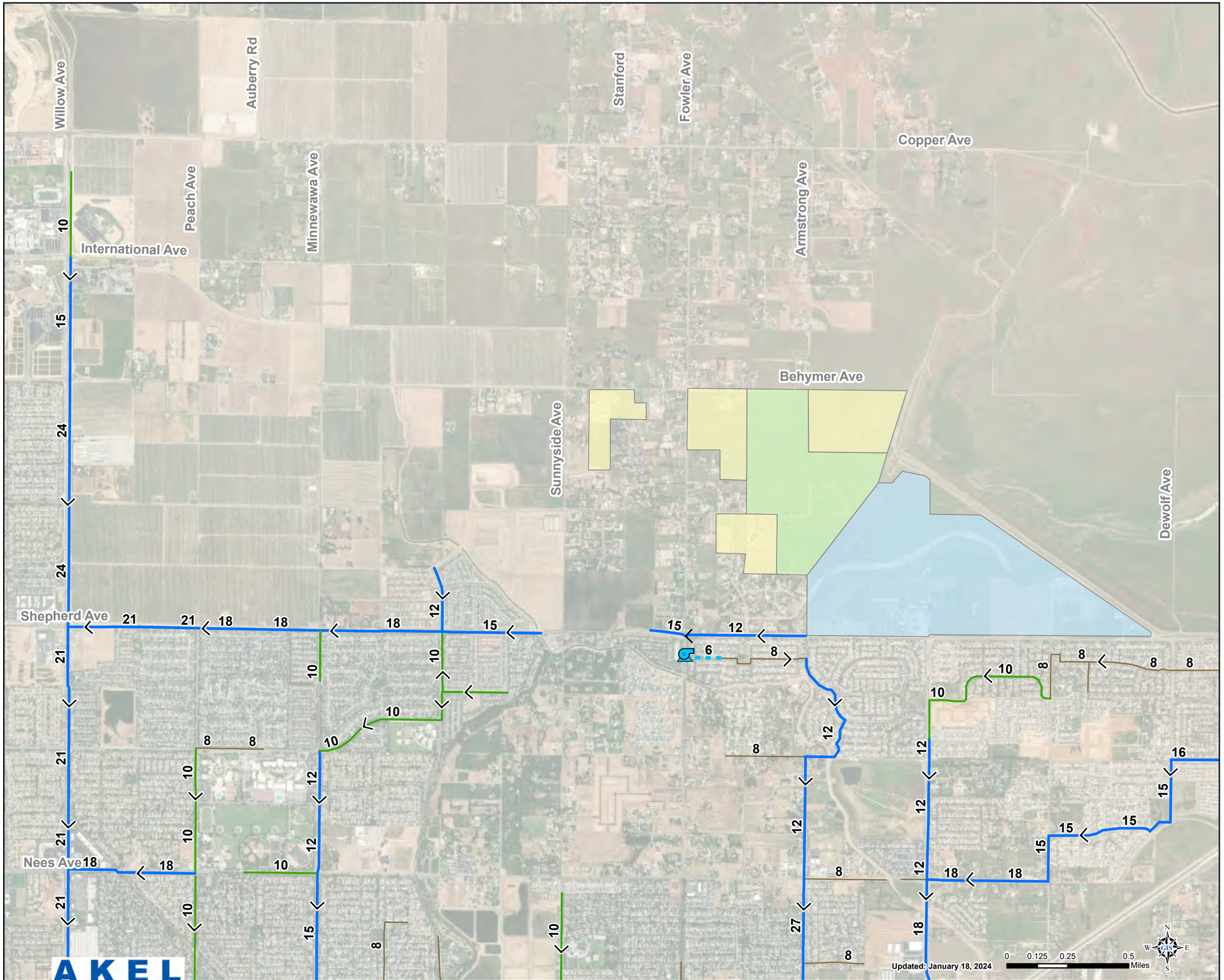
Proposed Land Uses

- R-1 Low Density Residential
- R-1-MD Medium Density Residential
- R-2 Medium Density Residential
- R-4 Very High Density Residential
- R-1-MD School
- C-1 Gateway Neighborhood Commercial - Mixed Used
- C-R Community Recreation (Private) - Mixed Use
- C-R Community Recreation (Public) - Mixed Used
- I Industrial - Mixed Use
- O Park
- O Open Space - Trail
- O Open Space - Corridor

Figure 1
Proposed Land Uses

Vista Ranch Hydraulic Modeling Study
City of Clovis

AKEL ENGINEERING GROUP, INC.



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Development Areas

- Vista Ranch - Phase 1
- Vista Ranch - Phase 2
- Other Development Areas - Phase 3

Existing System

- Lift Station

Gravity Pipes by Diameter

- 8" or Smaller
- 10"
- 12" or Larger

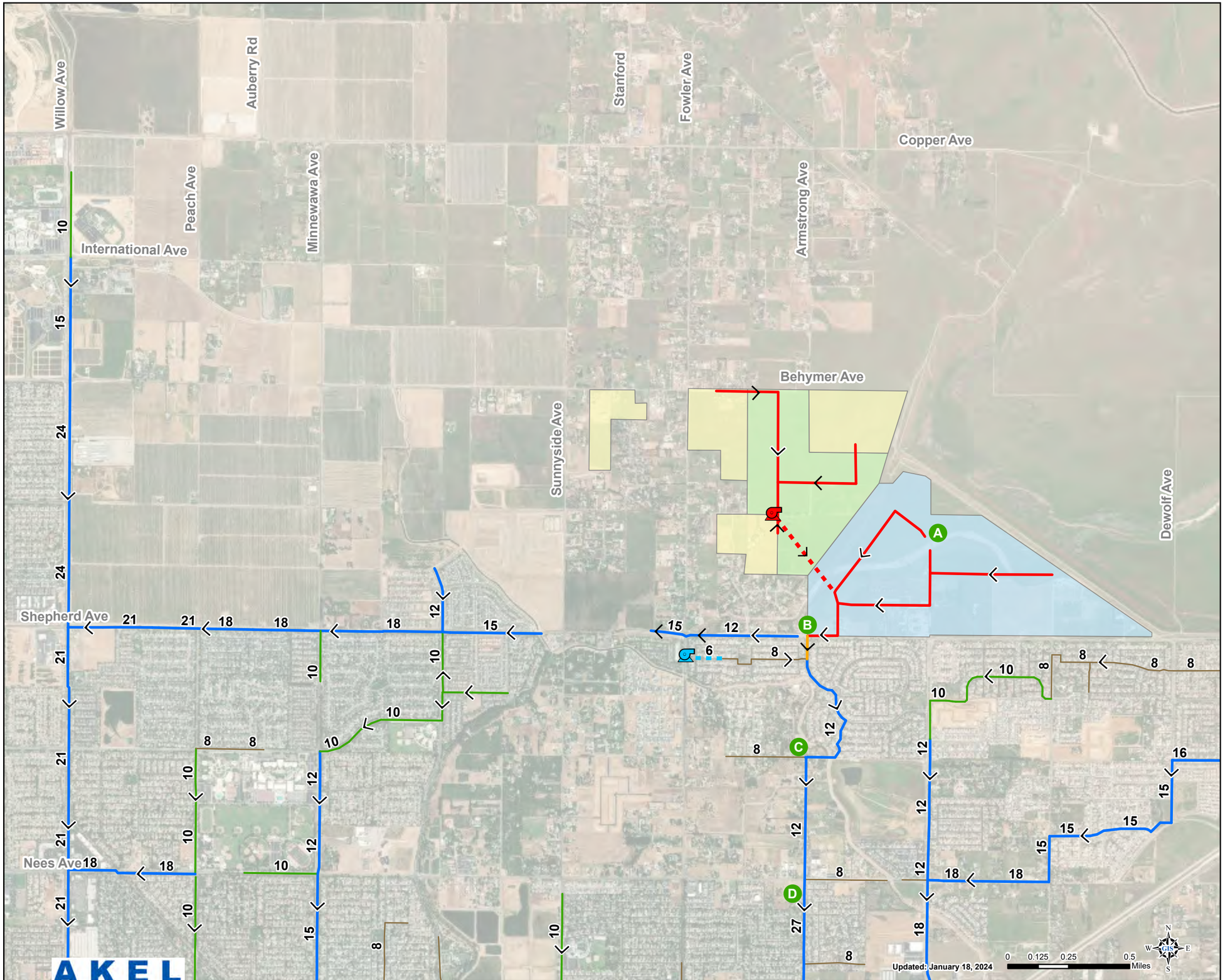
Force Mains by Diameter

- 8" or Smaller
- 12" or Larger

Figure 2
Development Phases

Vista Ranch Wastewater
Hydraulic Modeling Study
City of Clovis

AKEL ENGINEERING GROUP, INC.



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Proposed Improvements

- Proposed On-Site Lift Station
- Proposed On-Site Force Main
- Proposed On-Site Gravity Pipes
- Proposed Off-Site Gravity Pipes

Development Areas

- Vista Ranch - Phase 1
- Vista Ranch - Phase 2
- Other Development Areas - Phase 3

Existing System

- Lift Station

Gravity Pipes by Diameter

- 8" or Smaller
- 10"
- 12" or Larger

Force Mains by Diameter

- 8" or Smaller
- 12" or Larger

Figure 3
Alternative A

Vista Ranch Wastewater
Hydraulic Modeling Study
City of Clovis

AKEL ENGINEERING GROUP, INC.

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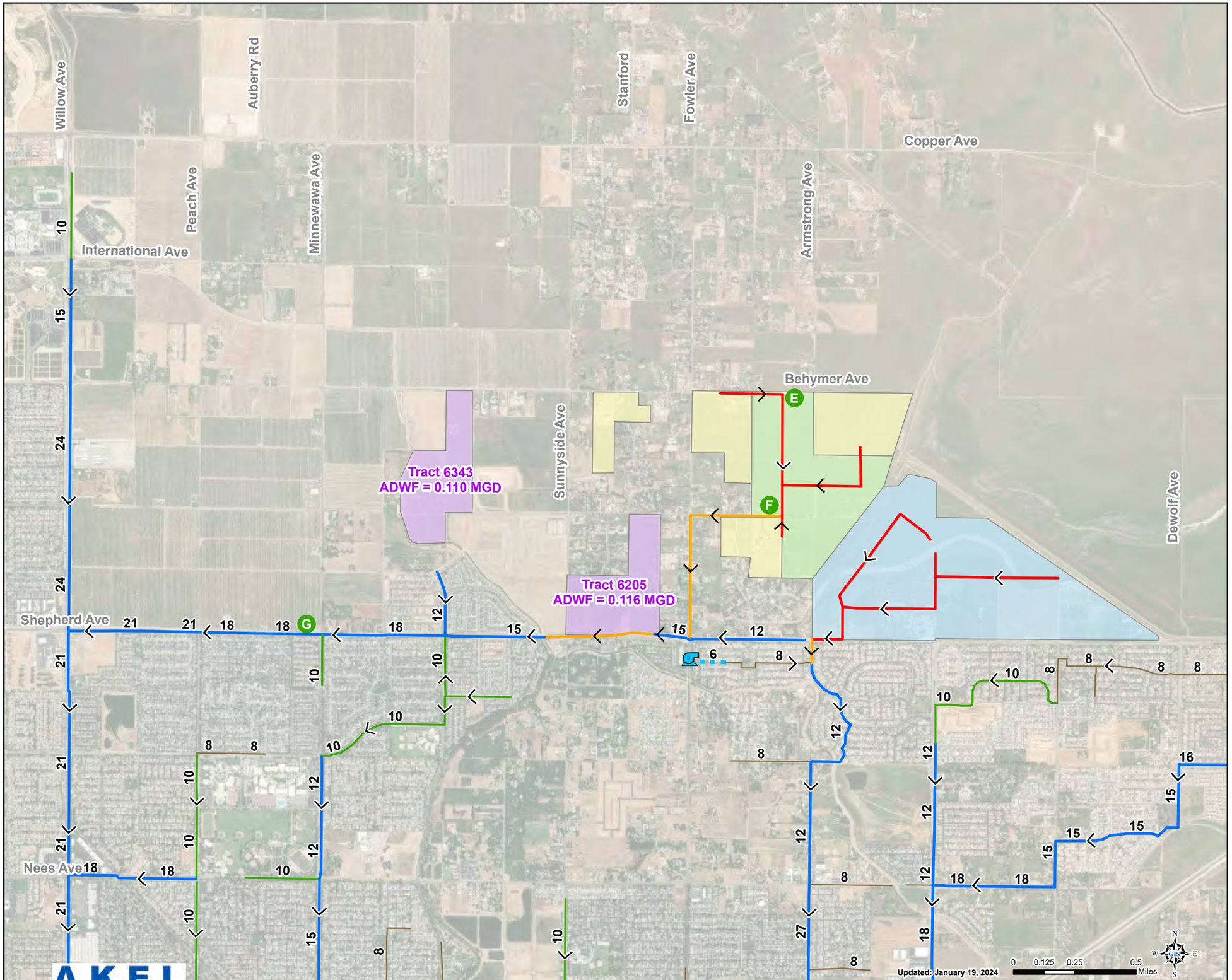

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Proposed Improvements

- Proposed On-Site Gravity Pipes
- Proposed Off-Site Gravity Pipes

Development Areas

- Vista Ranch - Phase 1
- Vista Ranch - Phase 2
- Other Development Areas - Phase 3
- Tract Developments

Existing System

- Lift Station

Gravity Pipes by Diameter

- 8" or Smaller
- 10"
- 12" or Larger

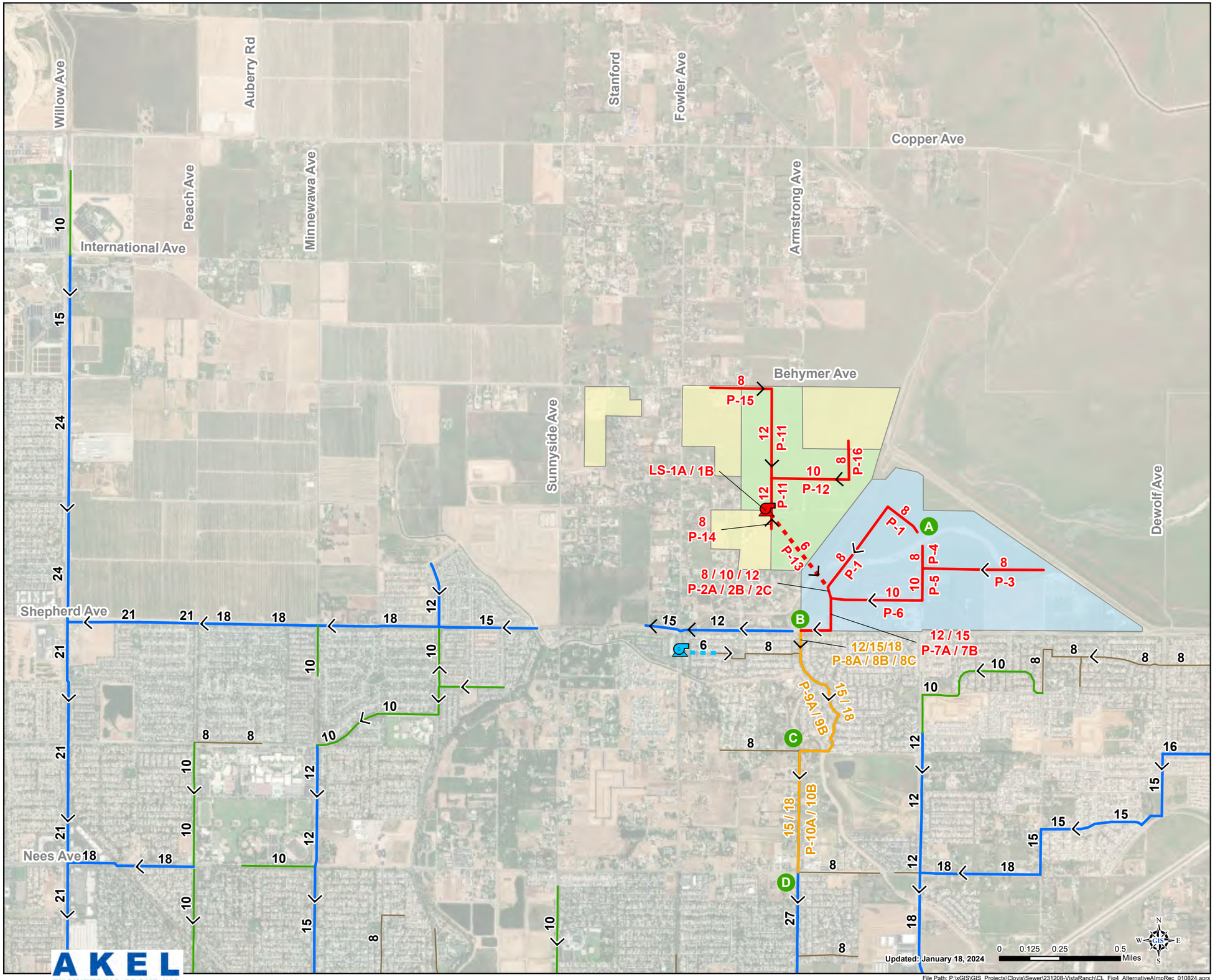
Force Mains by Diameter

- 8" or Smaller
- 12" or Larger

Figure 4
Alternative B

Vista Ranch Wastewater
Hydraulic Modeling Study
City of Clovis

AKEL ENGINEERING GROUP, INC.



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Proposed Improvements

- Proposed On-Site Lift Station
- Proposed On-Site Force Main
- Proposed On-Site Gravity Pipes
- Proposed Off-Site Gravity Pipes

Development Areas

- Vista Ranch - Phase 1
- Vista Ranch - Phase 2
- Other Development Areas - Phase 3

Existing System

- Lift Station

Gravity Mains by Diameter

- 8" or Smaller
- 10"
- 12" or Larger

Force Mains by Diameter

- 8" or Smaller
- 12" or Larger

Figure 5
Alternative A Improvement Recommendations

Vista Ranch Wastewater
Hydraulic Modeling Study
City of Clovis

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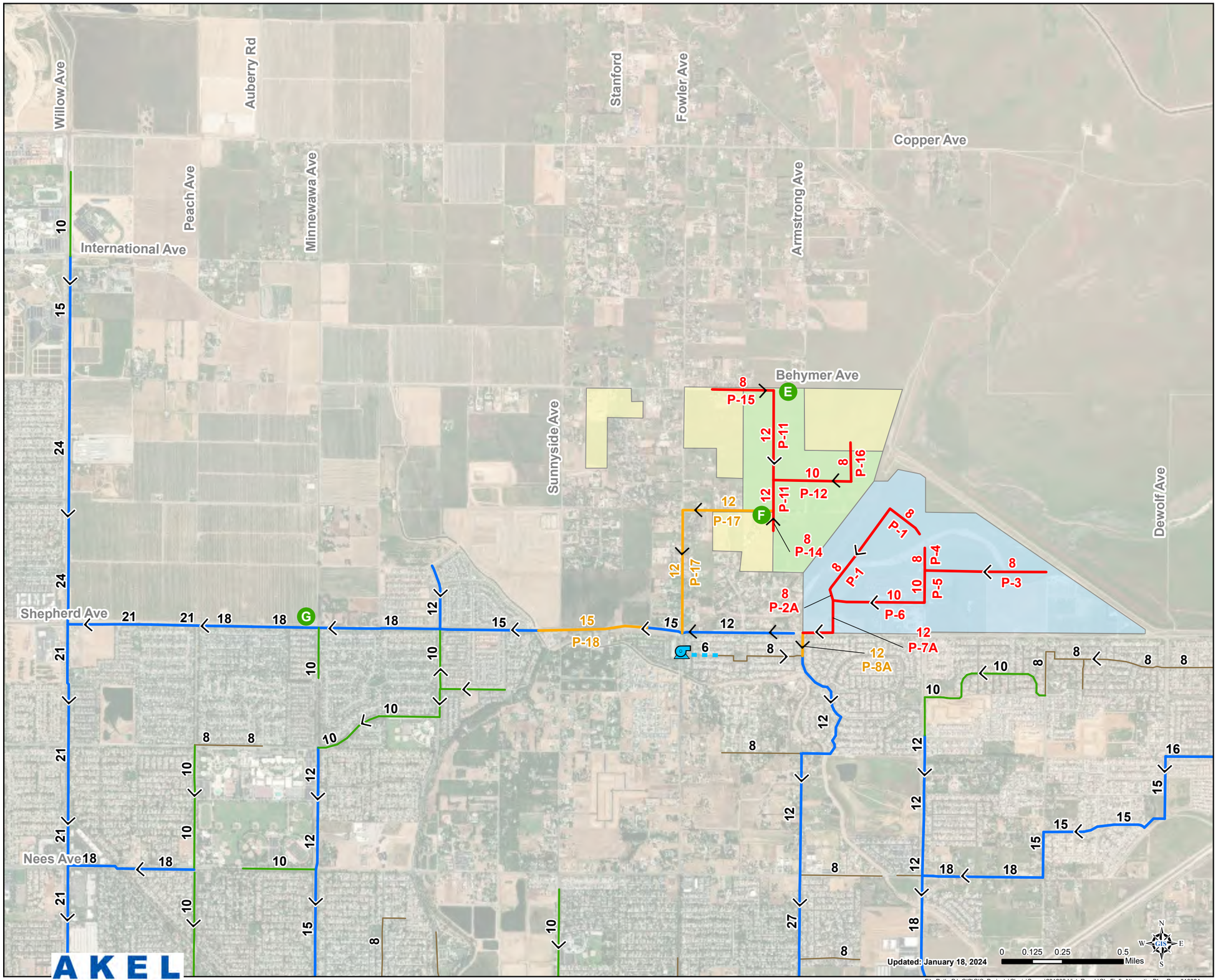

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Proposed Improvements

- Proposed On-Site Gravity Pipes
- Proposed Off-Site Gravity Pipes

Development Areas

- Vista Ranch - Phase 1
- Vista Ranch - Phase 2
- Other Development Areas - Phase 3

Existing System

- Lift Station

Gravity Pipes by Diameter

- 8" or Smaller
- 10"
- 12" or Larger

Force Mains by Diameter

- 8" or Smaller
- 12" or Larger

Figure 6
Alternative B Improvement Recommendations
Vista Ranch Wastewater
Hydraulic Modeling Study
City of Clovis

AKEL ENGINEERING GROUP, INC.

