SANDELL DISTRIBUTION WAREHOUSE BUILDING 2

USE PERMIT AND DESIGN REVIEW TO CONSTRUCT A NEW 35,500 SQUARE FOOT COMMERCIAL/INDUSTRIAL BUILDING LOCATED AT 380 BLODGETT STREET TO BE USED AS A MOVING AND STORAGE FACILITY WITH OUTSIDE STORAGE OF CONTAINERS

ENVIRONMENTAL CHECKLIST AND INITIAL STUDY

FINAL MITIGATED NEGATIVE DECLARATION

SCH NUMBER 2022090131

ADOPTED OCTOBER 10, 2022

SANDELL DISTRIBUTION WAREHOUSE BUILDING 2
CEQA ENVIRONMENTAL CHECKLIST AND INITIAL STUDY

Project Title:	Sandell Distribution Warehouse Building 2
Lead agency name and address:	City of Cotati Community Development Department 201 West Sierra Avenue Cotati, CA 94931
Contact person and email:	Autumn Buss, Associate Planner abuss@cotaticity.org
Sandell Distribution Warehouse Facility Building 2	
Project Location:	380 Blodgett Street (APN 046-073-006), City of Cotati, Sonoma County, CA
File Number:	PA#22/03
Project sponsor's name and address and Property Owners:	Albert Sandell 3348 Paradise Drive Tiburon, CA 94920
General Plan Designation:	Commercial Industrial
Zoning:	Commercial/Industrial District (CI)
Description of project:	The proposed project includes the construction of a 35,500-square-foot warehouse building to operate as a moving and storage company. The project includes loading areas, outdoor storage, paved parking areas, sidewalks, and landscaping.
Surrounding land uses and setting; briefly describe the project's surroundings:	The project site is surrounded by land designated as Commercial Industrial to the north, east, and south, and unincorporated rural residential land west of the project site, across Washoe Creek. Laguna de Santa Rosa abuts the site to the north.
Other public agencies whose approval is required (e.g. permits, financial approval, or participation agreements):	U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, Regional Water Quality Control Board.
Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun?	The Federated Indians of Graton Rancheria (FIGR) was notified on March 29, 2022. On April 25, 2022 the City received a request from FIGR for formal consultation. On May 9, 2022, the City responded to FIGR to initiate consultation.

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ACRONMYMS AND ABBREVIATIONS

AFY	acre feet a year
Air Basin	San Francisco Bay Area Air Basin
APN	Assessor Parcel Numbers
AQP	Air Quality Plan
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ARB	California Air Resources
BAAQMD	Bay Area Air Quality Management District
BMP	Best Management Practice
CalEEMod	California Emissions Estimator Model
CBC	California Building Code
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CIP	Capital Improvement Program
CI	Commercial/Industrial (Cotati Zoning District)
CORP	Army Corps of Engineers
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CRHR	California Register of Historical Resources
CRPUSD	Cotati-Rohnert Park Unified School District
CTS	California Tiger Salamander
dBA	A-weighted decibel
DEIR	Draft Environmental Impact Report
DPM	Diesel Particulate Matter
DPR	Department of Parks and Recreation
DTSC	Department of Toxic Substance Control
EIR	Environmental Impact Report
FEIR	Final Environmental Impact Report
GHG	greenhouse gas
gpd	gallons per day per acre
HI	hazard index
HRA	Health Risk Assessment
HMBP	Hazardous Material Business Plan
IRWP	Incremental Recycled Water Program

IS/MND	Initial Study/Mitigated Negative Declaration
ITP	Incidental Take Permit
LID	Low Impact Development
LWWTP	Laguna Wastewater Treatment Plant
mgd	million gallons per day
MBTA	Migratory Bird Treaty Act
MEI	Maximum Exposed Individual
MM	Mitigation Measure
MMRP	Mitigation Monitoring and Reporting Program
NPDES	National Pollutant Discharge Elimination System
NAHC	Native American Heritage Commission
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
OEHHA	California Office of Environmental Health Hazards Assessment
PPV	peak particle velocity
PRC	Public Resources Code
RAFD	Rancho Adobe Fire Protection District
RCPA	Regional Climate Protection Agency
ROG	Reactive Organic Gas
RWQCB	Regional Water Quality Control Board
SCH	State Clearinghouse
SCTA	Sonoma County Transportation Authority
SCWA	Sonoma County Water Agency
SR	State Route
SRPCS	Santa Rosa Plain Conservation Strategy
SW	Storage-Warehouse
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminants
USFWS	United States Fish and Wildlife Service
UWMP	Urban Water Management Plan
µg/m3	micrograms per cubic meter

1. INTRODUCTION

1.1. Executive Summary

The proposed project includes the construction of a 35,500 square-foot building ("Building 2") with an outdoor storage area for containers, loading areas, paved parking and driveways, sidewalks, and landscaping on the western portion of an 8.47-acre site at the west terminus of Blodgett Street. There is also a 50,072 square foot warehouse building ("Building 1") proposed on the eastern portion of the property, which was previously vacant. Both buildings are intended to be occupied by the same tenant. Building 1 was previously approved, including a separate IS/MND, and is currently under construction.