TABLES

Table 1 Average Wastewater Flow Projections

Vista Ranch Wastewater Hydraulic Modeling Study
City of Clovis

Planning Area Details			Development Details						Development Flows
Planning Area [1]	Land Use Designation	Zone Designation	Units	Flexibility	Acerage (acre)	Density (du/acre)	Commercial Square Footage (sf)	FAR	Maximum Development [2] (mgd)
Vista Ranch Proposed Land Uses (Phase 1 and Phase 2)									
PA-1	Medium	R-1-MD	212	0	32.97	6.4	-	-	0.030
PA-2	Medium	R-1-MD	128	56	18.33	7.0	-	-	0.027
PA-3	Medium High	R-2	265	0	21.31	12.4	-	-	0.031
PA-4	Medium	R-1-MD	60	56	11.70	5.1	-	-	0.017
PA-5	Community Recreation - Mixed Use	C-R	-	0	3.32	-	12,000	0.08	0.003
PA-6	Medium High	R-2	204	0	17.91	11.4	-	-	0.026
PA-7	Medium	R-1-MD	55	0	9.53	5.8	-	-	0.009
PA-8	Medium	R-1-MD	108	0	20.05	5.4	-	-	0.018
PA-9	Medium	R-1-MD	169	0	24.65	6.9	-	-	0.022
PA-10	Medium High	R-2	166	0	15.09	11.0	-	-	0.022
PA-11	Community Recreation - Mixed Use	C-R	-	0	2.52	-	28,000	0.26	0.002
			-	0	0.53	-	8,000	0.35	0.000
PA-12	Medium	R-1-MD	35	0	6.14	5.7	-	-	0.005
PA-13	Medium	R-1-MD	190	0	27.95	6.8	-	-	0.025
PA-14	Medium	R-1-MD	46	0	8.84	5.2	-	-	0.008
PA-15	Medium	R-1-MD	142	0	22.58	6.3	-	-	0.020
PA-16	Medium High	R-2	95	0	8.34	11.4	-	-	0.012
PA-17	Medium	R-1-MD	45	0	8.03	5.6	-	-	0.007
PA-18	Medium High	R-2	101	0	8.32	12.1	-	-	0.012
PA-19	Medium	R-1-MD	39	16	5.23	7.5	-	-	0.008
PA-20	Very High	R-4	208	0	6.91	30.1	-	-	0.035
PA-21	Gateway Neighborhood Commercial	C-1	28	0	4.41	6.3	85,000	0.44	0.004
PA-22	Medium	R-1-MD	135	0	21.76	6.2	-	-	0.019
PA-23	Medium High	R-2	109	0	9.58	11.4	-	-	0.014
PA-24	Medium High	R-2	99	0	8.74	11.3	-	-	0.013
PA-25	Gateway Neighborhood Commercial	C-1	-	0	4.08	-	55,000	0.31	0.004
PA-26	Gateway Neighborhood Commercial	C-1	-	0	4.20	-	60,000	0.33	0.004
PA-27	School	R-1-MD	-	118	19.31	-	-	-	0.028
PA-28[3]	Administrative and Professional Office	C-P	-	0	32.21	-	425,000	0.30	0.025
PA-29	Low	R-1	137	0	34.17	4.0	-	-	0.019
PA-30	Very High	R-4	264	0	8.78	30.1	-	-	0.044
		Subtotal	**3,040**	**246**	**427.49**	-	**673,000**	-	**0.513**
Additional Development Areas (Phase 3) [4]									
A-1	Medium	R-1-MD	-	-	112.00	-	-	-	0.100
A-2	Medium	R-1-MD	-	-	58.00	-	-	-	0.052
		Subtotal	-	-	**170.00**	-	-	-	**0.152**
Total Wastewater Flows									
		Study Area Total	**3,040**		**597.49**		**673,000**		**0.665**

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4/17/2024

Notes:
1. These planning areas were received from the Developer on April 3, 2024 and can be cross-referenced with Figure 1.
2. Maximum development flows assume that the "Flexibility" development units are included in the flow totals.
3. Area 28 is currently stated to develop as a Derrel's Mini Storage. However, for the purposes of this analysis, flows are assumed at the maximum developable intensity, Office.
4. The City's Planning and Development Services Department also identified 170 acres of potential Medium Density Residential sites surrounding Vista Ranch.

Table 2 Average and Peak Wastewater Flow Projections By Phases

Vista Ranch Wastewater Hydraulic Modeling Study

City of Clovis

Land Use Designation	Zone Designation	Planning Area [1,2] (acres)	Average Dry Weather Flows [1,2] (mgd)	Equivalent Dwelling Units (EDUs)	Peaking Factor [3]	Peak Dry Weather Flows [4] (mgd)
Phase 1 Vista Ranch - Maximum Development Flows [5]				**1 EDU = 175 gpd**		
Low Density Residential	R-1	34	0.019	110	1.9	0.036
Medium Density Residential	R-1-MD	101	0.093	531	1.9	0.177
Medium High Density Residential	R-2	50	0.073	417	1.9	0.139
Very High Density Residential	R-4	16	0.079	449	1.9	0.149
Medium Density Residential / School [6]	R-1-MD	19	0.028	161	1.9	0.054
Community Recreation - Mixed Use	C-R	3	0.003	16	1.7	0.005
Gateway Neighborhood Commercial	C-1	13	0.012	66	1.7	0.020
Administrative and Professional Office [7,8]	C-P	32	0.025	144	1.7	0.043
Subtotal Phase 1		**268**	**0.331**	**1,893**		**0.622**
Phase 2 Vista Ranch - Maximum Development Flows [5]						
Medium Density Residential	R-1-MD	117	0.122	696	1.9	0.232
Medium High Density Residential	R-2	39	0.057	327	1.9	0.109
Community Recreation - Mixed Use	C-R	3	0.003	17	1.7	0.005
Subtotal Phase 2		**160**	**0.182**	**1,041**		**0.345**
Phase 3 Other Development Areas						
Medium Density Residential	R-1-MD	112	0.100	574	1.9	0.191
Medium Density Residential	R-1-MD	58	0.052	295	1.9	0.098
Subtotal Phase 3		**170**	**0.152**	**869**		**0.289**
Total Wastewater Flows						
Study Area Total		**597**	**0.665**	**3,803**		**1.256**

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4/16/2024

Notes:

1. Vista Ranch planning areas and average dry weather flows (Phase 1 and Phase 2) were received from City staff on April 3, 2024.
2. Phase 3 average dry weather flows were estimated based on a unit factor of 0.000895 mgd / acre, obtained from the City's 2017 Wastewater Collection System Master Plan. Phase 3 development areas were identified by City staff and received via email on December 14, 2023.
3. Peaking factor for various land uses were obtained from diurnal patterns in the City's existing wastewater collection system hydraulic model.
4. Peak dry weather flows were calculated by multiplying the peaking factor with the estimated average dry weather flows.
5. Phase 1 and Phase 2 flow projections account for 'Flexibility' units in specific planning areas that can accommodate additional growth.
6. This planning area consisted of either medium density residential units or a school. The higher flows resulting from the residential units were used in this study.
7. Average flows for the Administrative and Professional Office areas were estimated based on a unit factor of 0.000780 mgd / acre, obtained from the City's 2017 Wastewater Collection System Master Plan. These estimated flows represent the maximum developable intensity (Office Space) within this planning area.
8. This planning area includes the proposed Derrel's Storage Facility located northwest of Shepherd Avenue and Locan Avenue.

Table 3 Hydraulic Model Scenarios

Vista Ranch Wastewater Hydraulic Modeling Study

City of Clovis

Scenario No.	Description
ALTERNATIVE A - Routing Flows South Along Armstrong Ave	
Scenario 1	Existing Conditions + Phase 1
Scenario 2	Existing Conditions + Phase 1 + Phase 2 (Lift Station and Force Main Required for Phase 2)
Scenario 3	Existing Conditions + Phase 1 + Phase 2 + Phase 3 (Lift Station and Force Main Required for Phases 2 and 3)
ALTERNATIVE B - Routing Flows South Along Armstrong Ave and Southwest Along Shepherd Ave	
Scenario 4	Existing Conditions + Phase 1 - South Along Armstrong Ave Existing Conditions + Phase 2 + Tracts 6205 and 6343 - Southwest Along Shepherd Ave
Scenario 5	Existing Conditions + Phase 1 - South Along Armstrong Ave Existing Conditions + Phase 2 + Phase 3 + Tracts 6205 and 6343 - Southwest Along Shepherd Ave

Table 4 Design Criteria

Vista Ranch Wastewater Hydraulic Modeling Study
City of Clovis

Gravity Pipe Criteria [1]

Peak Dry Weather Flow

Existing Pipes :	Maximum Flow Depth to Diameter (d/D) <= 0.82
New Pipes :	Maximum Flow Depth to Diameter (d/D) <= 0.65

Minimum Slopes

Pipe Diameter (inches)	Minimum Slope (ft/ft)	Full-Flow Capacity n = 0.013 (mgd)	Half-Full Velocity (ft/s)
6''	0.0040	0.23	1.81
8''	0.0024	0.38	1.70
10''	0.0020	0.63	1.80
12''	0.0015	0.89	1.76
15''	0.0012	1.45	1.83
18''	0.0010	2.15	1.88
21''	0.0010	3.25	2.09
24''	0.0010	4.63	2.28
27''	0.0010	6.34	2.47
30''	0.0010	8.40	2.65
33"	0.0010	10.83	2.82
36''	0.0010	13.66	2.99
39''	0.0010	16.91	3.16
42''	0.0010	20.61	3.32

Lift Station and Force Main Criteria [2]

Lift Station Capacity:	Peak Wet Weather Flow with Largest Pump Out of Service (Firm Capacity)
Maximum Force Main Velocity:	3 to 8 Feet per Second
Hazen Williams C-Factor:	130

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4/9/2024

Notes:

1. Criteria obtained from the City's 2017 Wastewater Collection System Master Plan.
2. Lift station capacity and maximum forcemain velocity recommended based on typical industry standards. Hazen Williams C-Factor was obtained from the City's 2017 Wastewater Collection System Master Plan.

Table 5 Alternative A Improvement Recommendations

Vista Ranch Wastewater Hydraulic Modeling Study

City of Clovis

Project ID	On-site / Off-site	Asset Type	Main Alignment and Construction Limits	New / Replace	Existing Diameter (inches)	Proposed Diameter (inches)	Total Length (feet)
Scenario 1 - Existing Conditions + Phase 1							
P-1	On-site	Gravity Pipe	Phase 1 Development Area	New	-	8	3,100
P-2A	On-site	Gravity Pipe	Phase 1 Development Area	New	-	8	300
P-3	On-site	Gravity Pipe	Phase 1 Development Area	New	-	8	2,700
P-4	On-site	Gravity Pipe	Phase 1 Development Area (North of Temperance Ave)	New	-	8	500
P-5	On-site	Gravity Pipe	Phase 1 Development Area (Temperance Ave)	New	-	10	800
P-6	On-site	Gravity Pipe	Phase 1 Development Area	New	-	10	2,000
P-7A	On-site	Gravity Pipe	Phase 1 Development Area (From Phase 1 to Shepherd Ave)	New	-	12	1,400
P-8A	Off-site	Gravity Pipe	Armstrong Ave (From Shepherd Ave to Everglade Ave)	New	-	12	600
			Subtotal Scenario 1				**11,400**
Scenario 2 - Existing Conditions + Phase 1 + Phase 2							
P-1	On-site	Gravity Pipe	Phase 1 Development Area	New	-	8	3,100
P-2B	On-site	Gravity Pipe	Phase 1 Development Area	New	-	10	300
P-3	On-site	Gravity Pipe	Phase 1 Development Area	New	-	8	2,700
P-4	On-site	Gravity Pipe	Phase 1 Development Area (North of Temperance Ave)	New	-	8	500
P-5	On-site	Gravity Pipe	Phase 1 Development Area (Temperance Ave)	New	-	10	800
P-6	On-site	Gravity Pipe	Phase 1 Development Area	New	-	10	2,000
P-7B	On-site	Gravity Pipe	Phase 1 Development Area (From Phase 1 to Shepherd Ave)	New	-	15	1,400
P-8B	Off-site	Gravity Pipe	Armstrong Ave (From Shepherd Ave to Everglade Ave)	New	-	15	600
P-9A	Off-site	Gravity Pipe	Armstrong Ave (From Everglade Ave to Teague Ave)	Replace	12	15	3,300
P-10A	Off-site	Gravity Pipe	Armstrong Ave (from Teague Ave to Nees Ave)	Replace	12	15	2,700
P-11	On-site	Gravity Pipe	Phase 2 Development Area (North of Perrin Ave)	New	-	12	2,800
P-12	On-site	Gravity Pipe	Phase 2 Development Area (Northeast of Perrin Ave)	New	-	10	1,700
P-13	On-site	Force Main	Phase 2 Development Area (Crossing Spillway)	New	-	6	2,100
LS-1A	On-site	Lift Station	Phase 2 Development Area at Perrin Ave	New lift station with a minimum capacity of 0.35 mgd			
			Subtotal Scenario 2				**24,000**
Scenario 3 - Existing Conditions + Phase 1 + Phase 2 + Phase 3							
P-1	On-site	Gravity Pipe	Phase 1 Development Area	New	-	8	3,100
P-2C	On-site	Gravity Pipe	Phase 1 Development Area	New	-	12	300
P-3	On-site	Gravity Pipe	Phase 1 Development Area	New	-	8	2,700
P-4	On-site	Gravity Pipe	Phase 1 Development Area (North of Temperance Ave)	New	-	8	500
P-5	On-site	Gravity Pipe	Phase 1 Development Area (Temperance Ave)	New	-	10	800
P-6	On-site	Gravity Pipe	Phase 1 Development Area	New	-	10	2,000
P-7B	On-site	Gravity Pipe	Phase 1 Development Area (From Phase 1 to Shepherd Ave)	New	-	15	1,400
P-8C	Off-site	Gravity Pipe	Armstrong Ave (From Shepherd Ave to Everglade Ave)	New	-	18	600
P-9B	Off-site	Gravity Pipe	Armstrong Ave (From Everglade Ave to Teague Ave)	Replace	12	18	3,300
P-10B	Off-site	Gravity Pipe	Armstrong Ave (from Teague Ave to Nees Ave)	Replace	12	18	2,700
P-11	On-site	Gravity Pipe	Phase 2 Development Area (North of Perrin Ave)	New	-	12	2,800
P-12	On-site	Gravity Pipe	Phase 2 Development Area (Northeast of Perrin Ave)	New	-	10	1,700
P-13	On-site	Force Main	Phase 2 Development Area (Crossing Spillway)	New	-	6	2,100
LS-1A	On-Site	Lift Station	Phase 2 Development Area at Perrin Ave	New lift station with a minimum capacity of 0.65 mgd			
P-14	On-site	Gravity Pipe	Phase 3 Development Area (South of Perrin Ave)	New	-	8	500
P-15	On-site	Gravity Pipe	Phase 3 Development Area (Behymer Ave)	New	-	8	1,400
P-16	On-site	Gravity Pipe	Phase 3 Development Area (Northeast of Perrin Ave)	New	-	8	900
			Subtotal Scenario 3				**26,800**

Table 6 Alternative B Improvement Recommendations

Vista Ranch Wastewater Hydraulic Modeling Study

City of Clovis

Project ID	On-site / Off-site	Asset Type	Main Alignment and Construction Limits	New / Replace	Existing Diameter (inches)	Proposed Diameter (inches)	Total Length (feet)
Scenario 4 - Existing Conditions + Phase 1 (South) + Phase 2 (Southwest)							
P-1	On-site	Gravity Pipe	Phase 1 Development Area	New	-	8	3,100
P-2A	On-site	Gravity Pipe	Phase 1 Development Area	New	-	8	300
P-3	On-site	Gravity Pipe	Phase 1 Development Area	New	-	8	2,700
P-4	On-site	Gravity Pipe	Phase 1 Development Area (North of Temperance Ave)	New	-	8	500
P-5	On-site	Gravity Pipe	Phase 1 Development Area (Temperance Ave)	New	-	10	800
P-6	On-site	Gravity Pipe	Phase 1 Development Area	New	-	10	2,000
P-7A	On-site	Gravity Pipe	Phase 1 Development Area (Shepherd Ave)	New	-	12	1,400
P-8A	Off-site	Gravity Pipe	Armstrong Ave (From Shepherd Ave to Everglade Ave)	New	-	12	600
P-11	On-site	Gravity Pipe	Phase 2 Development Area (North of Perrin Ave)	New	-	12	2,800
P-12	On-site	Gravity Pipe	Phase 2 Development Area (Northeast of Perrin Ave)	New	-	10	1,700
P-17	Off-site	Gravity Pipe	Perrin Ave, Fowler Ave and Shepherd Ave	New	-	12	4,700
P-18	Off-site	Gravity Pipe	Shepherd Ave (From 800 ft west of Fowler Ave to 500 ft west of Sunnyside Ave)	New	-	15	2,400
			Subtotal Scenario 4				**23,000**
Scenario 5 - Existing Conditions + Phase 1 (South) + Phase 2 (Southwest) + Phase 3 (Southwest)							
P-1	On-site	Gravity Pipe	Phase 1 Development Area	New	-	8	3,100
P-2A	On-site	Gravity Pipe	Phase 1 Development Area	New	-	8	300
P-3	On-site	Gravity Pipe	Phase 1 Development Area	New	-	8	2,700
P-4	On-site	Gravity Pipe	Phase 1 Development Area (North of Temperance Ave)	New	-	8	500
P-5	On-site	Gravity Pipe	Phase 1 Development Area (Temperance Ave)	New	-	10	800
P-6	On-site	Gravity Pipe	Phase 1 Development Area	New	-	10	2,000
P-7A	On-site	Gravity Pipe	Phase 1 Development Area (Shepherd Ave)	New	-	12	1,400
P-8A	Off-site	Gravity Pipe	Armstrong Ave (From Shepherd Ave to Everglade Ave)	New	-	12	600
P-11	On-site	Gravity Pipe	Phase 2 Development Area (North of Perrin Ave)	New	-	12	2,800
P-12	On-site	Gravity Pipe	Phase 2 Development Area (Northeast of Perrin Ave)	New	-	10	1,700
P-14	On-site	Gravity Pipe	Phase 3 Development Area (South of Perrin Ave)	New	-	8	500
P-15	On-site	Gravity Pipe	Phase 3 Development Area (Behymer Ave)	New	-	8	1,400
P-16	On-site	Gravity Pipe	Phase 3 Development Area (Northeast of Perrin Ave)	New	-	8	900
P-17	Off-site	Gravity Pipe	Perrin Ave, Fowler Ave and Shepherd Ave	New	-	12	4,700
P-18	Off-site	Gravity Pipe	Shepherd Ave (From 800 ft west of Fowler Ave to 500 ft west of Sunnyside Ave)	New	-	12	2,400
			Subtotal Scenario 5				**25,800**

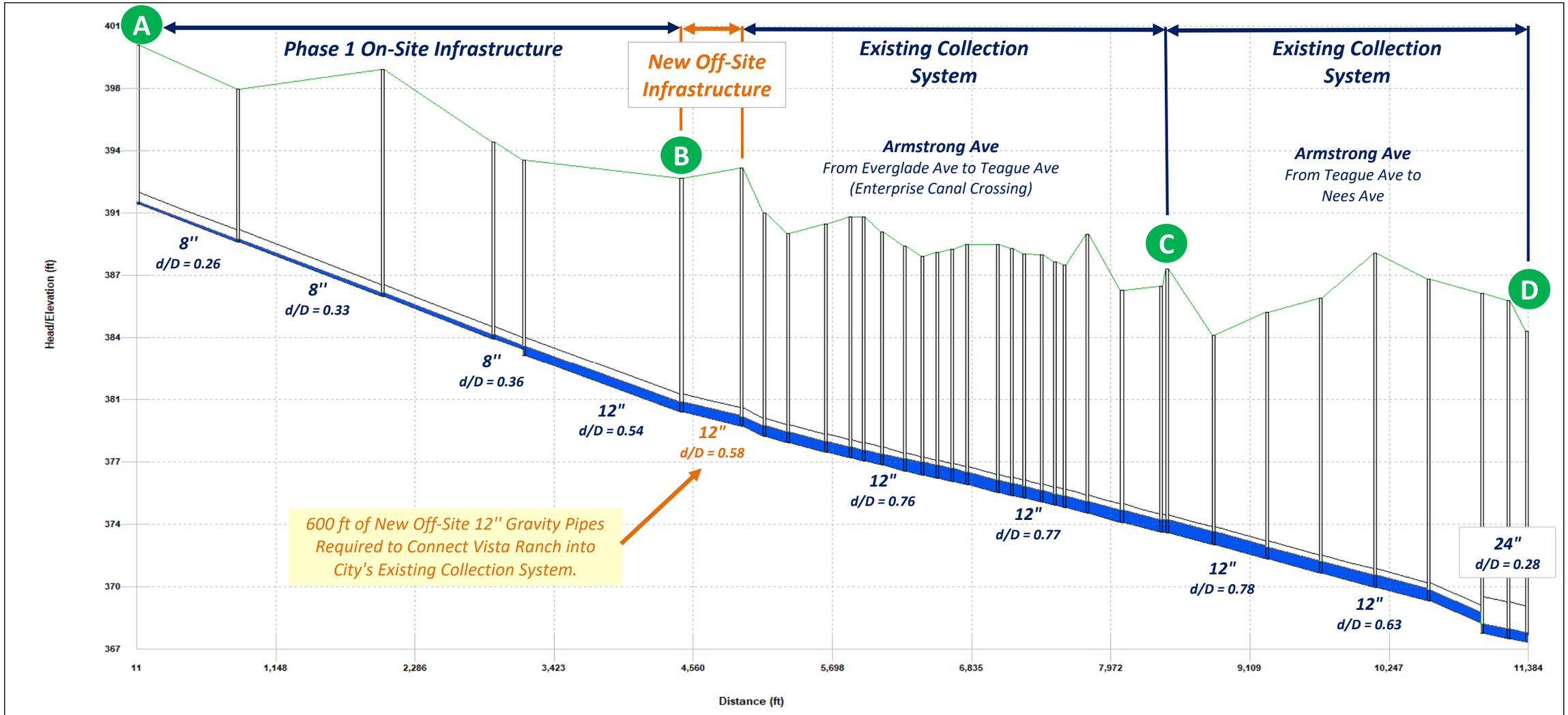
APPENDICES

APPENDIX A

ALTERNATIVE A

CAPACITY EVALUATION RESULTS

(Scenario 1 to 3)



Notes:

1. The HGL profile includes existing plus Phase 1 design flows routed south towards Armstrong Avenue.
2. The capacity evaluation results indicate that the existing system meets the City's Design Criteria.
3. All on-site and off-site pipelines must meet minimum cover requirements specified in the City's Design Guidelines. Any deviation from the guidelines must be approved by the City Engineer.

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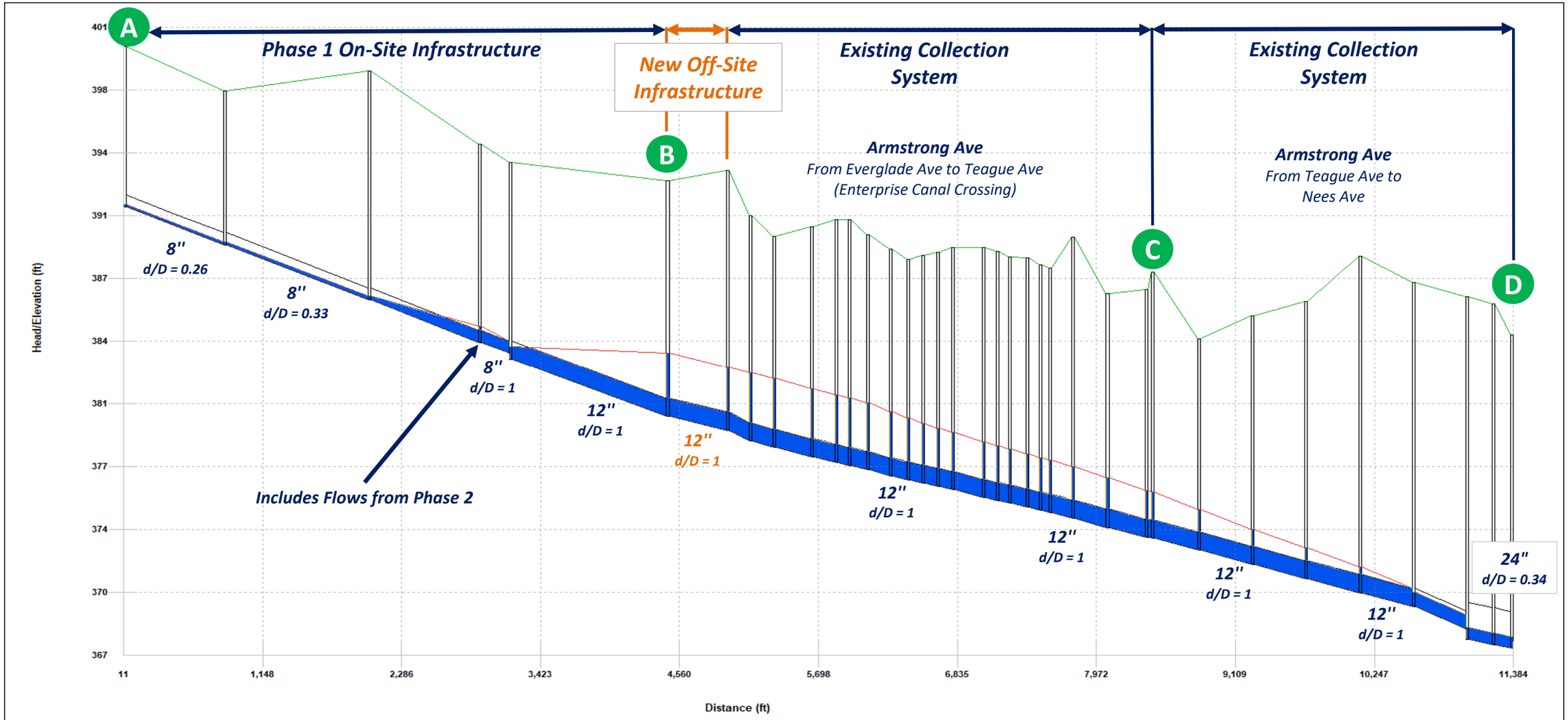
Figure A1

Scenario 1

HGL Profile (No Improvements)

Vista Ranch Wastewater
Hydraulic Modeling Study
City of Clovis



Notes:

1. The HGL profile includes existing plus Phase 1 and Phase 2 design flows routed south towards Armstrong Avenue.
2. The capacity evaluation results indicate several gravity pipe deficiencies that do not meet the City's Design Criteria.
3. All on-site and off-site pipelines must meet minimum cover requirements specified in the City's Design Guidelines. Any deviation from the guidelines must be approved by the City Engineer.

4/9/2024

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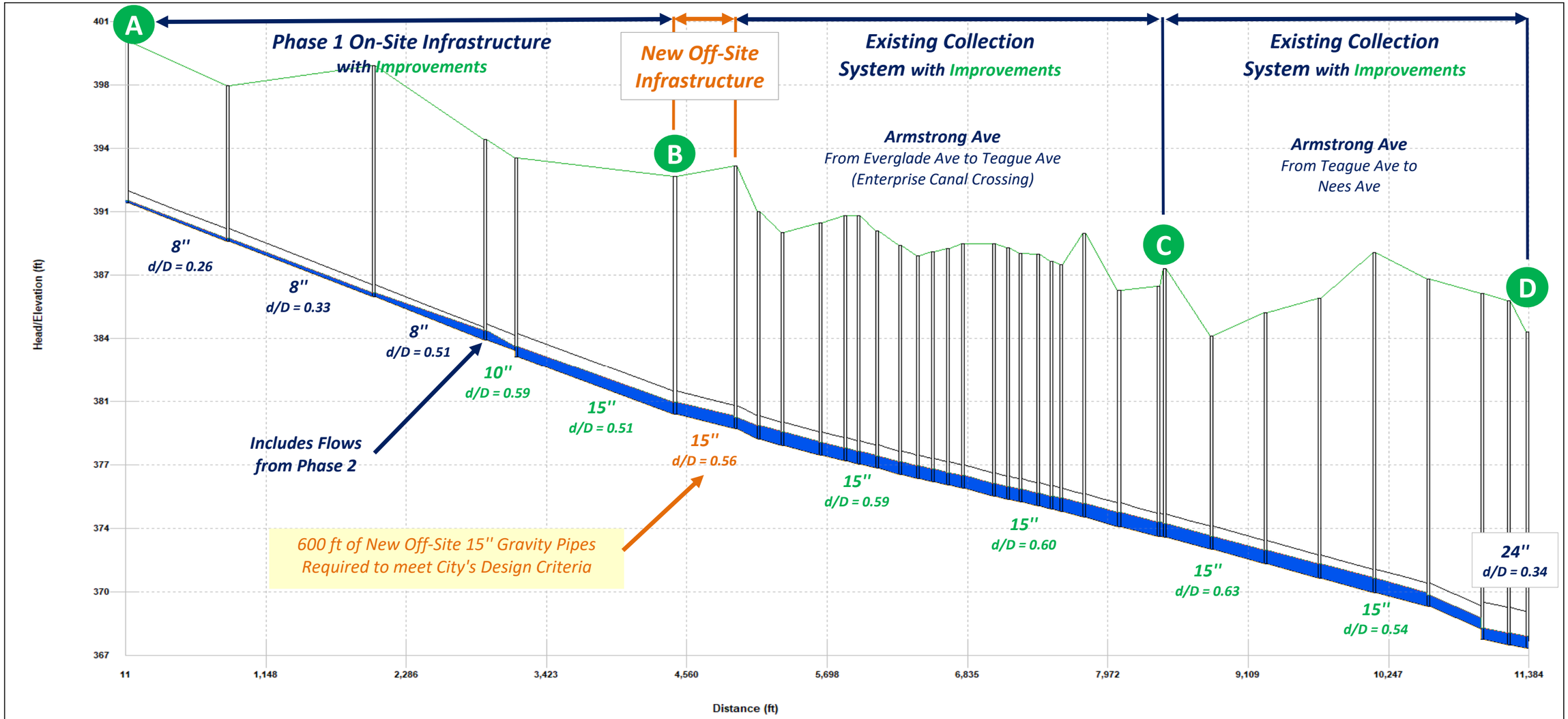
Figure A2
Scenario 2
HGL Profile (No Improvements)
Vista Ranch Wastewater
Hydraulic Modeling Study
City of Clovis



Notes:

1. The HGL profile includes existing plus Phase 1 and Phase 2 design flows routed south towards Armstrong Avenue.
2. The capacity evaluation results indicate that the following off-site improvements are required to meet the City's Design Criteria:
   - Construct 600 ft of new 15" gravity pipes along Armstrong Avenue, from Shepherd Avenue to Everglade Avenue.
   - Upsize 3,300 ft of existing 12" gravity pipes to 15" along Armstrong Avenue, from Everglade Avenue to Teague Avenue (Includes Enterprise Canal Crossing).
   - Upsize 2,700 ft of existing 12" gravity pipes to 15" along Armstrong Avenue, from Teague Avenue to Nees Avenue.
3. On-site improvements are also required to meet City's Design Criteria. These improvements include upsizing 8'' pipe to 10'', and upsizing 12'' pipe to 15''.
4. All on-site and off-site pipelines must meet minimum cover requirements specified in the City's Design Guidelines. Any deviation from the guidelines must be approved by the City Engineer.

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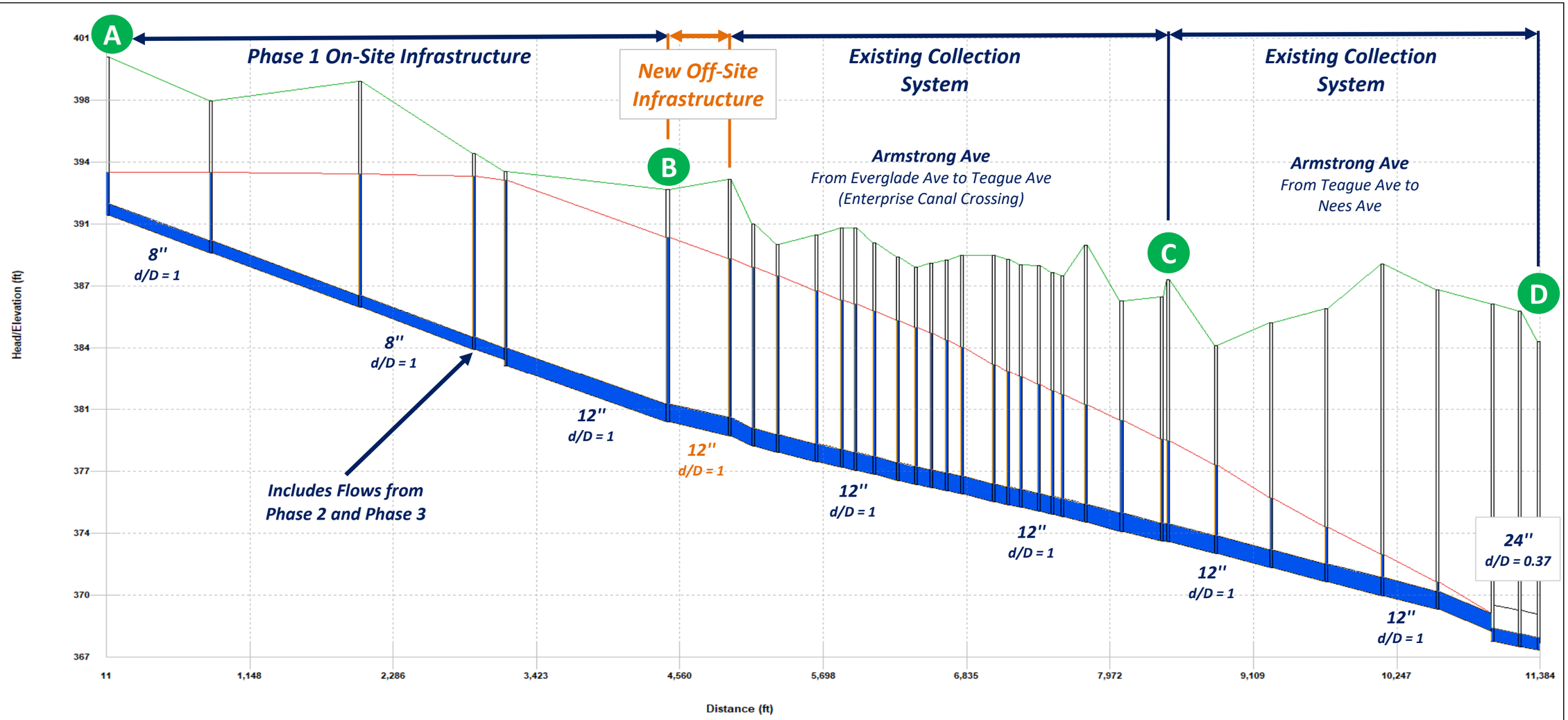
Figure A3
Scenario 2
HGL Profile (With Improvements)
Vista Ranch Wastewater
Hydraulic Modeling Study
City of Clovis



Notes:

1. The HGL profile includes existing plus Phase 1, Phase 2 and Phase 3 design flows routed south towards Armstrong Avenue.
2. The capacity evaluation results indicate several gravity pipe deficiencies that do not meet the City's Design Criteria.
3. All on-site and off-site pipelines must meet minimum cover requirements specified in the City's Design Guidelines. Any deviation from the guidelines must be approved by the City Engineer.

4/9/2024

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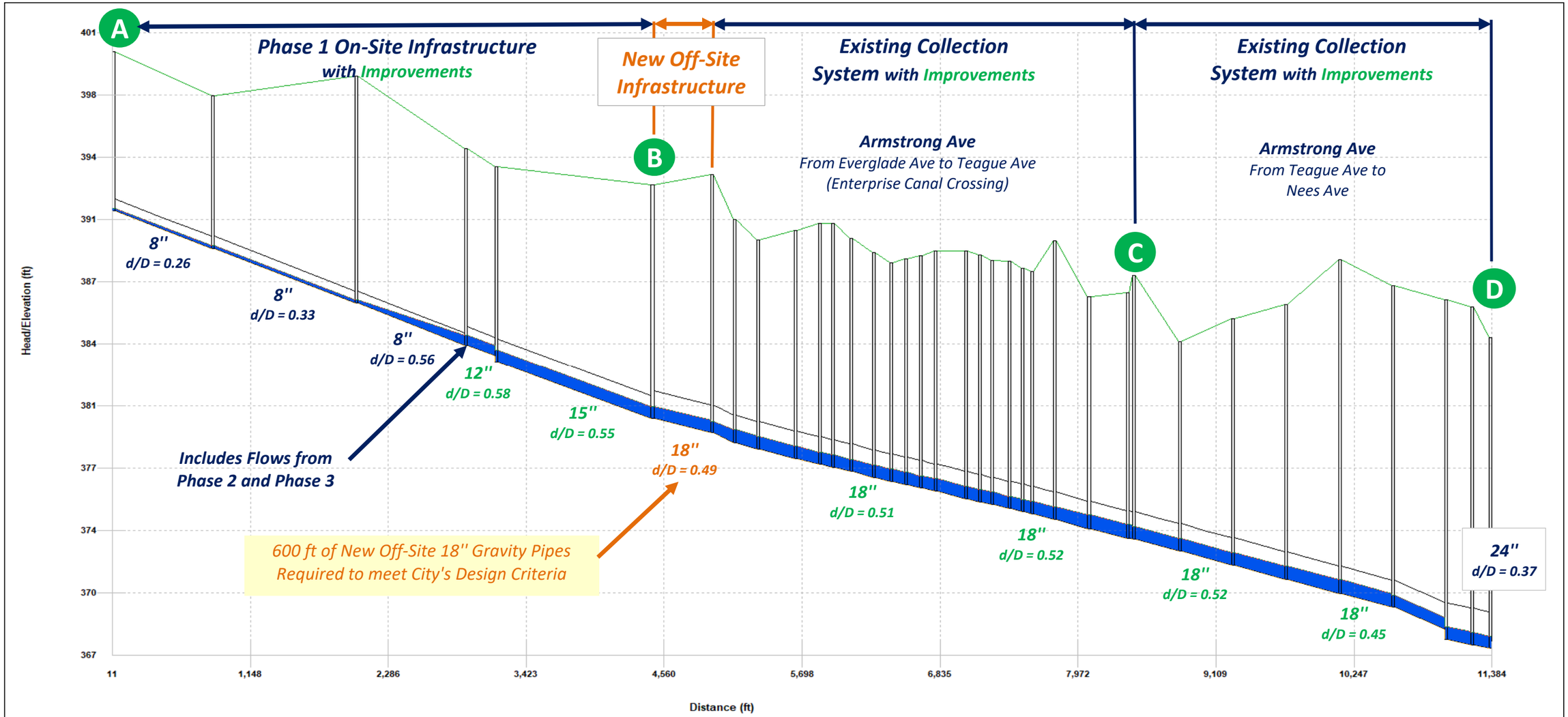
Figure A4
Scenario 3
HGL Profile (No Improvements)
Vista Ranch Wastewater
Hydraulic Modeling Study
City of Clovis



Notes:

1. The HGL profile includes existing plus Phase 1, Phase 2 and Phase 3 design flows routed south towards Armstrong Avenue.
2. The capacity evaluation results indicate that the following off-site improvements are required to meet the City's Design Criteria:
   - Construct 600 ft of new 18" gravity pipes along Armstrong Avenue, from Shepherd Avenue to Everglade Avenue.
   - Upsize 3,300 ft of existing 12" gravity pipes to 18" along Armstrong Avenue, from Everglade Avenue to Teague Avenue (Includes Enterprise Canal Crossing).
   - Upsize 2,700 ft of existing 12" gravity pipes to 18" along Armstrong Avenue, from Teague Avenue to Nees Avenue.
3. On-site improvements are also required to meet City's Design Criteria. These improvements include upsizing 8'' pipe to 12'', and upsizing 12'' pipe to 15''.
4. All on-site and off-site pipelines must meet minimum cover requirements specified in the City's Design Guidelines. Any deviation from the guidelines must be approved by the City Engineer.

4/9/2024

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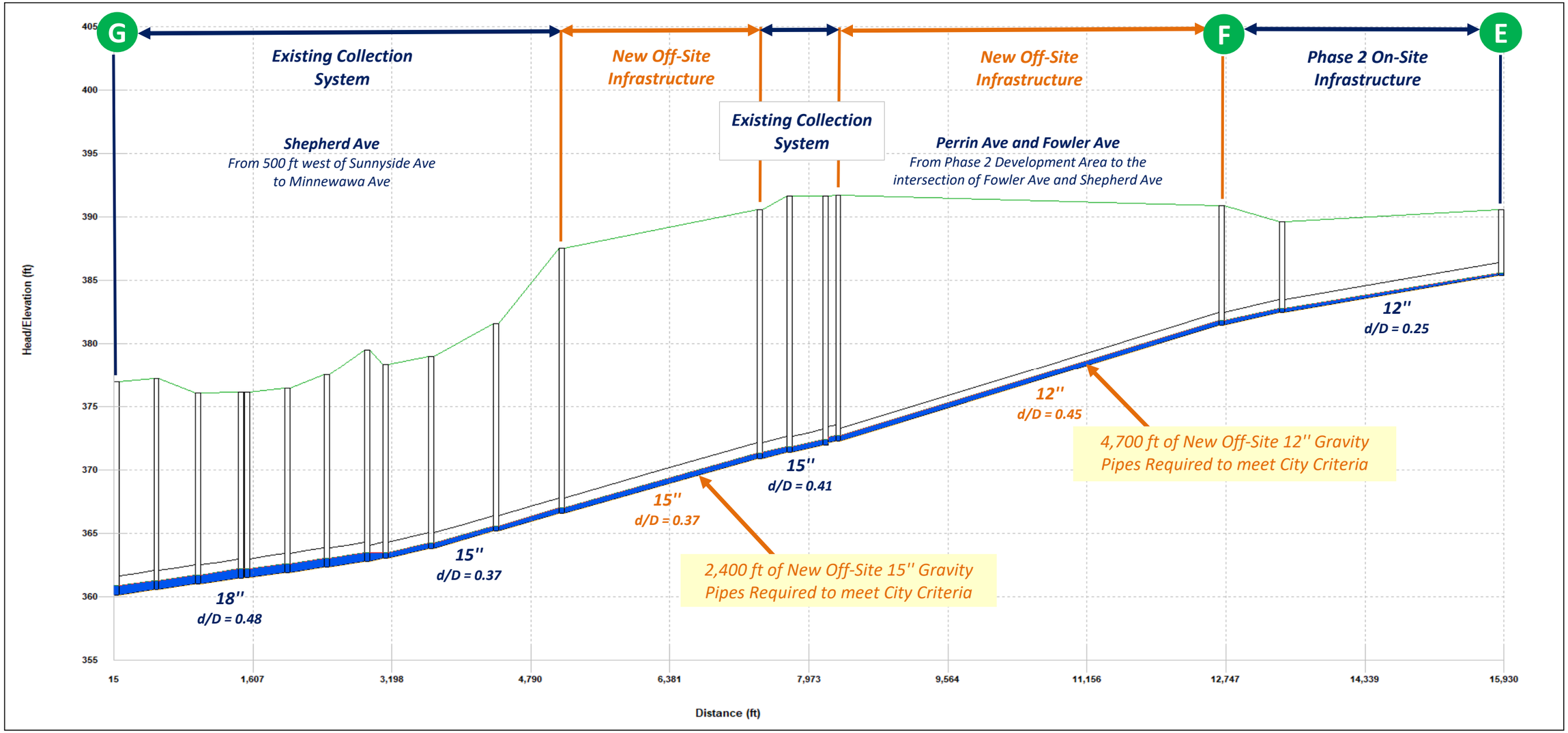
Figure A5
Scenario 3
HGL Profile (With Improvements)
Vista Ranch Wastewater
Hydraulic Modeling Study
City of Clovis

APPENDIX B

ALTERNATIVE B

CAPACITY EVALUATION RESULTS

(Scenario 4 and 5)



Notes:

1. The HGL profile includes existing plus Phase 2 design flows routed southwest towards Shepherd Avenue.
2. The capacity evaluation results indicate that the existing system meets City's Design Criteria.
3. New offsite infrastructure required to connect Phase 2 flows to the City's existing collection system are as follows:
   - Construct 4,700 feet of new 12'' gravity pipes along Perrin and Fowler Avenues, from Phase 2 development area to the intersection of Shepherd Avenue and Fowler Avenue.
   - Construct 2,400 feet of new 15'' gravity pipes along Shepherd Avenue, from 800 feet west of Fowler Avenue to 500 feet west of Sunnyside Avenue.
4. All on-site and off-site pipelines must meet minimum cover requirements specified in the City's Design Guidelines. Any deviation from the guidelines must be approved by the City Engineer.

4/9/2024

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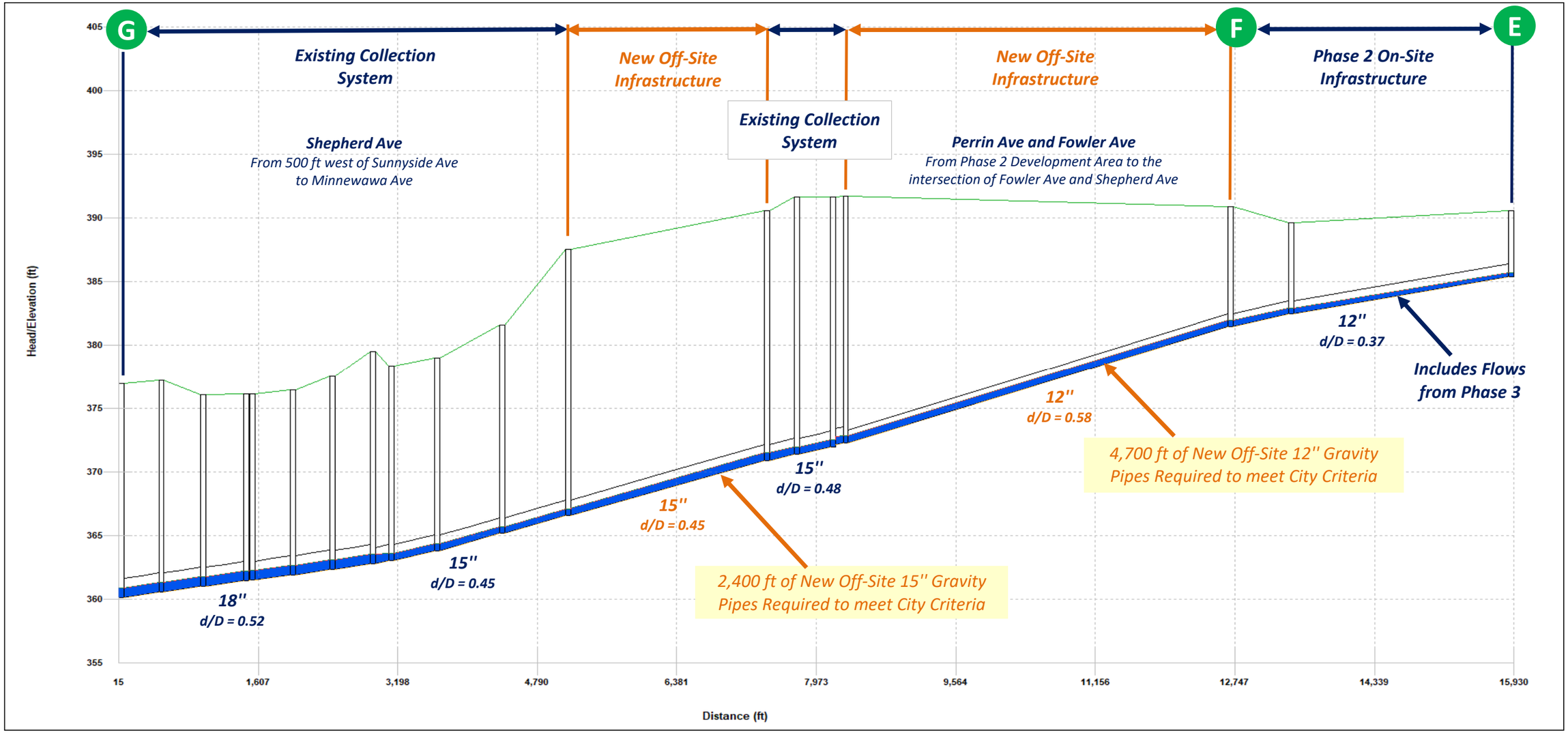
Figure B1

Scenario 4

HGL Profile (With Improvements)

Vista Ranch Wastewater
Hydraulic Modeling Study
City of Clovis



Notes:

1. The HGL profile includes existing plus Phase 2 and Phase 3 design flows routed southwest towards Shepherd Avenue.
2. The capacity evaluation results indicate that the existing system meets City's Design Criteria.
3. New offsite infrastructure required to connect Phase 2 flows to the City's existing collection system are as follows:
   - Construct 4,700 feet of new 12'' gravity pipes along Perrin and Fowler Avenues, from Phase 2 development area to the intersection of Shepherd Avenue and Fowler Avenue.
   - Construct 2,400 feet of new 15'' gravity pipes along Shepherd Avenue, from 800 feet west of Fowler Avenue to 500 feet west of Sunnyside Avenue.
4. All on-site and off-site pipelines must meet minimum cover requirements specified in the City's Design Guidelines. Any deviation from the guidelines must be approved by the City Engineer.