The City of Cotati prepared an Initial Study/Mitigated Negative Declaration (IS/MND) that tiers from the 2013 Cotati General Plan Update EIR. The Draft IS/MND was released for a 30-day public review period between September 8, 2022 and October 8, 2022. The Notice of Availability and Intent to Adopt a Mitigated Negative Declaration was filed with the Sonoma County Clerk on September 8, 2022. The Notice of Completion was filed with the State Clearinghouse and circulated to State Agencies for review and comment.

1.2. Initial Study/Mitigated Negative Declaration

This IS/MND was prepared by the City of Cotati, as the lead agency, pursuant to the requirements of the California Environmental Quality Act (CEQA) (California Public Resources Code Sections 21000 et. Seq.), the State CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3), and the Cotati Municipal Code.

This IS/MND describes the proposed project and its environmental setting, including the project site's existing conditions and applicable regulatory requirements. The IS/MND provides an assessment of the potential impacts to environmental resources that would result from implementation of the proposed project and includes mitigation measures to ensure that there would be no significant adverse impacts on the environment.

1.3. City of Cotati General Plan and EIR (Tiering)

This IS/MND tiers from the 2013 Cotati General Plan Update EIR (SCH No. 2013082037), which was certified in March 2015, to examine site-specific impacts of the proposed project. All General Plan policies adopted as mitigation apply to the project analyzed herein. The General Plan EIR reviewed potentially significant environmental effects resulting from plan implementation and developed measures and policies to mitigate impacts. Nonetheless, significant and unavoidable impacts were determined to occur under the General Plan. Therefore, the City adopted a statement of overriding considerations, which balance the merits of approving the plan despite the significant environmental effects. The effects identified as significant and unavoidable in the General Plan EIR are:

Aesthetics

- Impact 3.1-1: Substantial Adverse Effects on Visual Character, including Scenic Vistas or Scenic Resources.
- Impact 4.1: Cumulative Degradation of the Existing Visual Character of the Region

Noise

- Impact 3.10-1: Traffic Noise Sources.
- Impact 3.10-7: Cumulative Noise Impacts
- Impact 4.11: Cumulative Exposure of Noise-Sensitive Land Uses to Noise in Excess of Normally Acceptable Noise Levels or to Substantial Increases in Noise.

Traffic

- Impact 3.12-1: Acceptable traffic operation at the study intersections and roadway segments controlled by the City of Cotati, though the ability to fully fund all identified improvements is uncertain.
- Impact 3.12-2: Acceptable traffic operation on Gravenstein Highway, though the funding and timing of improvements needed to accommodate regional and local growth on the highway is uncertain.
- Impact 3.12-3: Unacceptable operation on US 101 freeway facilities.
- Impact 4.13: Cumulative Impact on the Transportation Network.

Utilities

- Impact 3.13-3: Potential to exceed wastewater treatment capacity or the requirements of the RWQCB.
- Impact 4.14: Cumulative Impact on Utilities.

Other

- Impact 4.15: Irreversible Effects (Consumption of Nonrenewable Resources, Irretrievable Commitments, Irreversible Physical Changes).

A copy of the City of Cotati's General Plan and EIR are available at the Community Development Department, 201 West Sierra Avenue, Cotati, California 94931, during normal business hours and online at http://cotati.generalplan.org/.

2. PROJECT DESCRIPTION

Project Location

The proposed project, Building 2, is located at the west terminus of Blodgett Street within the City of Cotati, Sonoma County, California (**Figure 1: Regional Location**). The 8.48-acre project site consists of one parcel, APN 046-073-006 (**Figure 2: Project Vicinity**).

General Plan and Zoning

The City of Cotati General Plan identifies the City's vision for the future and provides a framework that will guide decisions on growth, development, and conservation of open space and resources in a manner consistent with the quality of life desired by the City's residents and businesses. To ensure that this desired vision is realized, the General Plan has been designed to be internally consistent and cross-referenced with other documents, including the City's Zoning Ordinance. The project site exhibits a General Plan land use designation of CI-Commercial Industrial (**Figure 3: General Plan Land Use**).

The City of Cotati Zoning Ordinance implements the General Plan. Several different districts are identified in the Zoning Ordinance that are intended to, among other things, provide for a wide range of uses and implement the City's vision to conserve open space and resources. The project site is zoned CI Commercial/Industrial District (**Figure 4: Zoning**). The current zoning designation allows industrial uses, including storage-warehouse uses with a Use Permit.