4/9/2024

AKEL ENGINEERING GROUP, INC.

Figure B2
Scenario 5
HGL Profile (With Improvements)
Vista Ranch Wastewater
Hydraulic Modeling Study
City of Clovis

Appendix K

Water Supply

CITY OF CLOVIS

WATER SUPPLY ASSESSMENT VISTA RANCH

CITY OF CLOVIS
MARCH 2024

PREPARED FOR:
City of Clovis
California

PREPARED BY:
PROVOST & PRITCHARD CONSULTING GROUP
455 W FIR AVENUE, CLOVIS, CA 93611

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Report Prepared for:

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TABLE OF CONTENTS

1 Introduction 1-1
1.1 Purpose and Need for the Water Supply Assessment 1-1
1.2 Reliance on a Related Urban Water Management Plan 1-1
1.3 Document Organization 1-1
2 Project Description 2-1
2.1 Project Location and Setting 2-1
2.2 Water Supply and Distribution 2-1
3 Water Demands 3-1
3.1 Project Demands 3-1
3.1.1 Incremental Proposed Water Demands 3-2
3.2 Demands of Other Existing and Planned Development 3-2
4 Overview of Water Supplies 4-1
4.1 Surface Water 4-1
4.1.1 Kings River 4-1
4.1.2 Central Valley Project Water Allocation: Friant Division 4-1
4.1.3 Garfield Water District 4-2
4.1.4 International Water District 4-2
4.2 Supply from Storage 4-2
4.3 Groundwater 4-4
4.4 Recycled Water 4-4
4.5 Exchanges 4-4
4.6 Water Supply Summary 4-5
5 Normal Year Water Operations 5-1
6 Single-Dry and Multiple-Dry Year Water Supplies 6-1
6.1 Water Year Effects on Water Sources 6-1
6.1.1 Kings River Surface Water 6-1
6.1.2 Friant CVP Surface Water 6-1
6.1.3 Supply from Storage 6-1
6.1.4 Groundwater 6-2
6.1.5 Recycled Water 6-2
6.2 Changes in Water Source Reliability Over the Planning Horizon 6-2
6.3 Summary of Single-Dry and Multiple-Dry Year Reliability Over the Planning Horizon 6-2
6.4 Climate-Based Reliability Factors 6-3
7 Operational Reliability 7-1
8 Conclusions 8-1
8.1 Conclusions Including Additional WSAs 8-1
9 References 1

LIST OF FIGURES

Figure 2-1. Project Location....2-3
Figure 2-2. Water Infrastructure at Buildout....2-4
Figure 3-1. General Plan Land Use Plan in Project Area....3-4
Figure 3-2. Proposed Land Use Plan in Project Area....3-5
Figure 4-1. Irrigation and Water District....4-3

LIST OF TABLES

Table 3-1. Planned Demand Estimates....3-1
Table 3-2. Proposed Demand Estimates....3-2
Table 3-3. Proposed Demands in 5-Year Increments....3-2
Table 3-4. UWMP Planned Water Demands by Use Type (UWMP Table 4-5)....3-3
Table 4-1. Water Supplies – Normal Year (UWMP Tables 6-12 and 6-13)....4-5
Table 5-1. Comparison of Normal Year Supplies and Demands....5-1
Table 6-1. Dry Year Supply and Demand Comparison in 2035 (UWMP Tables 7-2, 7-3, and 7-4)....6-3
Table 8-1. Summary of Project Water Supplies and Demands....8-2

ABBREVIATIONS

AF ..... acre-feet
AFY ..... acre feet per year
Boswell ..... Boswell Groundwater Banking Facility
City ..... City of Clovis
County ..... Fresno County
CVP ..... Central Valley Project
CWC ..... California Water Code
FID ..... Fresno Irrigation District
GP ..... City of Clovis General Plan
GWD ..... Garfield Water District
IWD ..... International Water District
LDR ..... Low Density Residential
MDR ..... Medium Density Residential
MGD ..... million gallons per day
MHDR ..... Medium High Density Residential
NKGSP ..... North Kings Groundwater Sustainability Plan
RR ..... Rural Residential
SFR ..... Single-Family Residential
SOI ..... Sphere of Influence
SWTP ..... City of Clovis Surface Water Treatment Plant
UWMP ..... Urban Water Management Plan
VHDR ..... Very High Density Residential
Waldron ..... Waldron Banking Facility
WDF ..... Water Demand Factor
WMP ..... City of Clovis, Water Master Plan Update, Phase III
WRF ..... Water Reclamation Facility
WSA ..... Water Supply Assessment
WSCP ..... Water Shortage Contingency Plan

1 INTRODUCTION

1.1 PURPOSE AND NEED FOR THE WATER SUPPLY ASSESSMENT

California Water Code (CWC) §10912(a) requires preparation of a Water Supply Assessment (WSA) meeting the requirements of CWC §10910 et seq for projects within cities and counties that meet one of several water demand triggers, or the equivalent. These triggers include construction of 500 or more residential units, construction of a shopping center or business establishment having 500,000 square feet of floor space, construction of a commercial office building having more than 250,000 square feet, a proposed hotel or motel having more than 500 rooms, or another project having a water demand equivalent to or greater than the 500-unit development.

This WSA evaluates the adequacy of available water supplies for the proposed Vista Ranch development and surrounding areas, including a Sphere of Influence (SOI) Expansion Area north of Shepherd Ave, west of Sunnyside Ave located in Fresno County, California. The Project would entail the development of approximately 3,286 single family residential lots, more than the "500 residential units" trigger; therefore, a WSA is required. The City of Clovis operates the water system to which the Project proposes to connect. This water system meets the standards for a "Public Water System" as set forth in CWC §10912(c); the City is therefore responsible for preparation of the required WSA in accordance with CWC §10910(b).

This WSA discusses the estimated water demands and water supply for the proposed Project. The Project is located in Fresno County (County), adjacent to the City of Clovis (City) limits; the area will be annexed as part of the Project's progress and the entire Project will be supplied with water from the City.

1.2 RELIANCE ON A RELATED URBAN WATER MANAGEMENT PLAN

If the Project falls within the boundaries of a current Urban Water Management Plan (UWMP) prepared by the water purveyor, CWC §10910(c)(1) requires that the WSA determine whether projected water demand associated with the Project is included as part of that duly adopted UWMP.

1.3 DOCUMENT ORGANIZATION

This WSA is organized as follows:

- Section 2 describes the Project and its location.
- Section 3 describes the Project's potable and non-potable water demands in addition to those of other existing and planned uses, and how these vary from the numbers used in the UWMP.
- Section 4 provides an overview of the City's primary water supplies.
- Section 5 discusses the adequacy of water supplies during normal years.
- Section 6 discusses the adequacy of water supplies during single-dry and multiple-dry years.
- Section 7 discusses operational reliability on a daily basis.
- Section 8 concludes whether supplies would be adequate during normal, dry-year, and multiple-dry years during a 20-year projection.
- Section 9 lists references cited in this WSA

2 PROJECT DESCRIPTION

2.1 PROJECT LOCATION AND SETTING

The City limits currently encompasses 25.9 square miles. The City's SOI covers 34.9 square miles, while the City's General Plan (GP) encompasses approximately 74.3 square miles. The City's General Plan (Placeworks, 2014) identified three Urban Centers to focus growth, including Loma Vista, the Northwest area, and the Northeast area; this Project lies within the Northeast area, within the villages identified in the Water Master Plan Update, Phase III (WMP) (Provost & Pritchard Consulting Group, 2018) as Northeast Triangle and Northern Rural. Figure 2-1 identifies the location of the Project in relation to the surrounding Clovis/Fresno region.

The Project includes a total area of 923.41-acres located between Sunnyside and Fowler Avenues, Shepherd and Behymer Avenues, and the Big Dry Creek Reservoir. Located just outside the city limits and the SOI, according to the 2014 City of Clovis General Plan, the area north and east of the Project is open space, north of the Project is agriculture, west of the Project is rural residential, and south of the Project is low and very low residential uses.

The Project entails two distinct components, which are analyzed jointly in this WSA:

- Vista Ranch: a proposed master planned community, including approximately 3,286 dwelling units on 509 acres with a variety of land uses, including Low Density Residential (LDR), Medium Density Residential (MDR), Medium-High Density Residential (MHDR), Very-High Density Residential (VHDR), Mixed-Use, Neighborhood Commercial, Trails, Open Space, Park, and School.
    - 410.6-acres of this area was included in the WMP and UWMP analyses
    - 98.9-acres of this area was included in the UWMP analysis but not the WMP analysis.
- Surrounding Area: adjacent to Vista Ranch, the area northeast and west of the Vista Ranch boundaries, as follows:
    - Northeast area: 57.65-acres, with a potential to develop entirely as Medium-Density Residential.
        - This area was not included in the City's UWMP analysis and will be discussed further throughout this WSA.
    - West area: 356.30-acres, with a potential to develop 244.06-acres as Rural Residential and 112.24-acres as Medium-Density Residential.
        - This area was included in the City's UWMP analysis.

The Project area is currently designated, in the County of Fresno – Zoning, as AE-20, AL-20, and RR, and current land uses are rural residential and open fields

2.2 WATER SUPPLY AND DISTRIBUTION

The project will receive water supply from the City's water distribution system, which relies on both groundwater and surface water supplies. The City's Surface Water Treatment Plant (SWTP) has a current treatment capacity of 22.5 million gallons per day (MGD); expansion to 45 MGD is planned.

In addition to the supply from the SWTP, the City has more than 30 groundwater wells located throughout the City, with the nearest being approximately one mile south of the Project, at Temperance and Nees Avenues. While the City's system is divided into two pressure zones, there are interconnections between the two to balance supply and demand throughout the year in various water demand scenarios.

The Project area is entirely within the water system's Pressure Zone 2. Water will be delivered to the Project via the City's existing and planned distribution system. The water distribution system is shown in full in the WMP, and in detail for this area on Figure 2-2. The master planned 16-inch distribution mains in East Shepherd Avenue west of North Armstrong Avenue and in North Armstrong Avenue running south from East Shepherd Avenue exist. Additionally, master planned 24-inch transmission mains in Sunnyside and Perrin Avenues exist or will exist by the time this Project proceeds. Connectivity in both directions along Shepherd Avenue, Sunnyside Avenue, and/or in Temperance Avenue are required to reliably supply water to the Project.

The master planned mains within the Northeast Triangle, north of Shepherd Avenue, will require modification to accommodate the layout of the Project, as discussed in the Water Infrastructure Investigation, separate from this WSA. The mains in Figure 2-2 are those currently shown as planned in the WMP, not the updated alignments as the potential new alignments are not approved or confirmed by City staff at the time of preparation of this report.

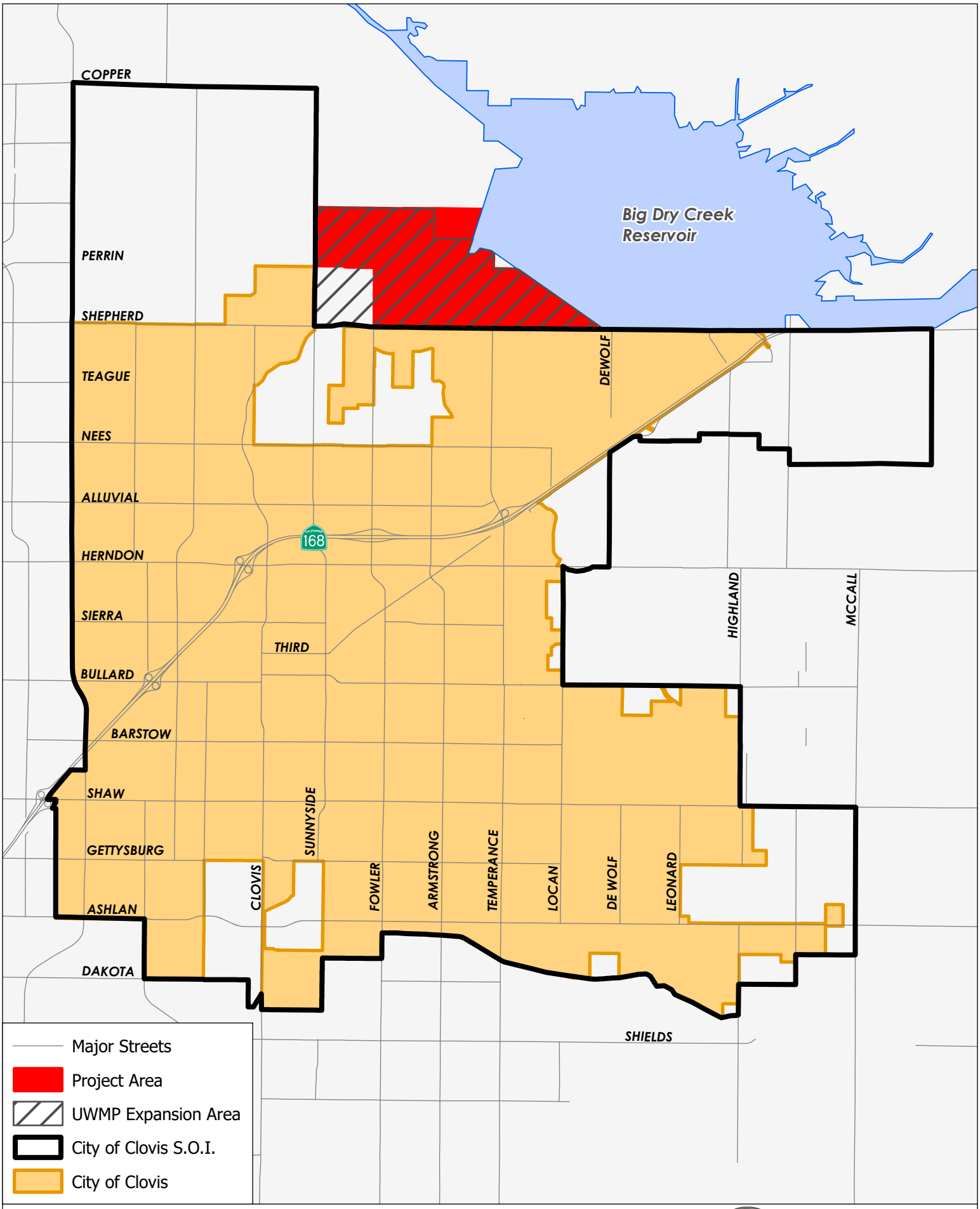

Figure 2-1: Project Location

Water Supply Assessment- Vista Ranch

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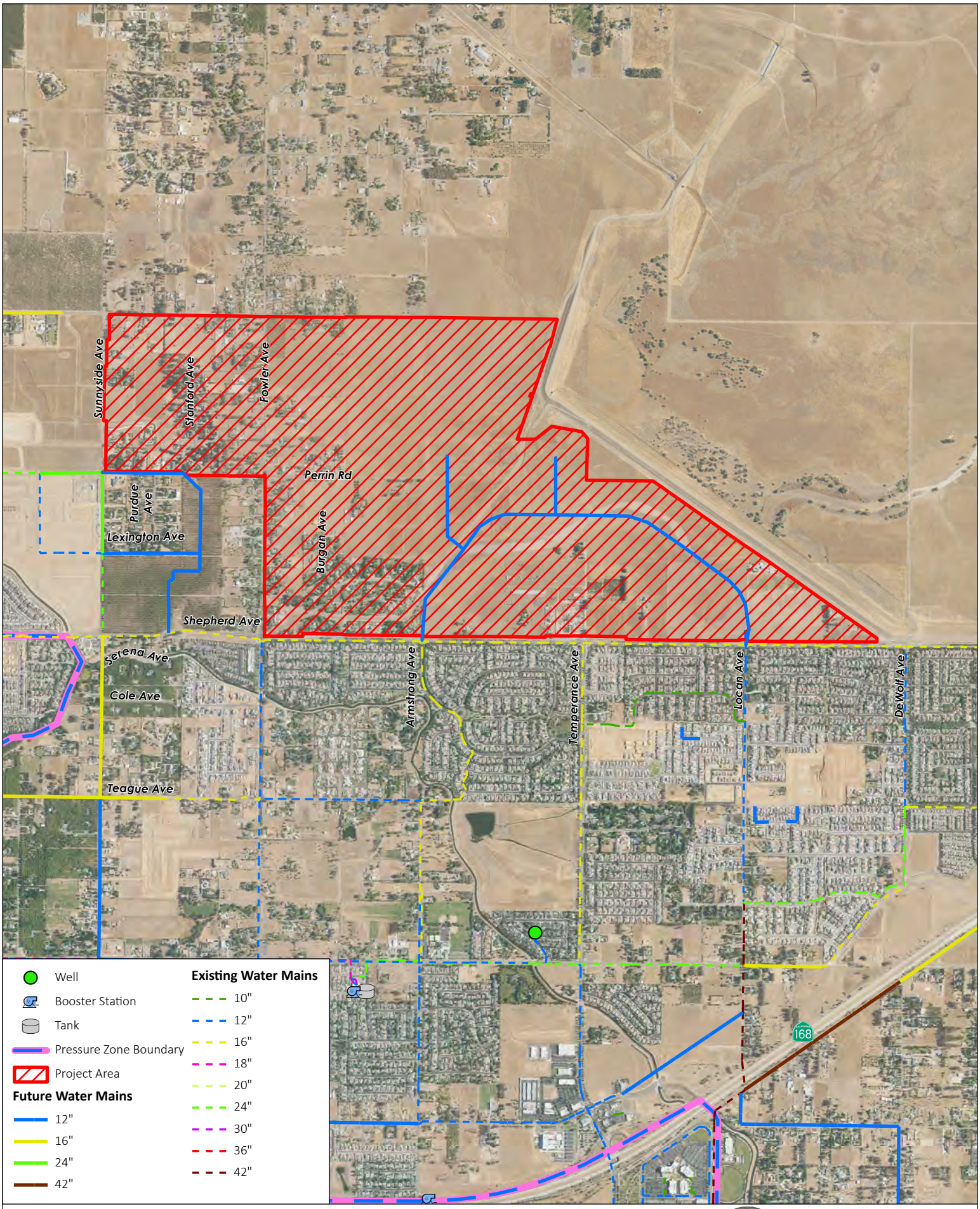

Figure 2-2: Water Infrastructure at Buildout

Water Supply Assessment- Vista Ranch

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3 WATER DEMANDS

This section summarizes projected water demands of the Project, assuming full buildout of the Project by 2035. Water demands were based on Land Use-based Water Demand Factors (WDFs) applied to land uses shown in the City's Adopted General Plan. Proposed Project water demands have been estimated based on the proposed land uses and the WDFs shown in the adopted WMP. This section compares water demand estimates developed as part of this study with the City's existing plans.

3.1 PROJECT DEMANDS

Based on the adopted WDFs stated in the WMP, and the existing GP land use designations (shown in Figure 3-1), the planned water demands for the Project area within the WMP and the area outside the WMP, shown in acre-feet per year (AFY), are shown in Table 3-1 below. This table is utilized for comparison of overall water supply portfolio impact of the Project, according to the WMP.

Table 3-1. Planned Demand Estimates

PLANNED DEMAND ESTIMATES			
PLANNED LAND USE DESIGNATION	UNIT FACTOR (AFY/ACRE)	ACREAGE (acres)	DEMAND (AFY)
AREA INCLUDED IN THE WMP ANALYSIS (NORTHEAST TRIANGLE)			
RR	0.7	2.0	1.4
LDR	2.5	169.0	422.5
MDR	2.2	100.0	220.0
MHDR	3.3	24.0	79.2
MU-V	5.0	14.0	70.0
Open Space	1.5	39.0	58.5
Park	3.0	22.0	66.0
School	2.8	16.0	44.8
Right-of-way (Road)	0.0	24.6	0.0
	Subtotal:	410.6	962.4
AREA NOT INCLUDED IN THE WMP ANALYSIS			
No planned land use[1]	0.0	512.8	0.0
	Subtotal	512.8	0.0
	Overall Total:	923.4	962.4

Based on the proposed land use designation (see Figure 3-2), the proposed water demands for the Project area are shown in Table 3-2. The water usage projection for the Project was developed based on the Water Demand Factors in the WMP for the proposed Project land use.

[1] For purposes of the WMP comparison, this area does not have a planned land use demand; however, for purposes of the UWMP comparison, this area is assumed to have a population associated with it per the Rural Residential land use shown in the Fresno County General Plan.

Table 3-2. Proposed Demand Estimates

PROPOSED DEMAND ESTIMATES			
PROPOSED LAND USE DESIGNATION	UNIT FACTOR (AFY/ACRE)	ACREAGE	DEMAND (AFY)
VISTA RANCH (AREA WITHIN THE WMP)			
LDR	2.5	34.2	85.5
MDR	2.2	146.4	322.1
MHDR	3.3	71.8	236.9
VHDR	7.3	15.7	114.6
MU	5.0	3.1	15.5
Neighborhood Commercial	2.9	12.7	36.8
Industrial	1.0	32.2	32.2
Open (No water use[2])	0.0	28.3	0.0
Park	3.0	31.2	93.6
School	2.8	19.3	54.0
Road (No water use)	0.0	15.7	0.0
	Subtotal:	410.6	991.2
VISTA RANCH (AREA NOT WITHIN THE WMP)			
MDR	2.2	71.4	157.1
MHDR	3.3	17.5	57.8
Park	3.0	3.3	9.9
Road	0.0	6.6	0.0
	Subtotal:	98.8	224.8
SURROUNDING AREAS (AREA NOT WITHIN THE WMP)			
RR	0.7	244.1	170.8
MDR	2.2	112.2	246.9
MDR (not accounted for in UWMP)	2.2	57.7	126.8
	Subtotal:	414.0	544.5
	Overall Total:	923.4	1,760.5

To evaluate the overall water supply portfolio impact to the City's water supply portfolio, the additional water supply needed for the project includes the demands associated the Surrounding Areas not previously accounted for in the WMP plus the increased density above that which was accounted for in the WMP. The impact, of the Project, to the City's water supply portfolio documented in the WMP is as follows:

- Increased density within the area shown in the WMP:
  - Planned: 962.4 AFY
  - Proposed: 991.2 AFY
  - Difference: 28.8 AFY
- Area outside WMP:
  - Planned: 0.0 AFY
  - Proposed: 769.3 AFY
  - Difference: 769.3 AFY

Total Impact to Water Supply: 798.1 AFY

[2] The project applicant has indicated this open space area will not be irrigated.