Existing Conditions

Blodgett Street, which currently terminates as a "stub" at the subject property, is a fully improved two-lane collector street connecting to Helman Lane serving a developed industrial area that is maintained by the City of Cotati. Blodgett Street is a public street with curbs, parking, planter strips, and sidewalks.

The Building 2 project site is the western portion of the property and is currently vacant, containing no existing structures or other improvements. There are no trees on the project site. **(Figure 5: Site Plan)** Another storage-warehouse building of 50,072 square feet ("Building 1") is proposed by the same developer on the eastern portion of the property. The Building 1 project, which received entitlements in 2021 and is under construction, will also be comprised of a storage-warehouse building, outdoor storage area for containers, loading areas, paved parking areas, sidewalks, and landscaping. As part of the development of Building 1, the developer is constructing a new cul-de-sac to provide a terminus to Blodgett Street that complies with City of Cotati standards and will provide access to both Buildings 1 and 2.

The project site has been regularly disked and therefore the grassland community has developed following repeated disturbance, consisting primarily of non-native (invasive) annual grasses and non-native forbs. Non-native annual grass species observed includes oats (*Avena* sp.), rye grass (*Festuca* perennis), and soft chess (*Bromus hordeaceus)*. Non-native forb species observed within the grassland include bristly ox-tongue (*helminthotheca* echioides), carrot (*Daucus* carota), and radish (*Raphanus* sativus).

Approximately 0.88 acres of seasonal wetlands were delineated on the project site in 2008 as verified by the Army Corps of Engineers on June 3, 2010 (File No. SPN-2001-25967-N). The seasonal wetlands were dominated by hydrophytic vegetation including buttercup (*Ranunculus muricatus*), rye grass, semaphore grass (*Pleuropogon californicus*), and soft chess. Hydric soils with the seasonal wetlands displayed a depleted matrix (10YR 3/2 or 3/1) with heavy mottling and/or oxidized rhizospheres in the top 10 inches. The presence of a biotic crust (algal matting) was the primary indicator of hydrology within the wetlands (Macmillan 2008). No special status plants have been observed on the project site.

The project site has the potential to support three special status wildlife species consisting of the white-tailed kite (WTK), burrowing owl (BW), and the California tiger salamander (CTS). Land within the project vicinity is known to have supported California tiger salamander (CTS) (*Ambystoma californiense*) in the past and the project site is located within the established Critical Habitat for CTS.

Land uses surrounding the subject property include the channelized Laguna de Santa Rosa and a developed industrial park to the north, channelized Washoe creek and grassland to the west, Marin/Sonoma Mosquito and Vector Control District facility and grassland to the south, and a developed industrial/business park to the east.

Project Description

The proposed project, Building 2, includes the construction of an approximately 35,500 square-foot warehouse building to be used by a moving and storage company. The project also includes an outdoor storage area for containers, loading areas, paved parking areas and driveways, sidewalks, and landscaping. Development is proposed on the western portion of the site. Access to the project will be from a new cul-de-sac, currently under construction, on the eastern portion of the property adjacent to Building 1, providing a terminus to Blodgett Street that complies with City of Cotati standards.

New Structures

The proposed project site plan, architecture, preliminary improvement plans, and landscaping plans are provided in the Sandell Distribution Warehouse Building 2 Project Plans dated July 18, 2022 (**Appendix A**), and address the following:

Warehouse Building

The 35,500-square-foot warehouse Building 2 would be located in the western portion of the site, approximately 240 feet from Building 1 to the east. The building would be approximately 40 feet in height, not including mechanical screening 3 feet in height. Both Building 1 and Building 2 will be occupied by a single tenant, a moving and storage company that utilizes portable on-demand storage containers.

Architecture

The architectural design for Building 2 incorporates glass entrances and upper story windows on the east, west, and south sides. The exterior wall material is metal siding. The building incorporates metal awnings, metal roll-up doors, and a flat metal roof which is not visible. Paint finishes consist of generally earth-tone colors of grey, green, and red. The design of Building 2 will mirror that of Building 1.

Outdoor Storage

A significant component of the project is the outdoor storage of the portable containers on the west side of the building. Each container is 8 feet in height and will be stacked 3 containers high for a total of 24 feet. The containers will not be visible from Blodgett Street. The project includes 8 foot-tall chain link fencing with slats and landscaping to help screen the containers from adjacent properties. The design of Building 2 will mirror that of Building 1.

Frontage Improvements

Access to the project from Blodgett Street will be via two private driveways that pass along the north and south sides of Building 1. Building 2 does not have public street frontage, as it will be located behind Building 1 and approximately 500 feet from the new cul-de-sac at the terminus of Blodgett Street.

Landscaping

The Landscape Site Plan includes a mix of trees, shrubs, and groundcover. Trees and other landscaping are proposed along the perimeter of the project site and throughout the parking lot. Landscaping will feature drought tolerant plants and a high efficiency irrigation system. Landscape areas will establish buffers, provide shading, serve as stormwater detention facilities, and screen the structure and outdoor storage areas from view of adjacent properties and the public right-of-way.

Water Supply

Potable water would be accommodated via the extension of an existing water lateral that would connect the new building to the existing 10-inch water line within Blodgett Street.

Wastewater

Wastewater would be accommodated via the installation of new sanitary sewer laterals that would connect to the existing 8-inch sanitary sewer main within Blodgett Street. The new sanitary sewer lines would collect wastewater generated onsite and convey flows through the existing sanitary sewer system to the wastewater processing plant for treatment.

Solid Waste

One covered solid waste containment area is proposed to be located at the southeast corner of Building 2. The solid waste containment area would include three dumpsters, one for trash/landfill materials, one for recyclable materials, and one for organic/green waste materials, and would be enclosed by 6-foot-high concrete masonry unit walls with metal gates and a metal roof.

Storm Drainage Infrastructure

Storm drains would be utilized throughout the project site to direct stormwater from impervious areas to the vegetated bio-retention features consistent with the requirements of Low Impact Development (LID). Stormwater runoff would discharge to the existing storm drain network along Blodgett Street. The project includes subsurface retention chambers underneath the parking lot to accommodate all the runoff that is conveyed from the flow-through planters for both the 10-year design storm and 100-year check storm.

Site Preparation and Construction

For the purpose of this analysis, it is assumed that site preparation and construction would occur within an approximately 12-month period.

The project would achieve a near balance of cut and fill with the possibility of the need to import approximately 1,000 cubic yards of fill. Following completion of grading activities, infrastructure improvements and building foundations would be constructed. Utilities, storm drains, and catch basins would be installed and buildings erected. New driveways, sidewalks, curbs and gutters, striping, landscaping, and signage would be installed.

Construction equipment expected to be utilized during site preparation and grading includes tractors, backhoes, haul trucks, graders, pavers, and water trucks. All material and equipment would be staged on site.

Construction of the proposed project will result in no filling of the existing 0.88 acres of jurisdictional seasonal wetland regarded as waters of the U.S. and State subject to regulation by the U.S. Army Corps of Engineers and the Regional Water Quality Control Board (RWQCB). It is the goal of the project to avoid these waters.

Operation

The applicant is in negotiations with PODS Enterprises, LLC to lease both Buildings 1 and 2 upon completion. PODS is a moving and storage company which utilizes portable on-demand containers. Approximately 85% of the PODS business in Sonoma County is from customers moving between houses locally or out-of-state. The proposed warehouse would be used to store customer household goods in containers. Additionally, empty containers ready for delivery to customers are stored/staged outside in a secure yard. When a customer orders a container for storage, PODS delivers it to the customer's home. When the container is filled, PODS picks it up and stores it in its warehouse. If a customer later requires access to his/her container, they make an appointment with 72 hours' notice and PODS brings the container outside from the warehouse at the appointed time, and then returns it to storage when the customer leaves. This happens 4 to 5 times a day. No customers are ever allowed into the warehouse. When a customer no longer requires storage, PODS delivers the container for unpacking to the customer's home, whether that is at the original location, across town or across the country.

The entire facility of Buildings 1 and 2 will have approximately 14 employees during normal business hours Monday through Saturday, with 4 of those employees attributable to Building 2. They will use 6 local delivery trucks (approximately 32' long each) to deliver and retrieve the containers to and from local residents and businesses, making between 10 to 14 trips each day, with 2 of these trucks attributed to Building 2. In addition, there will be deliveries and/or pick-ups by 3-5 OTR (tractor/trailer rigs) per day to move the containers between PODS warehouses, both within California and to other states, an increase of 1-2 OTR per day from Building 2 beyond the 2-3 OTR per day proposed for Building 1.

Required Discretionary Actions

The project requires the following discretionary entitlements from the City of Cotati:

- Use Permit for the proposed warehouse to be used by a moving and storage company
- Design Review for the buildings and landscaping of the site.

Other Public Agency Review

The project requires approval from the following public agencies:

- U.S. Fish and Wildlife Service (Endangered Species Act permit)
- California Department of Fish and Wildlife Service (California Endangered Species Act permit)
- Regional Water Quality Control Board

California Native American Tribal Consultation

In accordance with Public Resources Code (PRC) Section 21084.2, lead agencies are required to consider Tribal Cultural Resources (TCR) including a site feature, place, cultural landscape, or sacred place or object of cultural value to the tribe and listed on the California Register of Historic Resources (CRHR) or a local register, or if the Lead agency, at its discretion, chooses to treat resources as such.