For purposes of understanding the difference between planned and proposed demands on a per capita basis, as documented in the UWMP, the "Area Not Included in WMP Analysis" would have had an assumed demand associated with rural residential (512.8 acres * 0.7 AFY/acre = 359.0 AFY) and the impact of the Project would be associated with the increased density. This total impact is calculated as follows:

- Increased density within the area shown in the UWMP:
  - Planned: 1321.4 AFY (962.4 AFY + 359.0 AFY)
  - Proposed: 1,760.5 AFY
  - Difference: 439.1 AFY

Total Impact to Water Supply: 439.1 AFY

Comparison between the projected water demands and the demands anticipated in the UWMP evaluates the overall availability of water supply to meet the City's per capita demand scenarios described later in the WSA.

3.1.1 INCREMENTAL PROPOSED WATER DEMANDS

Project water demands were calculated in 5-year increments, as shown in Table 3-3. This table is based upon the understanding that the Project will be entirely constructed by 2035[3].

Table 3-3. Proposed Demands in 5-Year Increments

PROPOSED DEMANDS IN 5-YEAR INCREMENTS				
CRITERIA	2025	2030	2035	TOTAL
Estimated Demand (AFY)	440.1	660.2	660.2	1,760.5

3.2 DEMANDS OF OTHER EXISTING AND PLANNED DEVELOPMENT

The UWMP reports the planned demands for similar types of uses proposed with this Project within the City, referred to collectively as Single-Family Residential uses (SFR), Multi-Family Residential uses, and Commercial uses. These demands are summarized in UWMP Table 4-5, which is reproduced, in part, below.

[3] The anticipated demands timing is an estimate and development of the Project will be determined by the Project Applicant. This WSA does not govern the development timeline.

Table 3-4. UWMP Planned Water Demands by Use Type (UWMP Table 4-5)

UWMP PLANNED WATER DEMANDS BY USE TYPE (As shown in UWMP Table 4-5)			
USE TYPE	UWMP PROJECTED DEMANDS IN 2035 (AFY)	PROPOSED PROJECT DEMANDS IN 2035	
		PROJECTED PROJECT DEMANDS (AFY)	% OF UWMP DEMANDS
Residential	23,331	1,526.3	6.5%
Commercial (includes schools)	3,670	130.8	3.6%
Landscape (includes open space and parks)	1,336	103.5	7.7%
Totals	**28,337**	**1,760.5**	**6.2%**

Comparing the total proposed Project water demands in Table 3-2 with the total water demand area analyzed in the UWMP and shown in Table 3-4, the Project makes up a small portion of the overall water anticipated to be delivered by the City to similar types of uses.

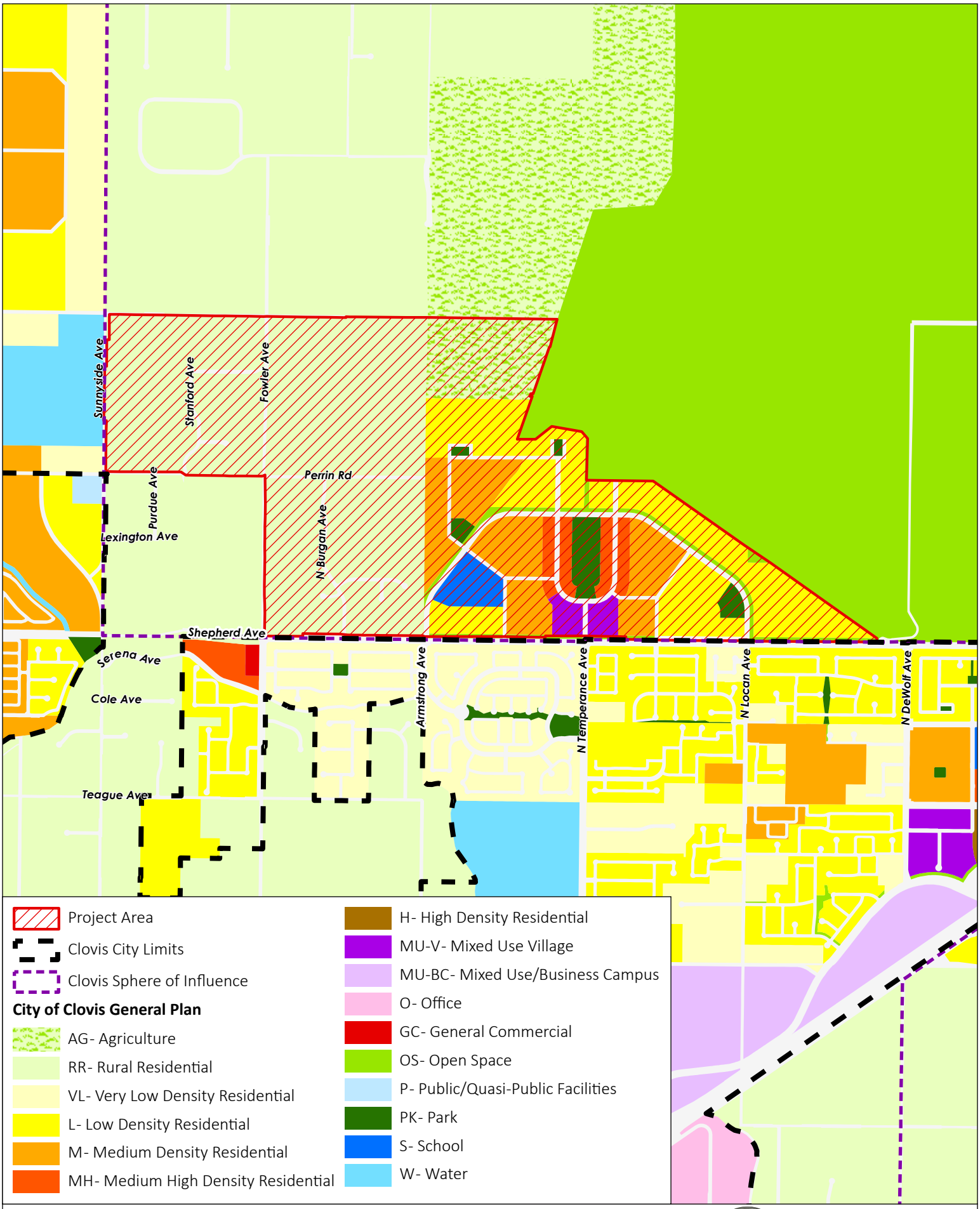

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Figure 3-1: General Plan Land Use in Project Area

Water Supply Assessment- Vista Ranch

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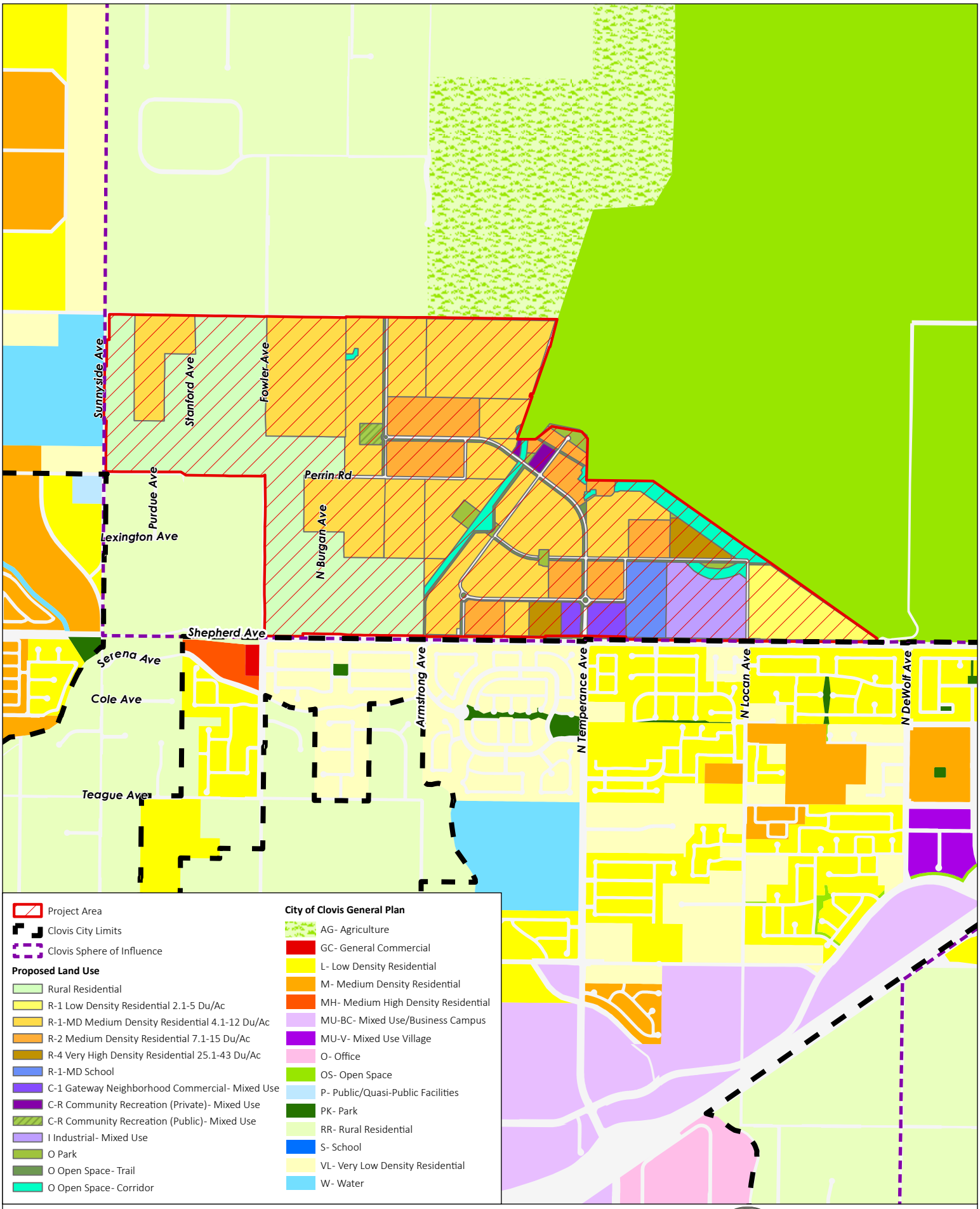

Figure 3-2: Proposed Land Use in Project Area

Water Supply Assessment- Vista Ranch

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4 OVERVIEW OF WATER SUPPLIES

CWC §10910(c)(2) allows reliance on the City's UWMP to determine overall water supply reliability if the Project's planned water demand was included in the UWMP. Approximately 93 percent of the Project demand was included in the City's UWMP calculations and, while only a portion of the demand of this entire area was included in the WMP, the calculations and analysis from the UWMP are utilized as a current baseline for the City's supply and demand comparison. The Project's demands are also over and above the demands planned in the WMP, as discussed in Section 3 and later in this WSA. The overall additional demand will require planning on the City's part to account for it in the future build-out of the City's GP. This WSA relies, in large part, on the UWMP.

CWC §10910(d) requires that a WSA identify any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, including any such existing entitlements, rights, or contracts held by the public water system or city or county preparing the WSA. These descriptions appear in detail in Chapter 6 of the UWMP and are summarized below.

4.1 SURFACE WATER

The City's surface water supply is provided through agreements with Fresno Irrigation District (FID), which allows the City to receive a share of FID's King's River and Friant Central Valley Project (CVP) entitlements. Garfield Water District (GWD) and International Water District (IWD) are located within the City's General Plan boundaries. As the districts' service areas are urbanized over time, surface supplies available to the two districts will be added to the City's surface water supply. As those supplies are added to the City's water supply portfolio, they will be available throughout the City's service area as part of the general water supply. Currently, all surface water available to the City comes from the FID contract. The boundaries of each of the districts are shown on Figure 4-1.

4.1.1 KINGS RIVER

FID obtains much of its surface water from the Kings River. FID is a member of the Kings River Water Association, which holds water rights licenses for all the Kings River and storage rights licenses on Kings River reservoirs. FID is entitled to water based upon a prorated monthly schedule determined by the natural flow of the Kings River as it would occur without reservoir storage above the historic Piedra gauging station. FID is entitled to water from the Kings River at all flows, but the percentage is higher at relatively low Kings River flows. If the snowmelt is slow, the District receives greater entitlement. FID's average gross annual entitlement is 452,541 acre-feet (AF). Within the last fifty years, the smallest entitlement received was 158,109 AF, which occurred in 2015.

The City's allocation from the Kings River is proportional to the total acreage of the City's included area to the total FID area receiving water; the total amounts available to the City are discussed in greater detail in Section 6.

4.1.2 CENTRAL VALLEY PROJECT WATER ALLOCATION: FRIANT DIVISION

The water obtained from the CVP comes from the diversion and storage of water from the San Joaquin River behind Friant Dam. The total available water on the San Joaquin River has been estimated at 2,200,000 AF. Of that, 800,000 AF have been designated as Class I supply (Bureau of Reclamation, 2005). Class I supply is considered to be dependable in most years with shortages only in very dry years. Class II water is in excess of Class I and is therefore much less dependable. FID has a contract with the United States Bureau of Reclamation for 75,000 AF of Class II water from this source (Bureau of Reclamation, 2005). The agreement between the City and FID requires the District to make available to the City a proportional share of all surface water available to the District although it does not allow the City to directly receive FID's CVP supplies. Therefore, FID is required to make a like amount of Kings River (or any

other surface) water available to the City for its proportional share of Class II CVP supplies. FID's Class II contract has received an average 13,577 AFY with the actual number ranging from zero to the full 75,000 AF depending upon the nature of each water year over that period. Table 4-1 lists the projected surface water volume through 2040.

4.1.3 GARFIELD WATER DISTRICT

GWD is located north of the City with a portion of the District in the City's SOI. The GWD holds a Class I CVP contract for 3,500 AFY. With half of GWD within the City's SOI, an estimated 1,750 AFY is expected to be added to the City's supply upon development. As noted in the UWMP, the first portion of GWD supplies is not anticipated to be available to the City until 2025, with the total 1,750 AFY not accounted for in the supply totals until 2040.

4.1.4 INTERNATIONAL WATER DISTRICT

IWD is located east of the City's SOI within the general plan's boundary. The IWD holds a Class I CVP contract for 1,200 AFY. The City's General Plan designates a portion of the District's area as industrial and residential use. At build-out it is estimated that the entire 1,200 AFY supply will be added to the City's supply. As noted in the UWMP, the first portion of IWD supplies is not anticipated to be available to the City until 2030, with the total 1,200 AFY not accounted for in the supply totals until 2040.

4.2 SUPPLY FROM STORAGE

Since 2004, the City has been storing water in the aquifer to create a stable source of supply over the years. The City has been working with FID to recharge surface water, using the City's contracted shares of capacity in FID's Waldron Banking Facility and Boswell Groundwater Banking Facility, to build up credit in those facilities which allows for annual water withdrawals, on an as-needed or as-requested basis. The surface water banked includes portions of FID's Kings and CVP supplies and may in the future also include other surface water supplies that FID is able to secure on the spot market. Recharged water is purchased under separate agreements with FID and is not included in the surface water totals in the previous section, so this is truly a separate water supply. This process is fully explained in the UWMP.

Two banking facilities, the Waldron Banking Facility (Waldron) and Boswell Groundwater Banking Facility (Boswell), have been constructed in central Fresno County. The City entered into an agreement with FID to participate in the financing of the construction of a dedicated water banking facility called the Waldron Banking Facilities. The City is entitled to receive up to ninety percent (9,000 AF) of the annual yield. The City and FID have entered into a similar agreement regarding the Boswell Groundwater Banking Facility whereby the City will have access to up to 4,500 AFY of additional surface water supplies. The recharged water will be "banked" for future recovery during dry periods or to accommodate planned growth.

The City has created a recharge plan accounting for historic variations in surface water supplies that will allow it to withdraw an annual 13,500 AF, the maximum withdrawal allowed under the City's agreements with FID. This is considered a firm supply because the contract allows for the City to purchase water at market cost should there be no yield in a given year. The 13,500 AF maximum annual withdrawal is built into the water supply projections in the UWMP for each year over the planning horizon.

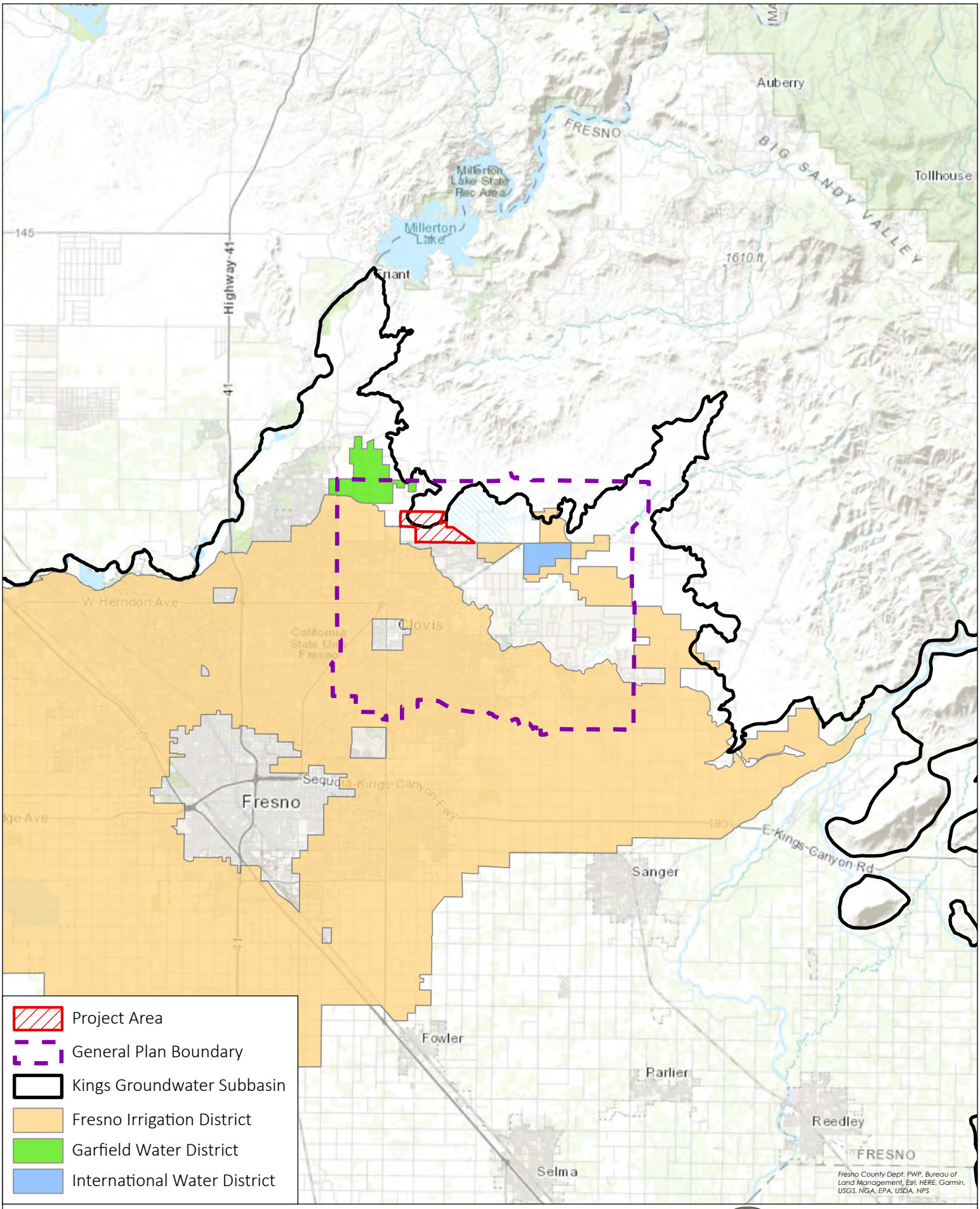

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Figure 4-1: Irrigation and Water Districts

Water Supply Assessment- Vista Ranch

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4.3 GROUNDWATER

The City is located within the Kings Groundwater sub-basin, a part of the Tulare Lake Hydrogeologic Basin as described in the Department of Water Resources Bulletin 118 (Department of Water Resources, 2003). The groundwater basin is in overdraft and has been for many years. However, it has not been adjudicated.

Chapter 6 of the UWMP discusses a sustainable groundwater yield for the service area and concludes the sustainable yield to be 9,400 AFY, as discussed in greater detail in the WMP. While the North Kings Groundwater Sustainability Plan (NKGSP) has been written and adopted, it does not yet include a firmer approximation of sustainable yield, although development of one is anticipated. The sustainable yield from the UWMP and WMP has been used for this assessment.

4.4 RECYCLED WATER

Most of the City's wastewater flow is treated at the Regional Water Reclamation Facility, located southwest of the City of Fresno on Jensen Avenue. In 2009, the City of Clovis completed a new Water Reclamation Facility (WRF). In 2020, the WRF produced approximately 2,496 AFY. Of that total, 28 percent was recycled for mostly landscape and agricultural irrigation, with the remainder being discharged to FID's Fancher Creek for agricultural irrigation.

Ultimately the WRF will be expanded to be able to treat 8.4 MGD, or 9,400 AFY, and will make a substantial contribution to the City's overall water resources. According to the 2020 UWMP, recycled water is used for irrigation of public and private landscape within the service area. Areas receiving or planned to receive recycled water include the Freeway 168 corridor between Shepherd and Sierra Avenues, the existing Clovis Community Medical Center campus, and multiple City parks and landscape areas.

Landscape irrigation will continue to be the main use of recycled water in the future. All public landscape areas within three-quarters of a mile of the distribution system are considered potential recycled water use areas. Clovis Unified School District is evaluating the use of recycled water for its landscape areas. Caltrans has expanded their use of recycled water along State Route 168 from Armstrong Avenue west to Sierra Avenue. Concurrent with the Project's development, the City will expand its use of recycled water and broaden its range of beneficial uses to potentially include irrigating the public landscape space to be developed with the Project.

To affect that increase in use, the City now requires all new development of public landscape near recycled water transmission lines to use recycled water. Additional actions include extending the recycled water distribution system to discharge at groundwater recharge facilities and reducing the cost of recycled water. The UWMP indicates planned use of recycled water supply will be 9,400 AFY by 2040 (UWMP Table 6-13). A 30-inch recycled water transmission main exists in North Temperance Avenue which bisects the proposed Project area. With a planned[4] recycled water transmission main in East Shepherd Ave, it is possible this Project may use recycled water for landscape irrigation, but the City will make final determination of that at a later date. Additionally, there are planned 6-inch and 8-inch recycled water transmission mains within the Project area.

4.5 EXCHANGES

Water exchanges, transfers, and water banking allow purveyors to manage demand and supply variability by ensuring water will be available for the near future. The majority of the City's wastewater is treated at

[4] As noted in the City's 2018 Recycled Water Master Plan

the RWRF. Under an agreement with FID, the City of Fresno receives 0.92 AF of Kings River surface water in exchange for each two AF of reclaimed water produced by RWRF (46 percent exchange). Clovis is in discussions with FID, and potentially the City of Fresno, to appropriately allocate Clovis' pro-rata share of the treated water. This water is limited by agreement to being used for groundwater recharge activities.

4.6 WATER SUPPLY SUMMARY

The five sources discussed above make up the City's water resources. These are tabulated overall for 2025 and for each subsequent 5-year period through 2040 in Table 4-1.