In accordance with PRC Section 21080.3.1(d), the City of Cotati provided written formal notification to the Federated Indians of Graton Rancheria (FIGR) on March 29, 2022, including a brief description of the proposed project and its location, the Archeological Resources Study dated June 2021 commissioned by the applicant, the City of Cotati's contact information, and a notification that the FIGR has 30 days to request consultation pursuant to this section. In the preparation of the Archeological Resources Study, on June 18, 2021 the consultant also notified groups and individuals recommended by the NAHC of plans to develop Building 1 on the property.

The City of Cotati received a request for consultation on the project under PRC Section 21080.3.1(b)(2) from FIGR on April 25, 2022, and on May 9, 2022, the City initiated consultation. The City of Cotati did not receive a request from consultation from any other groups and individuals from the list provided by the NAHC.

Figure 1: Regional Location

Figure 2: Project Vicinity

Figure 3: General Plan Land Use

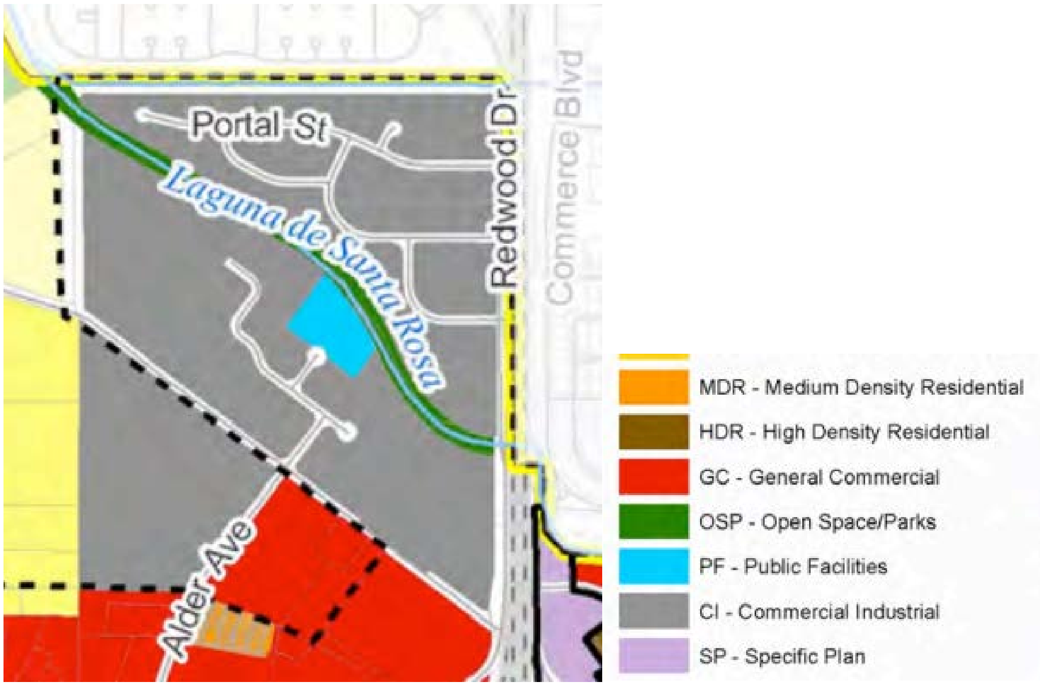


Figure 4: CI Zoning District

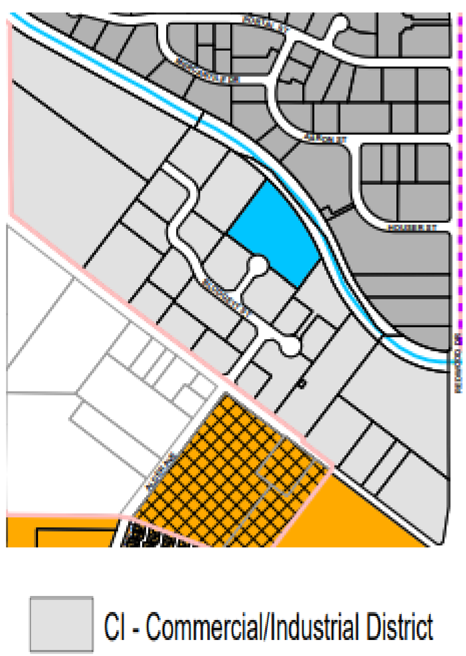
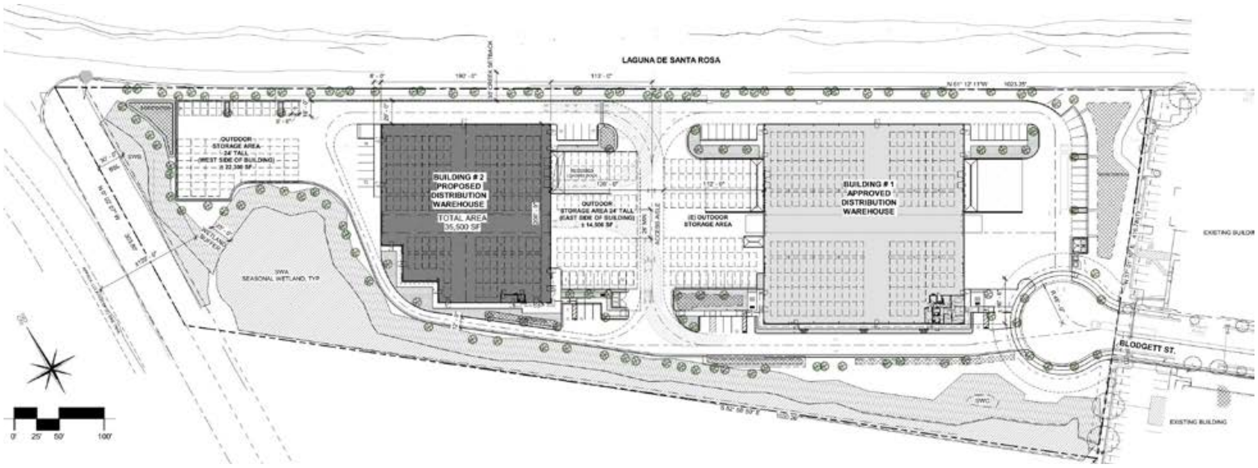


Figure 5: Site Plan



3. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

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

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

The CEQA Initial Study (IS) Checklist and written explanations are provided in Section 4 below. The IS Checklist and narrative indicate the level of significance of the potential environmental effects of the proposed project upon each of the noted environmental resources.

4. DETERMINATION

(TO BE COMPLETED BY THE LEAD AGENCY)

On the basis of this initial evaluation:

I find that the proposed project **COULD NOT** have a significant effect on the environment. A **NEGATIVE DECLARATION** will be prepared.	
I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. **A MITIGATED NEGATIVE DECLARATION** will be prepared.	**X**
I find that the proposed project **MAY** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.	
I find that the proposed project **MAY** have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed.	
I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier **EIR** or **NEGATIVE DECLARATION** pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier **EIR** or **NEGATIVE DECLARATION**, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.	

Autumn Buss

10/10/2022

Signature: Autumn Buss, Associate Planner, City of Cotati **Date**

5. EVALUATION OF ENVIRONMENTAL IMPACTS

The following discussion addresses the potential level of impact relating to each aspect of the environment.

5.1. AESTHETICS

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

Sources: City of Cotati 2015 General Plan; General Plan EIR; Biological Resource Report and Addendum, prepared by Sol Ecology, January 2022 and July 21, 2022, respectively; Project Plans dated July 18, 2022; and California Scenic Highway Mapping System, https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways, Accessed March 29, 2022.

Existing Aesthetics Setting:

The City of Cotati is located in the southern portion of Sonoma County, where it is surrounded by the Sonoma Mountains, old growth oaks, pastures, and vineyards. Cotati is located north of Petaluma and south of Rohnert Park, and bisected into east and west sides by Highway 101. The City of Cotati exhibits a historic city core with traditional urban forms featuring minimal setbacks and large sidewalks. The remainder of the city more closely resembles modern suburban patterns of development comprised primarily of detached houses with a limited number of townhomes, apartments, and retail/commercial uses. The more suburban areas of the city exhibit a uniformity that is generally absent from the downtown core.

The project site where Building 2 is proposed exhibits flat topography and is undeveloped with no structures or trees. Site features include ruderal vegetation and a seasonal wetland.

The site is located at the western edge of urbanized Cotati and is bordered by the future Building 1 and existing industrial/business parks to the east, channelized Laguna de Santa Rosa and existing industrial/business parks to the north, Mosquito and Vector Control District facilities and grassland to the south, and channelized Washoe Creek, grassland, and unincorporated rural residential land to the west.

Aesthetics Impact Discussion:

5.1(a) (Effect a Scenic Vista) Less Than Significant Impact: Scenic vistas viewed from the project site are largely confined to views of rural Sonoma County pastureland and hills west of Cotati. The project site is not located on a designated scenic corridor, or within or adjacent to a Sonoma County designated scenic landscape. The project proposes the development of a large warehouse building 40 feet in height and associated site improvements. The project site is currently undeveloped, except for the grading and sitework for Building 1, and surrounded by mostly light industrial development. Development of the proposed project site will extend the existing urban landscape observed in the project vicinity. Views of the Laguna de Santa Rosa watershed, Sonoma Mountain, local hillsides, natural resources, open space, and agricultural lands will not be substantially impacted by the proposed development project. Therefore, impacts associated with scenic vistas will remain below significant levels.