The City's overall water resources are projected to increase from 50,739 AFY in 2025 to 74,650 AFY in 2040. Nearly all this increase will come from increasing surface water resources from 18,039 AFY in 2020 to 39,400 AFY in 2040. The mix of water supplies the City plans to use to meet these demands is changing over time and, while the surface water supplies will be the primary source, a mixture of groundwater and supply from storage will be used to meet demands.

Table 4-1. Water Supplies – Normal Year (UWMP Tables 6-12 and 6-13)

WATER SUPPLIES – NORMAL YEAR (As shown in UWMP Tables 6-12 and 6-13)				
WATER SUPPLY	PROJECTED WATER SUPPLY (AF)			
	2025	2030	2035	2040
Groundwater [1]	11,429	10,753	10,076	9,400
Surface Water [2]	22,160	27,584	32,508	39,400
Supply from Storage (Waldron and Boswell facilities)	13,500	13,500	13,500	13,500
Recycled Water	3,100	5,500	6,300	9,400
Transfers (GWD and IWD)	550	1,600	2,650	2,950
Total:	50,739	58,937	65,034	74,650

Notes:

[1] Reasonably available volume shows a steady reduction in reliance on groundwater supply, as planned, to the sustainable yield volume in 2040; discussed in greater detail in the UWMP.

[2] Surface water quantities shown in greater detail in the UWMP.

5 NORMAL YEAR WATER OPERATIONS

This section evaluates the ability of the City to meet the overall water demands during normal water years. A normal year is a year, or average range of years, that most closely represents the average water supply available to the City. In this case, the normal year reflects the overall water supply summary discussed in Section 4.

This Chapter relies on information taken from Sections 6 and 7 of the UWMP. Table 5-1 compares the City's water demands and compares them with the normal year water supplies (see Table 4-1) for the 5-year increments the Project is anticipated to be constructed, and through 2040, as shown in the UWMP. As shown, total supplies would exceed total demands. Adequate supplies are available to serve the City and its water customers in normal rainfall years such as those discussed in this section. The excess water supply is adequate to meet the estimated Project water demands.

Table 5-1. Comparison of Normal Year Supplies and Demands

COMPARISON OF NORMAL YEAR SUPPLIES AND DEMANDS				
CONDITION	WATER SUPPLY (AFY)			
	2025	2030	2035	2040
Water Demand	39,737	42,824	46,422	52,598
Water Supply	50,739	58,937	65,034	74,650
Excess/Shortage	11,002	16,113	18,612	22,052

6 SINGLE-DRY AND MULTIPLE-DRY YEAR WATER SUPPLIES

This section evaluates the availability of City water supplies during single-dry and multiple-dry water years, based on Project buildout in 2035. Numerous factors will work to change the relative quantities of water the City receives from its several water sources. Since each of these has a different reliability in dry years, the overall water supply reliability will change over time. The following sections discuss how this will occur.

During a single-dry year, surface water allotments are anticipated to be reduced by as much as 66 percent for Kings River surface water supplies, and CVP Class II supplies are eliminated completely in dry years. In the future, as the City becomes more reliant on surface water supplies, the impact of surface water reductions in dry years will be more significant.

A multiple-dry year period represents the lowest average supply available to the Project for a consecutive five-year period. This analysis is referred to as a "multi-dry" condition in the UWMP. The WSA analysis is based on the five consecutive driest years of record for the Project's surface water supplies, which were water years 2011/12 through 2015/16.

6.1 WATER YEAR EFFECTS ON WATER SOURCES

6.1.1 KINGS RIVER SURFACE WATER

Both the single-dry and multiple-dry analyses are most affected by the variations in Kings River entitlement in dry years. FID's entitlement does not vary directly in proportion to overall annual runoff; rather it favors FID versus all the other Kings River diverters. When river flows are low due to slow runoff, low annual precipitation or both, FID's share of the daily river flow increases.

The effect of this is that FID's entitlement, as a percentage of its average entitlement, is higher than the overall water year percentage flow, for virtually any below-average water year. As noted in the UWMP, the anticipated share of Kings River water is shown as 32,100 AFY (UWMP Table 6-4) in 2040 for an average water year. As discussed in the UWMP, the City has recently executed a contract with FID for development of a new firm water supply starting at 1,000 AFY in 2020 and increasing to a maximum of 7,000 AFY by 2045 and thereafter. This new supply will not have the variability of the existing supply based on water year type.

6.1.2 FRIANT CVP SURFACE WATER

Over the period of 1986 through 2016, the average Class II allocation has been 38 percent of the contracted amount. However, Class II supplies are particularly subject to the water year type. However, these supplies are relatively small and would not have a significant impact on the total supply. While Class I entitlements do not currently affect the City's FID supplies, they will affect the future-year GWD and IWD entitlements. Class I allocations in the five multiple-dry years were 0 percent of the contracted amount for all five years.

6.1.3 SUPPLY FROM STORAGE

The contract for the Waldron facility allows annual withdrawals of up to approximately 9,000 AFY, while the Boswell Facility allows up to 4,500 AFY. According to the UWMP, the combined withdrawal limit from the two facilities is 13,500 AFY. In any year where surface water deliveries are substantially limited, the City would want to use these resources to the limit.

A related matter is how contributions are made to supply storage. Whereas in normal years the City is making deposits to both facilities, in a drier year those contributions would be reduced or halted since the surface supplies necessary for the deposits would not be available. Since the deposits come from surface

water resources not counted in the City's water balance, being acquired under separate FID agreements, the curtailment of deposits does not reduce the City's water demand.

6.1.4 GROUNDWATER

As of the preparation of the 2020 UWMP, the City of Clovis obtains groundwater from more than 30 wells, located throughout the service area. The total well production is estimated at 37,290 gallons per minute.

According to the UWMP, the City aims to reduce its direct groundwater consumption whenever possible. Most of the City's water demands will be met by a combination of surface water and supplies from storage, in water years when those two resources are sufficient to meet demands. In drier years, when surface water supplies are limited, the City will pump groundwater, potentially beyond the 9,400 AFY accounted for in a normal year, to make up the shortfall but not to an unsustainable level as discussed in the NKGSP. The City will also recharge surface waters when available to allow for additional groundwater pumping when needed.

Planning to make that objective possible is very important, as Chapter 6 of the UWMP states that the sustainable groundwater supply in the City service area is 9,400 AFY, for normal, dry, and multi-dry years. For the time being, there is no restriction against pumping groundwater above the sustainable aquifer yield; however, the NKGSP indicates the City must sustainably use groundwater.

This WSA uses 9,400 AFY as the sustainable groundwater pumping amount, as stated in the UWMP. Due to the very large size of the aquifer underlying the City, available groundwater is not quickly affected by the type of water year. Anticipating a mix of wet and dry years similar to what has been historically seen, this WSA does not reduce available groundwater in dry or multiple-dry years; however, the City will be prioritizing use of other supplies over groundwater when possible.

6.1.5 RECYCLED WATER

Recycled water production, being tied directly to indoor water use, does not vary significantly with the water year type, and is not adjusted from normal for this analysis.

6.2 CHANGES IN WATER SOURCE RELIABILITY OVER THE PLANNING HORIZON

In 2020, surface water made up 58 percent of the City's direct water supply. In 2035, the surface water supply is planned to be 53 percent of the total while the supply from storage will have increased to 18 percent in a normal year. Groundwater will remain an important component of the water supply in the near future.

This means the City's reliance on surface water supplies, either directly used or pumped from subsurface storage, will have increased to 71 percent of the total. While there is a margin of normal year supply available over planned demand over the entire planning horizon, some provisions may have to be made for additional reliable storage to account for such a large portion of surface water being subject to water year variability. See the reliability analysis in Section 6.3 following.

6.3 SUMMARY OF SINGLE-DRY AND MULTIPLE-DRY YEAR RELIABILITY OVER THE PLANNING HORIZON

Supply for dry years would be drawn from a combination of Kings River surface water, supply from storage, groundwater, and recycled water. As shown in the UWMP, it is anticipated that surface water supplies from the FID Firm Water Agreement would still be available during drought years. Other firm water supply sources are groundwater, banked water, and recycled water, all of which are considered

resilient against drought compared to surface water supplies while still being able to use previously banked groundwater supplies from the Waldron and Boswell facilities. Project demand was assumed to be constant across all water years.

The supplies that would be available during single-dry and multiple-dry years in 2035 (at assumed Project buildout) are summarized in Table 6-1; this is a reproduction of the data from the UWMP for reference, see Table 8-1 for a comparison including the Project demands. The City has a Water Shortage Contingency Plan (WSCP) (Provost & Pritchard Consulting Group 2021) in place that could be partially or fully implemented if needed or mandated. The 'demand with conservation' values are reduced to reflect implementation of various stages of the WSCP, as discussed in the UWMP.

Table 6-1. Dry Year Supply and Demand Comparison in 2035 (UWMP Tables 7-2, 7-3, and 7-4)

DRY YEAR SUPPLY AND DEMAND COMPARISON IN 2035 (As shown in UWMP Tables 7-2, 7-3, and 7-4)						
SCENARIO	SINGLE-DRY YEAR [1]	MULTIPLE-DRY YEAR [2]				
		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Baseline demand	46,422	46,422	46,422	46,422	46,422	46,422
Demand with Conservation	40,957	42,840	40,200	37,028	33,353	44,176
Total Supply	47,233	60,330	57,958	52,625	47,233	64,141
Excess/<Deficit> in Supply	**811**	**13,908**	**11,536**	**6,203**	**811**	**17,719**
Excess/<Deficit> in Supply with Conservation	**6,276**	**17,490**	**17,758**	**15,597**	**13,880**	**19,965**
Note: Refer to the 2020 UWMP for calculation methodology details. Units: AFY						

6.4 CLIMATE-BASED RELIABILITY FACTORS

This WSA defers to the UWMP for consideration of the overall effects of climate change upon supply reliability. Climate change has been considered in the preparation of the UWMP.

7 OPERATIONAL RELIABILITY

The City's surface water entitlement does not accrue all at once during a given water year. Rather, the Kings River entitlement accrues daily throughout the year based on actual river runoff and the Kings River Water Association (KRWA) entitlement schedule. The daily nature of the Kings River supply is especially important early in the water year, which begins October 1. The very low river flows in October and November mean that supply is low, and the City must rely on other water supplies during those months. The relatively large supplies available from storage help mitigate the seasonal nature of the surface water supply, and these are further backed up by groundwater supplies equivalent to almost half the City's total annual demand. Additionally, the 2019 Cooperative Agreement allows for up to an additional 5,000 AFY of carryover, when available, which can help with seasonal supply.

The City has not had any issue with temporary water shortages to date. The City's WMP and UWMP indicate a need to increase their surface water and groundwater supplies to meet future demands and provide details on how much of each supply is needed compared to the existing supplies. The WMP also includes a Capital Improvements Program identifying capital projects that are necessary to acquire and facilitate the movement of current and future water supplies throughout the City's system in a reliable manner the City's adherence to their planning documents and consistent development of these water supplies and infrastructure is critical for the City's continued growth and development and will provide operational reliability into the future.

8 CONCLUSIONS

As summarized in Table 8-1, the City has adequate supplies to meet the needs of all the City's water customer's including the Project, in normal water years, over the 20-years planning horizon. However, the 798 AFY of water supply used for this project above the supply planned for this area will need to be replaced to support full buildout of the GP.

In the buildout year, if demand is as projected, the City will have sufficient water to meet dry year demands of all dry year types. Conservation measures, detailed in the Water Shortage Contingency Plan, have been developed that would mitigate possible shortfalls by reducing demand by approximately 15 percent. Evidence from the 2013 to 2015 drought suggests that those results, and more, are achievable. Additionally, as the City has surplus water supplies in normal years, short-term additional groundwater extraction in the single-dry and multiple-dry years is also planned as part of their water portfolio.

As discussed in Section 7, the City has plans to continue to acquire water supplies and construct infrastructure to supply current and future water users. Therefore, we conclude the City of Clovis has adequate water supplies to meet the needs of the City in normal, and multi-dry years given the previously discussed potential demand reductions and supply augmentations.

8.1 CONCLUSIONS INCLUDING ADDITIONAL WSAs

Since the 2020 UWMP was adopted, four WSAs have been prepared for the City, including this one. It is important to understand the cumulative impact of the additional demands associated with WSAs over and beyond the demands analyzed in the 2020 UWMP.

The demands in Table 8-1 include those demands noted in the UWMP (see Table 6-1 above), and the additional demands (above the UWMP) associated with the Project evaluated in this WSA, as discussed in Section 2.2. Only the "additional demand" is noted in the table below, as the rest of the demand was already accounted for in the UWMP. Similarly, the noted Excess/Deficit reflects the difference between these summated demands and the total supply noted in the UWMP and in Table 5-1, above. This approach accounts for the additional demands associated with the proposed land use type above the demands associated with the originally planned land use type. The analysis of this report results in two impacts of the Project:

- Near-term: there is an excess of supply in all conditions, even with the additional demands.
- Long-term: the WMP evaluated the City's build-out of the General Plan based on assumed land use densities. The Project increases the density of those areas with calculated demands documented in the WMP and develops into an area without water demands associated with it in the WMP. The impact of those increases equates to an additional water supply needed for the Project of 798 AFY.

Table 8-1. Summary of Project Water Supplies and Demands

SUMMARY OF PROJECT WATER SUPPLIES AND DEMANDS							
2020 UWMP SUPPLY AND DEMAND COMPARISON RESULTS	NORMAL YEAR (2035)	SINGLE-DRY YEAR	MULTIPLE-DRY YEAR				
			YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Excess/<Deficit> in Supply	18,612	811	13,908	11,536	6,203	811	17,719
Excess/<Deficit> in Supply with Conservation	--	6,276	17,490	17,758	15,597	13,880	19,965
ADDITIONAL DEMANDS ASSOCIATED WITH WSAs PREPARED SINCE 2020 UWMP							
Home Place Master Plan (Approved March 2021)	No Additional Demand Associated with WSA						
Tract 6205 SOI Expansion (Approved 2022)	256	256	256	256	256	256	256
Tract 6343 (Approved 2022)	79	79	79	79	79	79	79
Vista Ranch SOI Expansion (Approval Anticipated by Spring 2024)	439	439	439	439	439	439	439
Excess/(Deficit) in Supply including Additional Demands from Approved WSAs	**17,838**	**37**	**13,134**	**10,762**	**5,429**	**37**	**16,945**
Excess/(Deficit) in Supply with Conservation including Additional Demands Approved WSAs [1]	**--**	**5,618**	**16,832**	**17,100**	**14,939**	**13,222**	**19,307**

Units: AFY

[1] Per the UWMP, conservation efforts will reduce the demands by an estimated 15%, which is reflected in the values in the table.

9 REFERENCES

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Appendix L

Water Infrastructure

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MEMORANDUM

To:	Chris Kelly, PE City of Clovis
From:	Nicholas Jacobson, PE
Subject:	Water Infrastructure Investigation for Vista Ranch and Surrounding Areas
Date:	April 12, 2024

REGISTERED PROFESSIONAL ENGINEER
NICHOLAS DAVID JACOBSON
No. 84,909
Civil
STATE OF CALIFORNIA

DATE SIGNED 4/12/2024

Provost and Pritchard Consulting Group ("P&P") has prepared this memorandum summarizing the findings of our investigation into the water system infrastructure required to serve a proposed development which is bounded, in general, by Shepherd Avenue (to the south), Behymer Avenue (to the north), Sunnyside Avenue (to the west), DeWolf Avenue (to the east), and the Big Dry Creek Reservoir.

Project Information

It is our understanding that the City of Clovis (City) is contemplating a Sphere of Influence (SOI) expansion including portions of both the Northeast Triangle and the Northern Rural villages, including two distinct components (Project):

- A proposed master planned community, Vista Ranch, including approximately 509-acres with a variety of land uses such as mixed-use, residential, schools, and public facilities.
  - The anticipated number of dwelling units is 3,286.
  - The development is mostly within the Northeast Triangle, but all portions west of Armstrong Avenue (alignment) are within the Northern Rural village.
  - The development timeline for the Project spans from 2024 through 2035.
- The additional surrounding areas to be included in the SOI expansion include lands north and west of the Vista Ranch proposed development, totaling approximately 414-acres with proposed land uses including 244-acres of rural residential and 170-acres of medium density residential.
  - The rural residential area noted above is currently developed to that use and generally included in the Fresno County Service Area No. 51 boundary.
  - There is no timeline associated with this area, but it is assumed it will be developed or otherwise incorporated into the City's water system after the Vista Ranch community.

A portion of the areas within the SOI expansion were originally planned for a different mix of land uses than proposed and therefore will have a potentially different impact on the City's water system in terms of both supply and infrastructure needs. Some areas have not been included in planning documents to date and will therefore have additional impacts to the City's water system.

The Project is located between Sunnyside and Fowler Avenues, Shepherd and Behymer Avenues, and the Big Dry Creek Reservoir. This area is within the City's water system Pressure Zone No. 2 (PZ2) and outside the Fresno Irrigation District (FID) boundary, which means the Project does not have access to water from the Kings River as a supply source. Overall water supply will be provided from the City of Clovis municipal system.

The Project area was included in the 2020 Urban Water Management Plan (UWMP), however a portion of the previously mentioned, "Additional Areas" were not included (approximately 57.65 acres). In addition, the Northeast Triangle village was included in the City's 2018 Water Master Plan Update, Phase III (WMP) but the Northern Rural village was not. Additionally, the proposed layout of the streets (where water mains would be located) within Vista Ranch differs from the assumed layout of water mains in the WMP. As a result, it is necessary to evaluate the existing infrastructure and alternatives for construction of transmission mains to provide sufficient supply (including pressure and velocity evaluations) to the Project without compromising the City's ability to provide water supply to existing customers.

Assumptions

The following assumptions apply to this investigation and are separated by phase:

Phase 1

- The City requires a minimum of two points of connection to the existing water system.
- The developer is responsible for sizing all water mains and other water related infrastructure internal to the Project and subject to City review and approval .
- The Clovis Fire Department (CFD) requires a minimum fire flow of 1,800 gallons per minute (gpm) and a minimum residual pressure of 35 pounds per square inch (psi), per CFD Standard #2.3.
- Existing infrastructure sizes based on GIS data from the City (see Figure 1).
- Recycled water will not be applied to public landscaping surrounding the Project.
- Infrastructure internal to and along frontages of tract maps (TMs) 6200, 6205, and 6343 will be constructed prior to development of the Project.
- WMP capital improvement project pipelines, P-3 (Sunnyside Ave. from Shepherd Ave. to Teague Ave.), P-4 (Sunnyside Ave. from Teague Ave. to Nees Ave.), will be constructed prior to development of the Project.
- Existing and proposed Water system demands will be based on unit demand from the *Water Master Plan Update Phase III - Facilities Plan* (Provost & Pritchard, 2018).
- The analysis will reflect the demands associated with existing developments in the area based on actual land use; undeveloped areas are modeled utilizing land use designations specified in the General Plan. Proposed demands will be modeled using the above referenced land use designations rather than those shown in the General Plan. In addition, it is assumed that TMs 6200, 6205, and 6343 will be built prior to the Project, therefore, the analysis also reflects the demands associated with TMs 6200, 6205, and 6343.
- Perrin Road, west of Fowler Avenue, is not anticipated to be continuous, therefore a water main has not been assumed to be constructed in that portion of the alignment.
- Phase 1 is understood to include the areas related to the Project that are south of the existing Fresno Metropolitan Flood Control District (FMFCD) spillway that runs through the Project area. The analysis assumed the transmission grid main infrastructure shown as existing and future (See Figures 2, 3, and 4) are under construction and are assumed to be operational for the purposes of this modeling effort.
- The system is operating with all valves open.
- System velocities should not exceed 10 feet per second (fps).
- For this study it is assumed that the first phase of the T-9 site is constructed, including 3.5 million gallons of water storage and associated booster pump capacity.

Phase 2:

All assumptions stated previously for Phase 1 apply to Phase 2. Assumptions unique to Phase 2 are stated below:

- WMP capital improvement project pipeline, P-19 (Behymer Ave. from Baron Ave. to Sunnyside Ave.) will be constructed prior to development of the Project. In addition, a 12-inch distribution main connecting P-19 to the northwestern portion of the proposed Project infrastructure will be constructed and operational prior to Phase 2 being initiated. This additional main is required to deliver maximum day demand plus fire flow (MDD+FF) to Phase 2 of the Project.
- Phase 2 is understood to include the areas related to the Project that are north of the existing Fresno Metropolitan Flood Control District (FMFCD) spillway that runs through the Project area. The analysis assumed the transmission grid main infrastructure shown as existing and future (See Figures 5, 6, and 7) are under construction and are assumed to be operational for the purposes of this modeling effort. Phase 2 would also include the infrastructure internal to the Project included with Phase 1 as shown in Figures 2, 3, and 4).

Phase 2 With Additional Areas

All assumptions stated previously for Phases 1 and 2 apply to “Phase 2 with Additional Areas”. Assumptions unique to “Phase 2 with Additional Areas" are stated below:

- Phase 2 was further analyzed to include additional areas adjacent to the Project that have existing land uses that include rural residential and agricultural. The City does not plan to change those land uses, at this time, but is interested in understanding the impacts of adding approximately 313 acres of medium density residential use to the areas for future planning purposes. These areas are shown with yellow hatching. Figures 8, 9, and 10 show the hydraulic impacts of adding the demands associated with these land uses to the area.
- No layout information was available for the additional areas included in the analyses summarized in Figures 8, 9, and 10. Rather than make assumptions for infrastructure alignments to serve the additional areas, demands associated with the additional areas were inputted into the model at junctions located in the most northerly area closest to where the development is planned to occur.

This investigation will include analysis of whether the existing (or soon to be existing) water system, as described above and shown on the attached figures, will be sufficient to provide up to Maximum Day Demand (MDD) and also meet MDD+FF demands per the WMP requirements with the City’s Surface Water Treatment Plant (SWTP) in operation.

Water Demand

Potable water demands for the Project were estimated using land-use-based unit water demand factors from the WMP. Land use throughout the project area and additional areas included in this study vary and include those listed in Table 1.

A separate water supply assessment (WSA) was prepared by P&P. The WSA estimated water demands for the Project. For consistency, the demand estimates stated in the WSA were used for this analysis. For specifics surrounding Project water demands refer to Table 1 below.

Infrastructure

The Project is comprised of numerous parcels that are currently being utilized in several ways including: fallow land, commercial landscaping, agricultural land, and residential. Because of the limited existing backbone infrastructure in the area, this development will depend on the existing infrastructure in Shepherd Avenue being operational.

There is existing a 16-inch transmission main in Shepherd Avenue that fronts the entire Project from Fowler Avenue to DeWolf Avenue. South of Shepherd Avenue there are several mains that bring water to the

Project area. There are existing 16-inch transmission mains in both Armstrong and Temperance Avenues and 12-inch distribution mains in Fowler and Locan Avenues.

Water Supply

Urbanization within Clovis occurs both inside and outside the Kings River service area for Fresno Irrigation District (FID), therefore not all lands have access to this water source. Lands generally located south and west of the Enterprise Canal are within the Kings River service area and as such are entitled to an average annual allotment of approximately 2.24 acre-feet per acre (AF/ac). The Project lies outside of the Kings River service area for FID. The City adopted an ordinance requiring new development with demands exceeding the allotment to pay fees, so the City can acquire additional water supply to serve the development. The Project will need to pay for supplies for demands over and above the FID available supply for the Project area within FID and for all demands for the Project area outside FID, as shown below. Table 1 summarizes the additional supply required to serve the Project area. For additional details on water supply for the Project, refer to the WSA (Provost & Pritchard, January 2024) prepared for the Project.