5.1(b) (Scenic Resources from Designated Scenic Highway) No Impact: Natural scenic resources in and around Cotati consist primarily of agricultural lands, undeveloped hillsides, undeveloped watershed habitat (open space), and creek corridors. Sonoma County has also designated various highways and roadways throughout the unincorporated County as Scenic Corridors. In the vicinity of the project site, SR 116 from Madrone Avenue west to SR 1, is a Sonoma County Designated Scenic Corridor. Madrone Avenue is approximately 6/10 mile southwest of the project site. Therefore, the project site is not located near any scenic roadways.

There are no state designated scenic highways within the City of Cotati. While SR 116 is a state designated scenic highway, only the portion from SR 1 to Sebastopol, outside of Cotati city limits, is designated as such. Introduction of the proposed project will not damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings viewable from a designated (or eligible) State scenic highway. Therefore, the project will have no impacts to scenic resources visible from designated scenic highways.

5.1(c) (Degrade Visual Character, Conflict with Regulations Governing Scenic Quality) Less Than Significant Impact: Construction of the proposed project would change approximately half of the project site from undeveloped land containing ruderal vegetation and a seasonal wetland to a developed condition containing a large warehouse building, outdoor storage, parking, and landscaping. The project would be visible from Blodgett Street and the Laguna de Santa Rosa, and possibly visible from Helman Lane, local roadways, and adjacent land uses. Helman Lane is approximately 645 feet from the property, at its closest point. The project will be approximately 540 feet from the nearest house on Helman Lane located to the southwest of the project site. Landscaping including trees is planned to further buffer the view of Building 2 and its outdoor storage areas.

The proposed project is subject to Design Review in order to ensure that the architectural style, massing, color and materials, and other design elements of the proposed buildings are compatible with the existing character.

The project would be located within the City Limits and would be compatible with the existing visual character of the area which includes an existing industrial/business park development (north, south and east), rural county development (west), and the channelized Laguna de Santa/Washoe Creek (north and west). Consistent with the City's General Plan the proposed project would introduce storage and warehouses uses on an underutilized parcel within the City's existing urbanized area. Therefore, potential impacts to the existing visual character of the site and its surroundings would be less than significant.

5.1(d) (Light and Glare) Less Than Significant: The project site is adjacent to existing development and roadways that are current sources of light and glare that contribute to the ambient light conditions. Current sources of light and glare in the vicinity include Blodgett Street streetlighting and surrounding industrial development.

The project will introduce new sources of light and glare including new interior lighting as well as street lights and exterior lighting for the building, outdoor storage, and parking areas. New building materials and windows have the potential to increase glare if not properly oriented and/or glazed.

Exterior lights installed in conjunction with the proposed project will result in a minimal increase of artificial light in the immediate vicinity. The proposed project is subject to Design Review to ensure that outdoor lighting and exterior materials/colors minimize the amount of light and glare that would be introduced by the project. Section 17.30.060 of the Cotati Land Use Code requires light fixtures be shielded to reduce light bleed to adjoining properties and no light fixture may directly illuminate an area of the site.

While new lighting will be introduced as part of the development, the additional lighting will not adversely affect day or nighttime views in the area and impacts from light and glare will be less than significant.

Mitigation Measures: None Required.

5.2. Agricultural and Forestry Resources

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

Sources: City of Cotati 2015 General Plan; General Plan EIR; and California Department of Conservation Farmland Mapping and Monitoring Program, https://www.conservation.ca.gov/dlrp/fmmp, Accessed March 29, 2022.

Agricultural and Forestry Resources Setting:

The City of Cotati contains approximately 1,104 acres of “Urban and Built-up Land,” 77 acres of “Other Land,” and 36 acres of “Farmland of Local Importance.” According to the California Department of Conservation's Farmland Mapping and Monitoring Program (FMMP), the project site is designated as “Farmland of Local Importance.” Lands adjacent to and surrounding the project site are designated as “Urban and Built-up Land” and “Farmland of Local Importance”). No portion of the project site is under a Williamson Act contract.

In accordance with the definition provided in California Public Resources Code Section 12220(g), “forest land” is land that can support, under natural conditions, 10 percent native tree cover of any species, including hardwoods, and that allows for the preservation or management of forest-related resources such as timber, aesthetic value, fish and wildlife, biodiversity, water quality, recreational facilities, and other public benefits. The project site contains ruderal vegetation, no trees, and does not meet the definition of forest land pursuant to Section 12220(g) of the Public Resources Code. None of the land within the project site is zoned as forest land, timberland zone, or timberland zoned Timberland Production.