Evaluation

The City has requested an investigation, utilizing the current City hydraulic model, to determine whether the proposed infrastructure in the vicinity of the Project (Figure 1) will provide adequate service during MDD and MDD+FF for several infrastructure scenarios including:

- Phase 1: analysis of the infrastructure required to deliver both MDD and MDD+FF for the Project area south of the existing FMFCD spillway
- Phase 2: analysis of the infrastructure required to deliver both MDD and MDD+FF for the Phase 1 area and the Project area north of the existing FMFCD spillway
- Phase 2 With Additional Areas: analysis of Phases 1 and 2 along with the adjacent additional project areas

As shown on Figure 1, infrastructure associated with Vista Ranch included the backbone infrastructure only. The analysis does not include the water mains internal to the individual neighborhood developments that will comprise Vista Ranch.

Table 1. Reconciliation of Surface Water Supply and Demand

Land Use Category	Area (ac)	Land Use Demand Factor (AFY/ac)	Annual Average Demand (AFY)	FID Entitlement (AFY)	Additional Supply Required (AFY)
Vista Ranch					
Low Density Residential	34.2	2.5	85.5	0	(85.5)
Medium Density Residential	217.8	2.2	479.2	0	(479.2)
Medium-High Density Residential	89.3	3.3	294.7	0	(294.7)
Very High Density Residential	15.7	7.3	114.6	0	(114.6)
Mixed Use	3.1	5	15.5	0	(15.5)
Neighborhood Commercial	12.7	2.9	36.8	0	(36.8)
Industrial	32.2	1	32.2		(32.2)
Open (No water use)	28.3	0	0.0	0	0.0
Park	34.5	3	103.5	0	(103.5)
School	19.3	2.8	54.0	0	(54.0)
Road (No water use)	22.3	0	0.0	0	0.0
Additional Areas					
Rural Residential	244.1	0.7	170.8	0	(170.8)
Medium Density Residential	169.9	2.2	373.7	0	(373.7)
Proposed Total	**923.4**		**1,760.5**	**0**	**(1,760.5)**

Maximum Day Demand Analyses

Phase 1

The hydraulic model analysis results indicate no pressure deficiencies internal to the Project. Minimum pressures during the MDD scenario are all above 40 psi. Pressures system wide are above 40 psi throughout the distribution system. Figure 2 summarizes the model results during the MDD analysis for Phase 1.

Phase 2

The hydraulic model analysis results indicate no pressure deficiencies internal to the Project. Minimum pressures during the MDD scenario are all above 40 psi. Pressures system wide are above 40 psi throughout the distribution system. Figure 5 summarizes the model results during the MDD analysis for Phase 2.

Phase 2 Plus Additional Areas

The hydraulic model analysis results indicate no pressure deficiencies internal to the Project. Minimum pressures during the MDD scenario are all above 40 psi. Pressures system wide are above 40 psi throughout the distribution system. Figure 8 summarizes the model results during the MDD analysis for Phase 3.

Maximum Day Demand Plus Fire Flow Analyses

Phase 1

The minimum pressure required during fire flow conditions (1,800 gpm) is 35 psi with a maximum velocity of 10 fps. The MDD+FF hydraulic model analysis results show residual pressures internal to the Project range from approximately 49 psi to approximately 56 psi (see Figure 3) assuming all 12-inch distribution mains (similar to what was planned for the area in the WMP). Available fire flow at the hydrants internal to the

Project exceed 5,575 gpm while maintaining at least 35 psi. Figure 4 shows the recommended minimum infrastructure to support Phase 1 of the Project.

Phase 2

The minimum pressure required during fire flow conditions (1,800 gpm) is 35 psi with a maximum velocity of 10 fps. The MDD+FF hydraulic model analysis results show residual pressures internal to the Project range from approximately 21 psi to approximately 54 psi (see Figure 6) gpm assuming all 12-inch distribution mains (similar to what was planned for the area in the WMP). Available fire flow at the hydrants internal to the Project exceed 1,439 gpm while maintaining at least 35 psi. Using only 12-inch distribution mains consistent with the layout shown provided by the City will not deliver the minimum flow and pressure to meet MDD+FF.

Model results show that, constructing a new 12-inch main in Behymer Avenue from Baron Avenue to the western most connection point in Vista Ranch along the Behymer Avenue alignment allows the distribution system to deliver adequate flow and residual pressure to meet City requirements (See Figure 7). With this additional connection to backbone infrastructure, the hydraulic model analysis results show residual pressures internal to the Project range from approximately 49 psi to approximately 56 psi during the MDD+FF scenario. Available fire flow at the hydrants internal to the Project exceeds 3,219 gpm while maintaining at least 35 psi with the upsized mains.

Phase 2 Plus Additional Areas

The minimum pressure required during fire flow conditions (1,800 gpm) is 35 psi with a maximum velocity of 10 fps. The MDD+FF hydraulic model analysis results show residual pressures internal to the Project range from approximately 21 psi to approximately 54 psi (see Figure 9) assuming all 12-inch distribution mains (similar to what was planned for the area in the WMP). Available fire flow at the hydrants internal to the Project exceed 1,437 gpm while maintaining at least 35 psi. Using only 12-inch distribution mains consistent with the layout shown provided by the City will not deliver the minimum flow and pressure to meet MDD+FF.

Model results show that, constructing a new 12-inch main in Behymer Avenue from Baron Avenue to the western most connection point in Vista Ranch along the Behymer Avenue alignment allows the distribution system to deliver adequate flow and residual pressure to meet City requirements (See Figure 10). With this additional connection to backbone infrastructure, the hydraulic model analysis results show residual pressures internal to the Project range from approximately 45 psi to approximately 55 psi during the MDD+FF scenario. Available fire flow at the hydrants internal to the Project exceeds 2,956 gpm while maintaining at least 35 psi with the upsized mains.

Conclusion

Based on information collected during this investigation and the City's adherence to recommendations from prior water supply planning efforts, the existing and planned water distribution system and recommended connections should be adequate to convey water supply to the Project to support anticipated demands from the Project. The modeling analysis indicates that the infrastructure needs for the Project vary by phase. Phase 1 of the Project may proceed with the existing infrastructure and the planned infrastructure as shown in Figure 4 and include:

- 12-inch mains internal to the Project in the Phase 1 area

If Phase 1 of the Project goes into construction prior to pipelines P-3 (Sunnyside Ave. from Shepherd Ave. to Teague Ave.) and P-4 (Sunnyside Ave. from Teague Ave. to Nees Ave.)being operational, the City will need to take action to ensure those pipelines are built and operational to avoid potential reliability issues in Zone 2.

Phase 2 of the Project would require the infrastructure shown in Phase 1 along with additional infrastructure shown in Figure 7 and would include:

- Infrastructure listed above as part of Phase 1
- P-19 (Behymer Ave. from Baron Ave. to Sunnyside Ave.)
- 12-inch distribution main in Behymer from east end of P-19 to northwest portion of Phase 2 of the Project

Infrastructure needs associated with Phase 2 and the additional areas would be the same as for Phase 2 (See Figure 10).

Additionally, a portion of the area of this study was not included in the WMP; however, it is understood, if it was, master planned water mains along the major road would have been included in the WMP and it is recommended water mains in major roads, along the Project's frontage be conditioned for construction with this Project. It is also understood construction of water mains along Fowler Avenue between Shepherd and Perrin Avenues and in Perrin Ave between Fowler Avenue and Vista Ranch may be delayed due to the existing development along those alignments.

Serving this Project should not negatively impact the City's ability to provide a supply and delivery of water to reasonably foreseeable users within the City assuming adherence to recommendations from prior water resources planning efforts. However, to understand the cumulative impacts to supplies and other major water infrastructure, the City should be tracking changes in demand as part of the development process in order to determine when projects with greater demand are offset by projects with demands lower than originally planned.

Respectfully,

Nicholas Jacobson

Enclosures:

- *Figure 1 – Existing Infrastructure*
- *Figure 2 – Vista Ranch Phase 1: Maximum Day Demand*
- *Figure 3 – Vista Ranch Phase 1: Maximum Day Demand Plus Fire Flow*
- *Figure 4 – Vista Ranch Phase 1: Recommended Master Plan Improvements*
- *Figure 5 – Vista Ranch Phase 2: Maximum Day Demand*
- *Figure 6 – Vista Ranch Phase 2: Maximum Day Demand Plus Fire Flow*
- *Figure 7 – Vista Ranch Phase 2: Recommended Master Plan Improvements*
- *Figure 8 – Vista Ranch Phase 2: With Additional Areas Maximum Day Demand*
- *Figure 9 – Vista Ranch Phase 2: With Additional Areas Maximum Day Demand Plus Fire Flow*
- *Figure 10 – Vista Ranch Phase 2: With Additional Areas Recommended Master Plan Improvements*

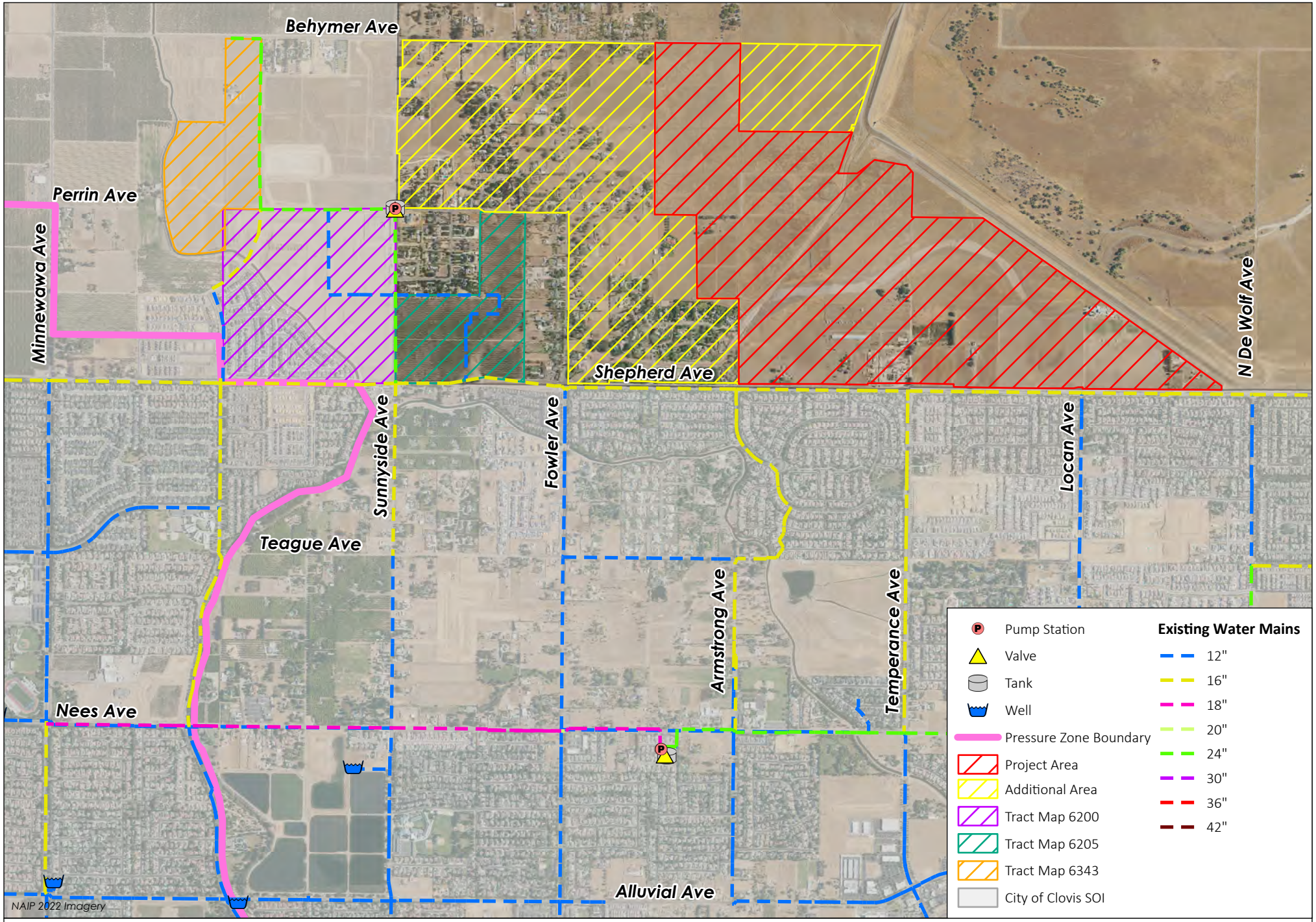

Figure 1: Existing Infrastructure

Vista Ranch

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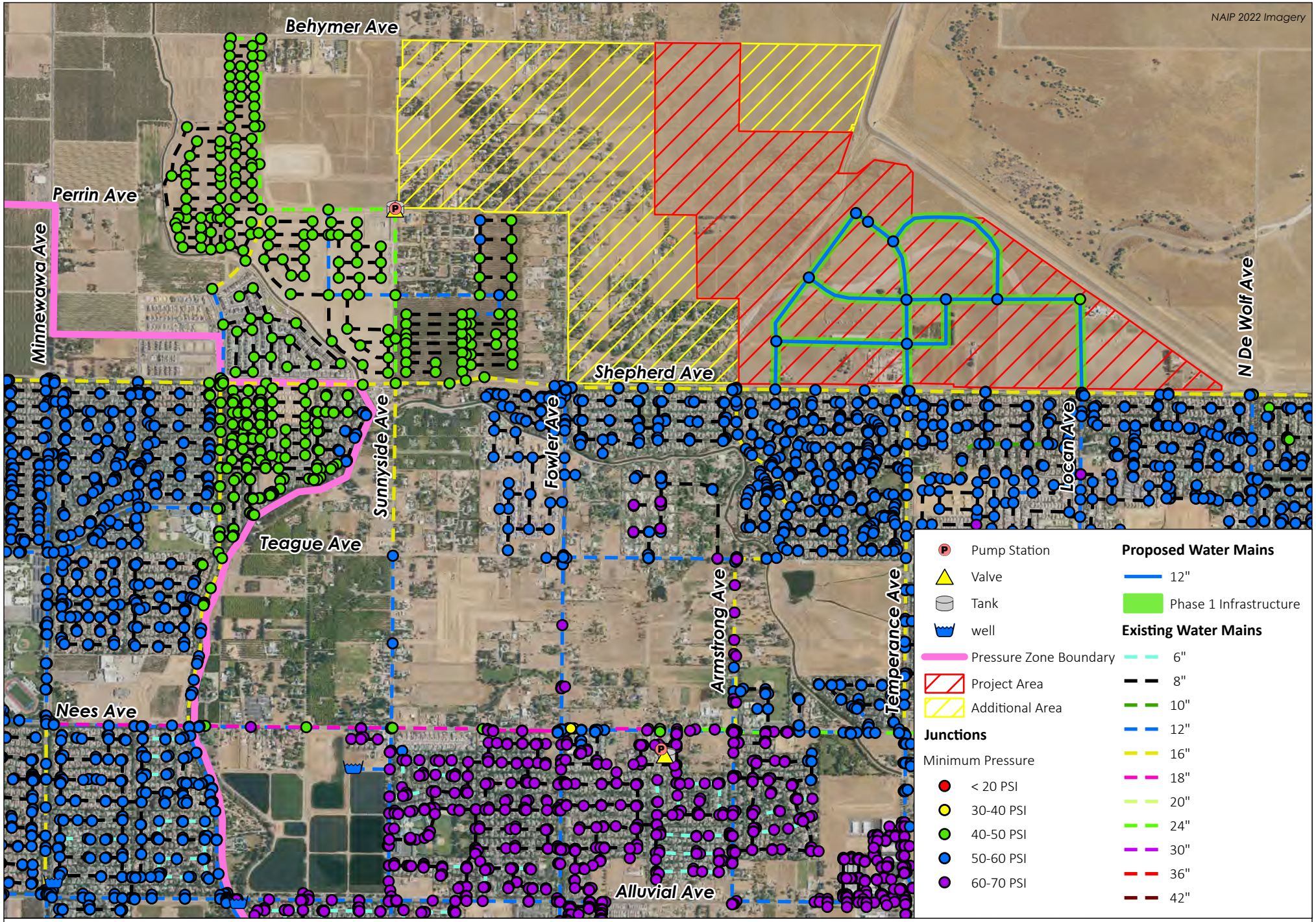

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Figure 2: Phase 1 Maximum Day Demand

Vista Ranch

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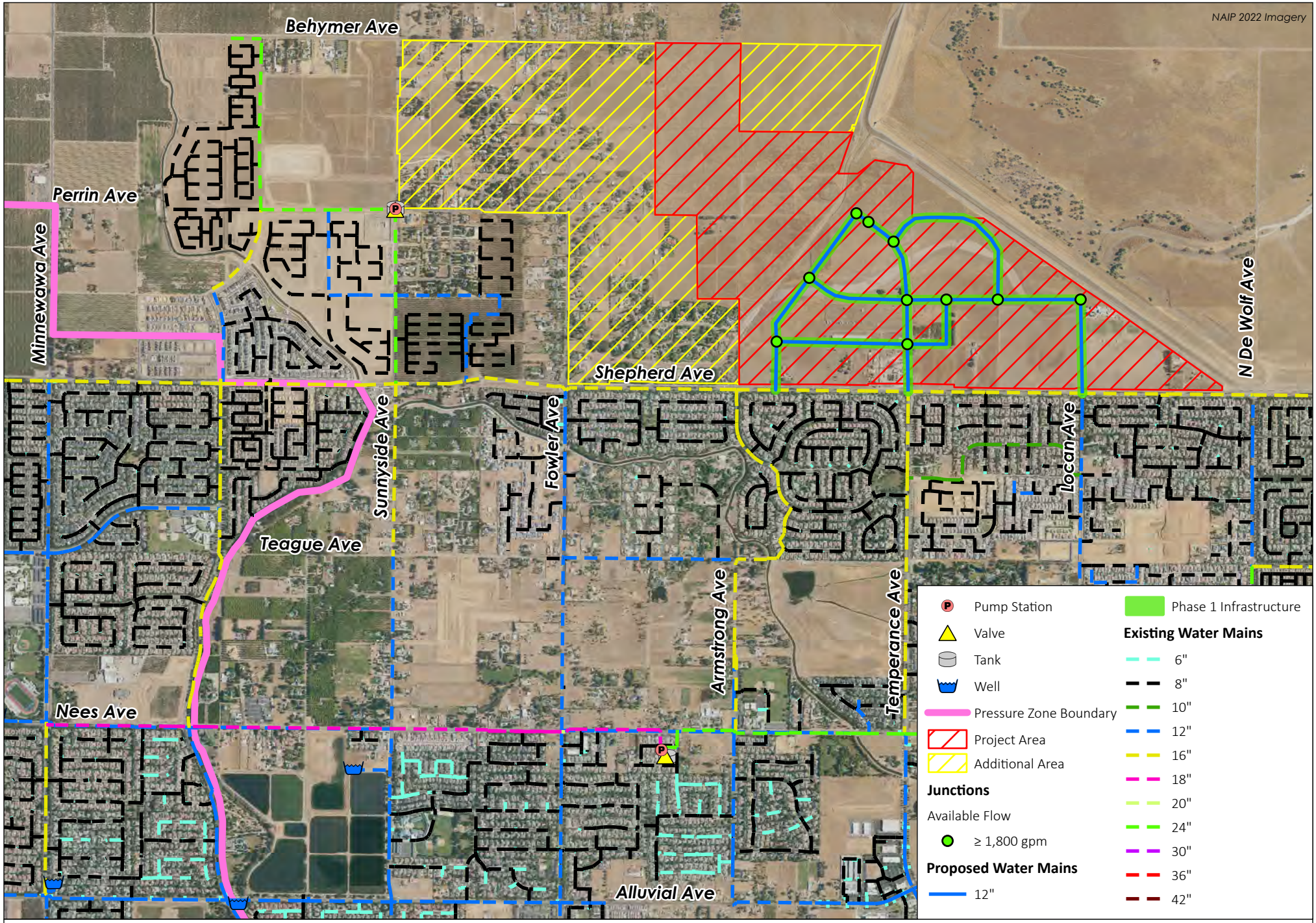

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Figure 3: Phase 1 Maximum Day Demand Plus Fire Flow
Vista Ranch

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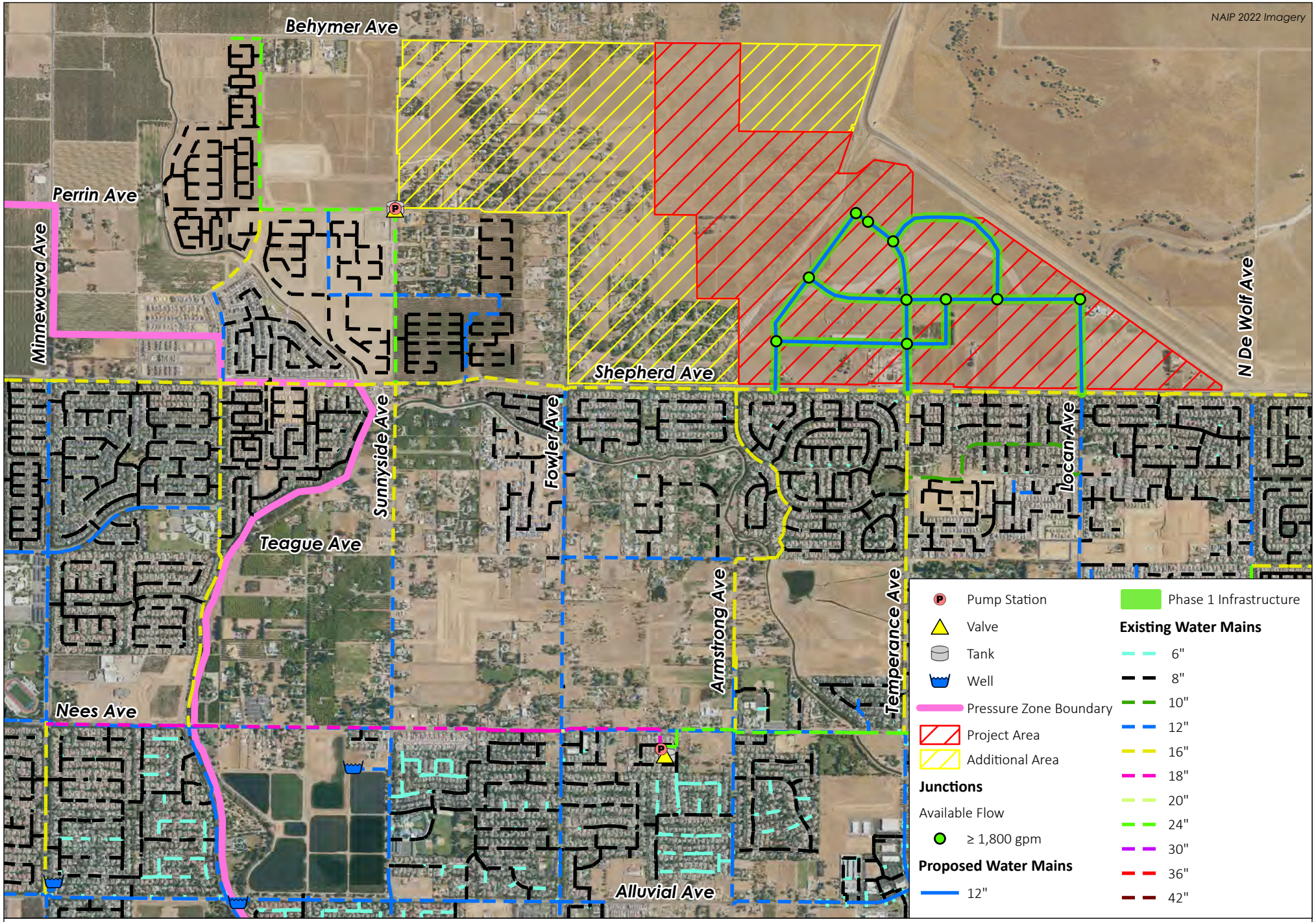

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Figure 4: Phase 1 Recommended Master Plan Improvements

Vista Ranch

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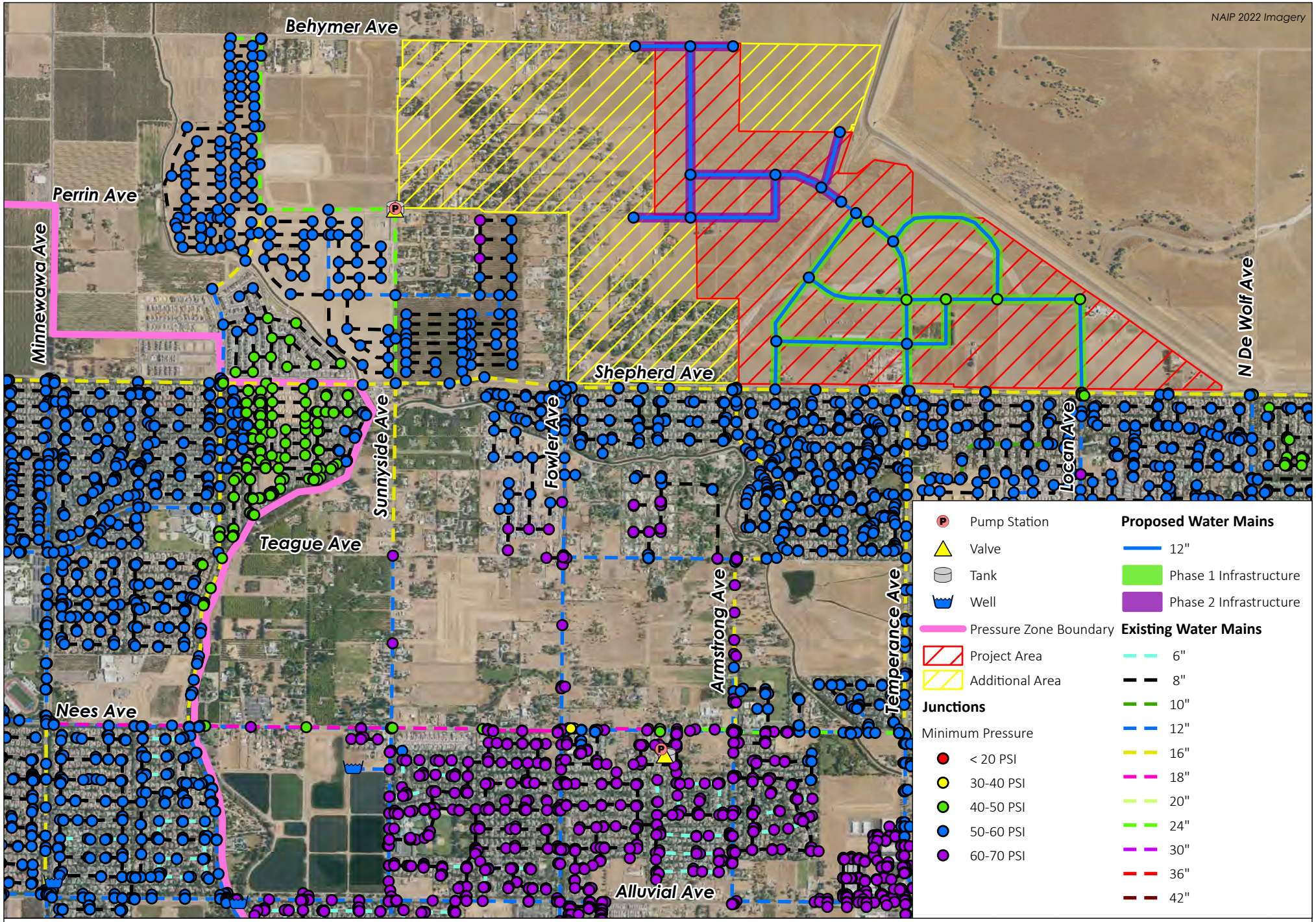

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Figure 5: Phase 2 Maximum Day Demand

Vista Ranch

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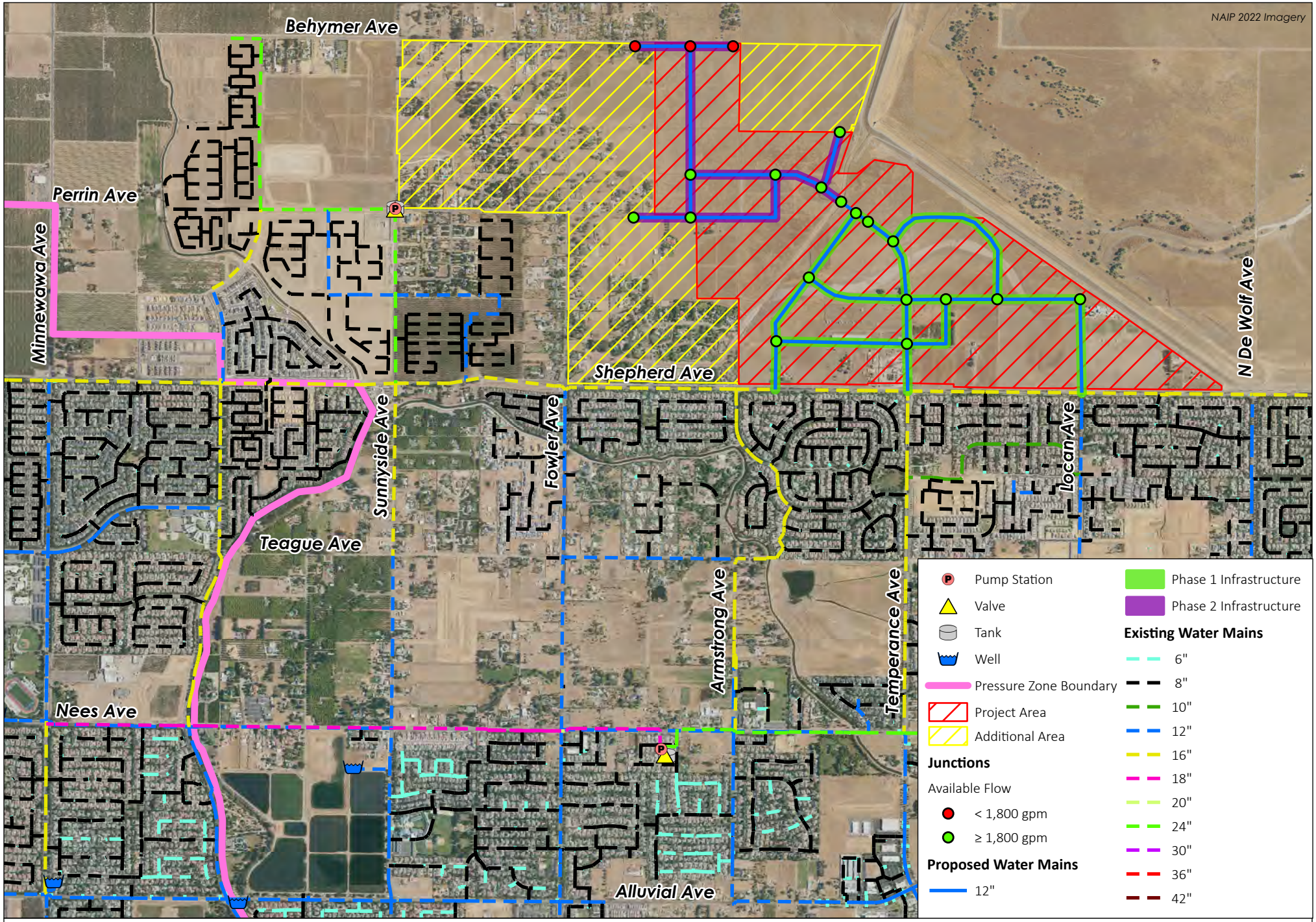

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Figure 6: Phase 2 Maximum Day Demand Plus Fire Flow

Vista Ranch

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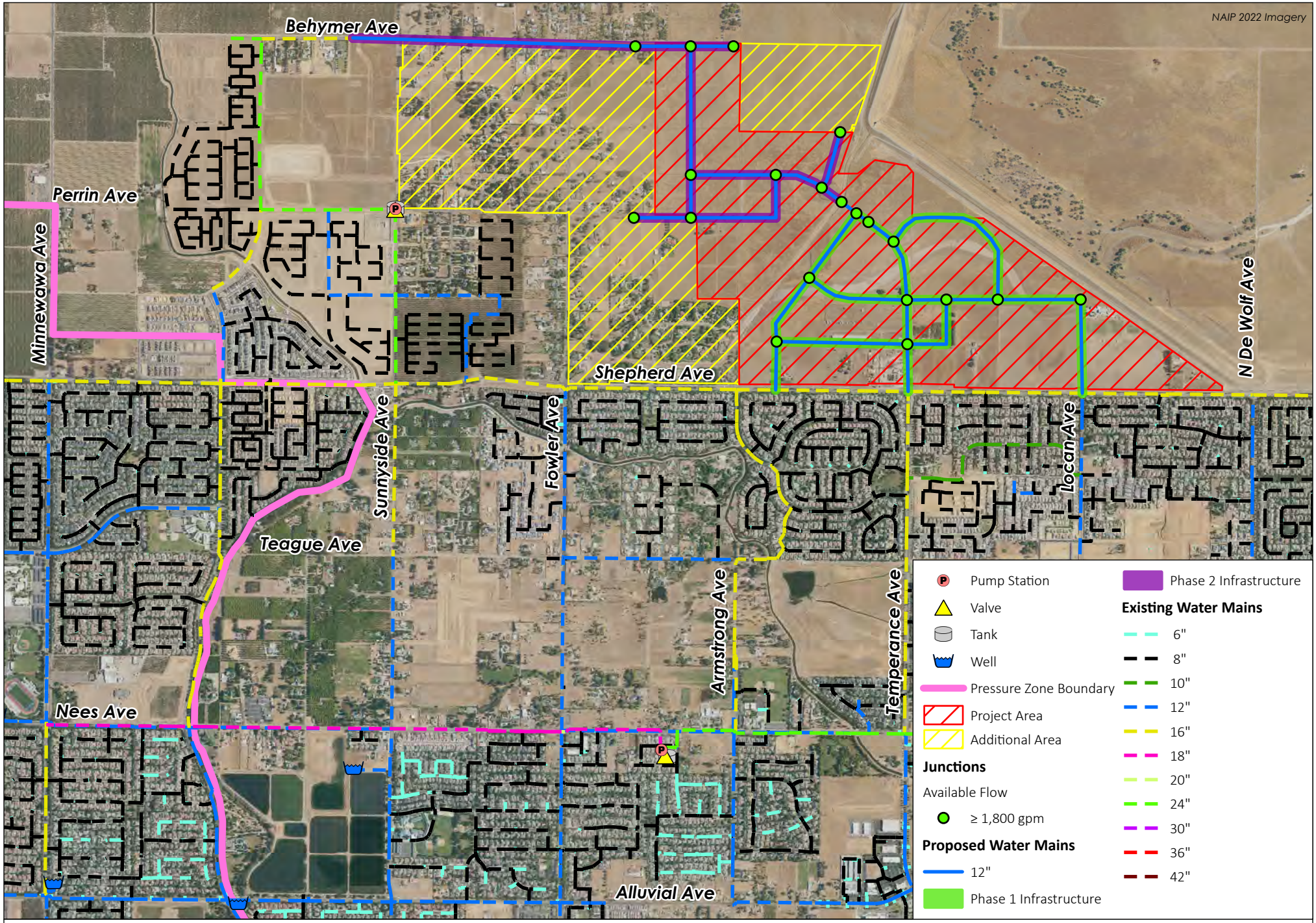

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Figure 7: Phase 2 Recommended Master Plan Improvements

Vista Ranch

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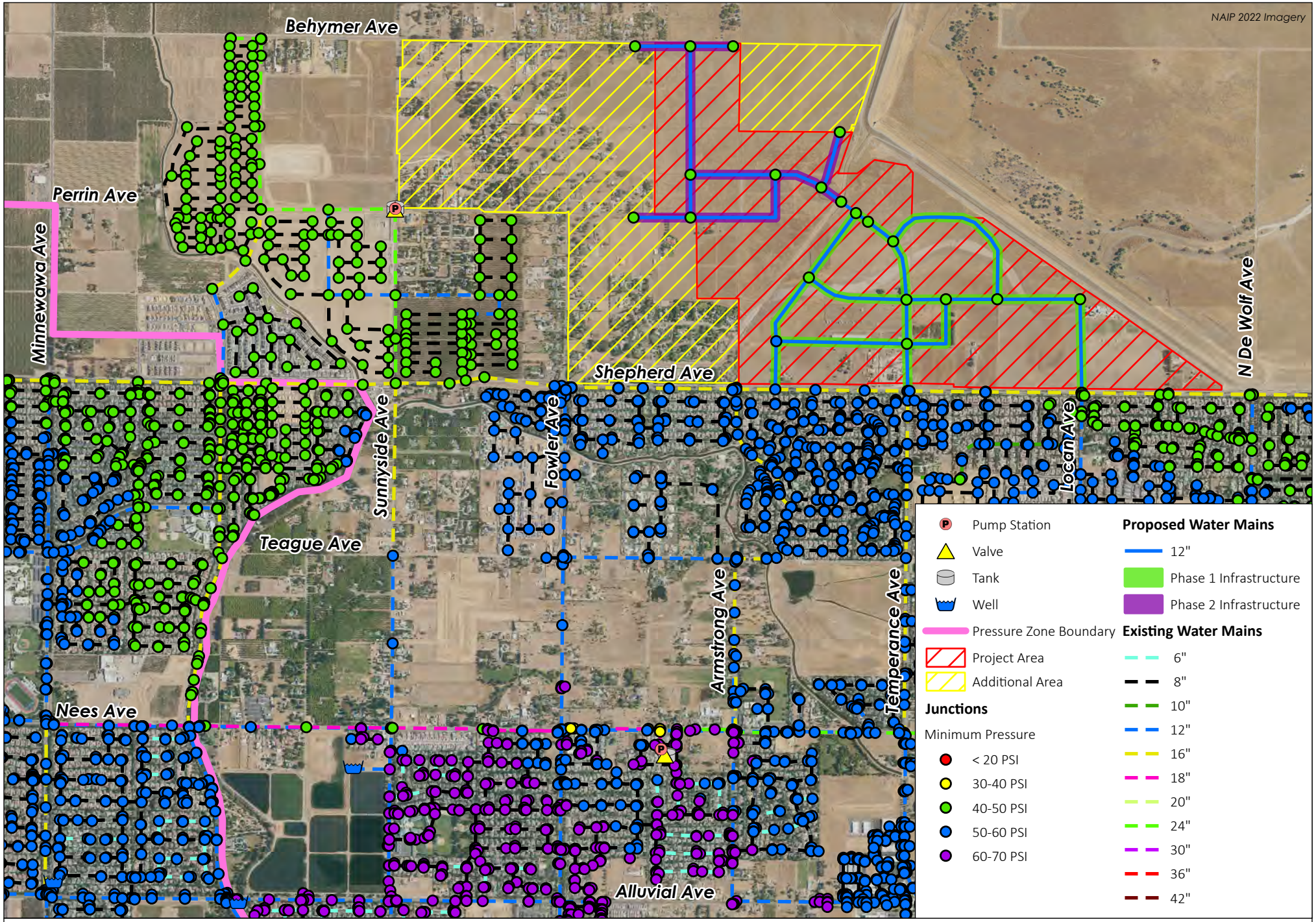

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Figure 8: Phase 2 With Extra Areas
Maximum Day Demand
Vista Ranch

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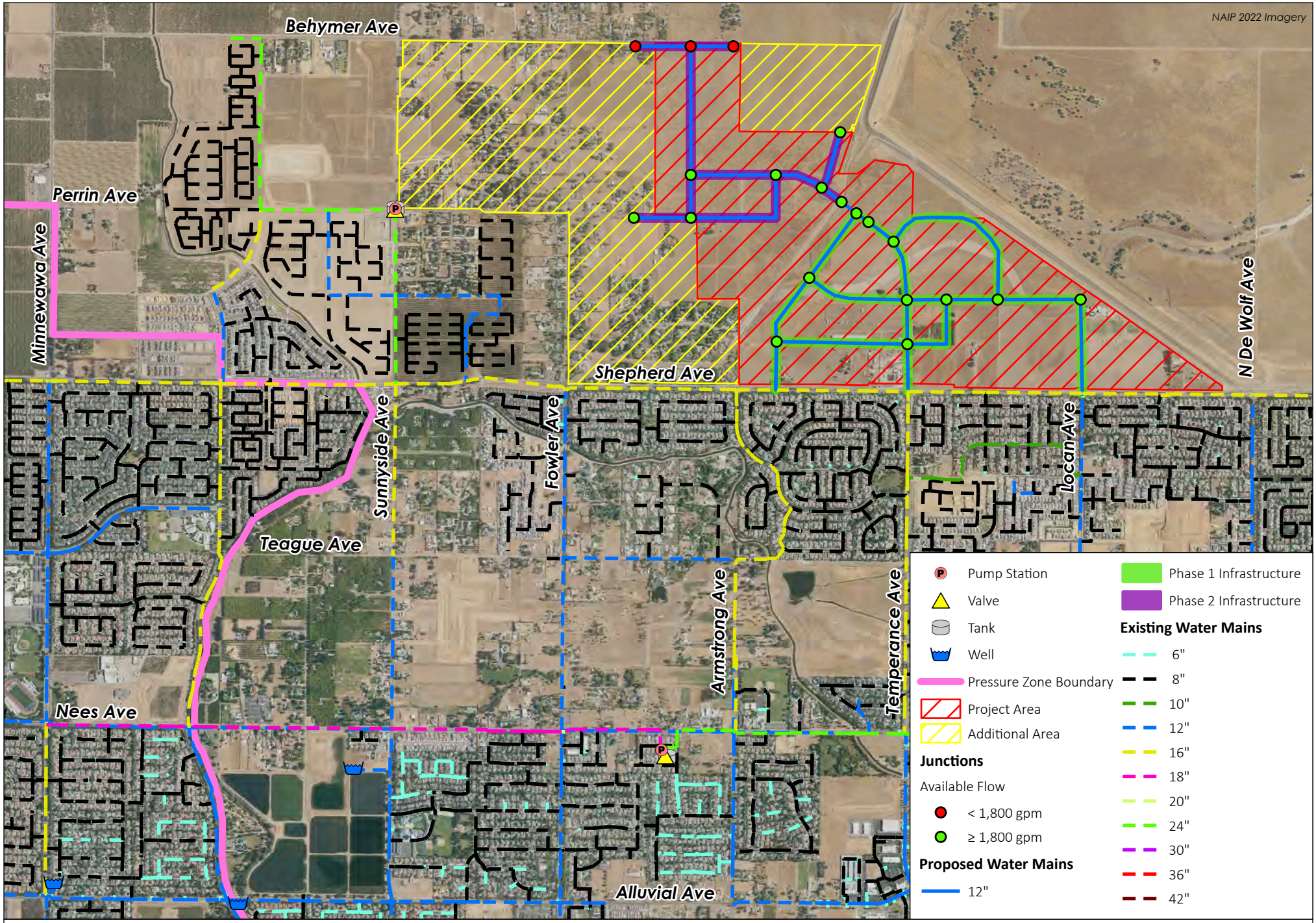

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Figure 9: Phase 2 With Extra Areas
Maximum Day Demand Plus Fire Flow
Vista Ranch

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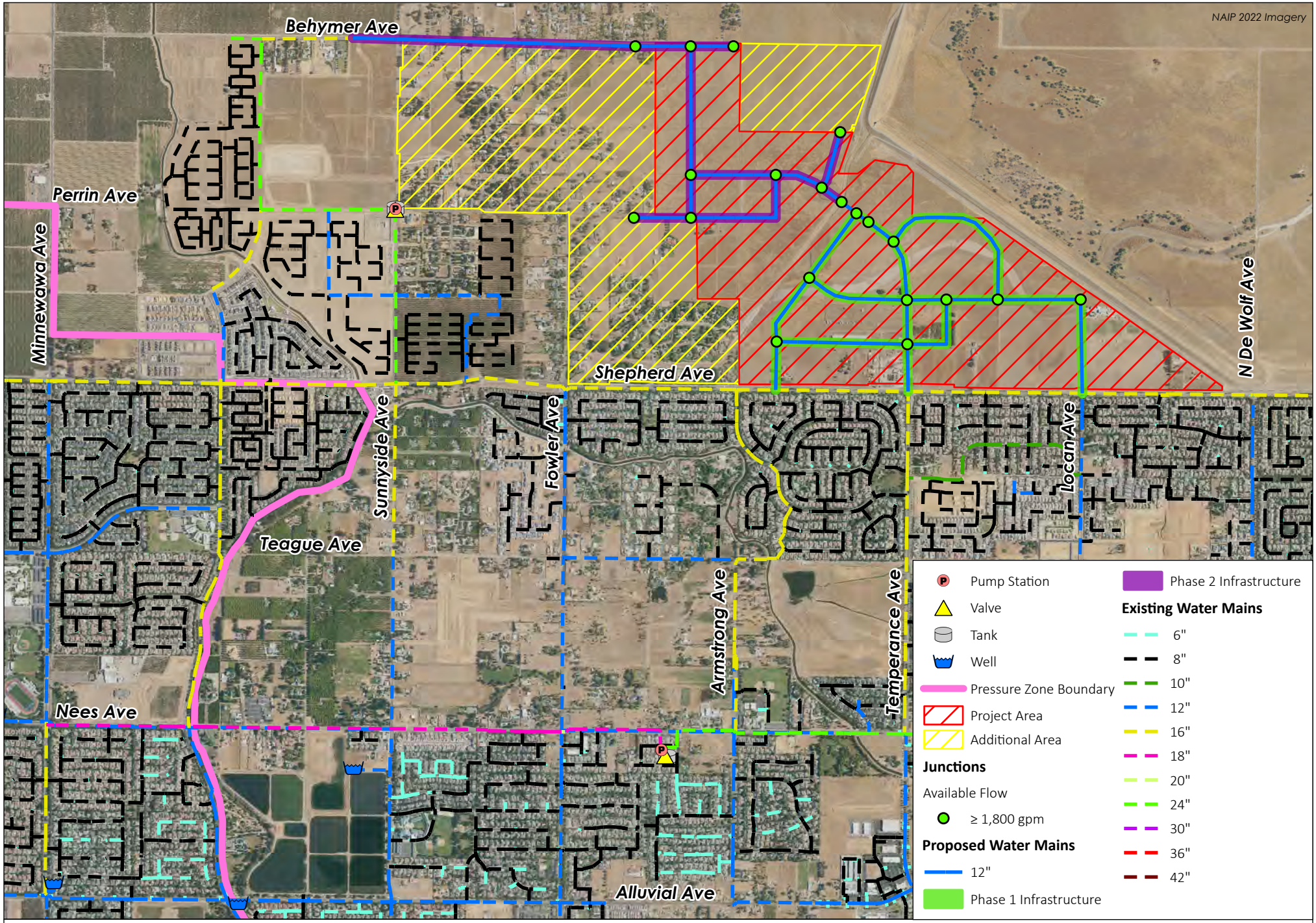

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Figure 10: Phase 2 With Extra Areas
Recommended Master Plan Improvements
Vista Ranch

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