Agricultural and Forestry Resources Impact Discussion:

5.2(a-e) (Farmland Conversion, Williamson Act, Forestland, Timberland) No Impact: There are no forestlands, important farmlands, agricultural resources, or agricultural preserves located within the project site and surrounding properties. The project site is not classified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The California Department of Conservation map shows the project site as “Farmland of Local Importance.” Lands adjacent to the project site are designated as “Urban and Built-Up Land” and “Farmland of Local Importance.” The project site is not under a Williamson Act contract. There are no forestlands, timberlands, or such zoning on the subject site or vicinity. The proposed project would have no impacts to agricultural resources or forest uses and would not result in the conversion of such lands since none exist on-site or in the immediate project vicinity. Therefore, the project would have no impact to agricultural and forestry resources. The site is not currently used for agricultural purposes.

Mitigation Measures: None Required.

5.3. AIR QUALITY

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard?	☐	☒	☐	☐
c) Exposure of sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

Sources: City of Cotati 2015 General Plan; General Plan EIR; BAAQMD 2017 Bay Area Clean Air Plan; BAAQMD CEQA Guidelines 2017; and Updated 380 Blodgett/597 Helman Lane Warehouse Project Air Quality and Greenhouse Gas Emissions Assessment, prepared by Illingworth & Rodkin, February 2, 2022.

Air Quality Setting:

The project is located in the portion of Sonoma County that is part of the San Francisco Bay Area Air Basin. Ambient air quality standards have been established at both the State and Federal level. The Bay Area meets all ambient air quality standards with the exception of ground-level ozone, respirable particulate matter (PM10) and fine particulate matter (PM2.5). In Sonoma County, measured levels of air pollutants are below air quality standards, including ozone, PM10, and PM2.5. High ozone levels are caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides (NOx). These precursor pollutants react under certain meteorological conditions to form high ozone levels. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ozone levels. The highest ozone levels in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High ozone levels aggravate respiratory and cardiovascular diseases, reduced lung function, and increase coughing and chest discomfort.

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less (PM10) and fine particulate matter where particles have a diameter of 2.5 micrometers or less (PM2.5). Elevated concentrations of PM10 and PM2.5 are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children. Toxic air contaminants (TAC) are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants listed above. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and Federal level. Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average).

According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the state's Proposition 65 or under the Federal Hazardous Air Pollutants programs. The most recent Office of Environmental Health Hazard Assessment (OEHHA) risk assessment guidelines were published in February of 2015. See Attachment 1 of the *Updated 380 Blodgett/597 Helman Lane Warehouse Project Air Quality and Greenhouse Gas Emissions Assessment, prepared by Illingworth & Rodkin, February 2, 2022* (**Appendix B**) for a detailed description of the community risk modeling methodology used in this assessment. CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways. These regulations include the solid waste collection vehicle (SWCV) rule, in-use public and utility fleets, and the heavy-duty diesel truck and bus regulations. In 2008, CARB approved a new regulation to reduce emissions of DPM and nitrogen oxides from existing on-road heavy-duty diesel fueled vehicles.

The regulation requires affected vehicles to meet specific performance requirements between 2014 and 2023, with all affected diesel vehicles required to have 2010 model-year engines or equivalent by 2023. These requirements are phased in over the compliance period and depend on the model year of the vehicle. The Bay Area Air Quality Management District (BAAQMD) is the regional agency tasked with managing air quality in the region. At the State level, the California Air Resources Board (a part of the California Environmental Protection Agency) oversees regional air district activities and regulates air quality at the State level. The BAAQMD has published CEQA Air Quality Guidelines that are used in this assessment to evaluate air quality impacts of projects.

Cotati General Plan:

The 2015 Cotati General Plan Conservation Element includes an extensive list of policies and action measures that are aimed at improving air quality. Additionally, the General Plan Land Use Element and Land Use Map promotes a compact urban development pattern that emphasizes infill development and ensures that land use patterns do to not expose sensitive receptors to unhealthy pollutant concentrations. Additionally, the Circulation Element includes a range of policies and action items that would effectively reduce vehicle travel, through the use of complete streets and multi-modal transportation systems. Applicable General Plan policies include: • Policy CON 2.1: Improve air quality through continuing to require a compact development pattern that focuses growth in and around existing urbanized areas, locating new housing near places of employment, encouraging alternative modes of transportation, and requiring projects to mitigate significant air quality impacts. • Policy CON 2.2: Minimize exposure of sensitive receptors to concentrations of air pollutant emissions and toxic air contaminants. • Policy CON 2.4: Require new development or significant remodels to install fireplaces, stoves, and/or heaters which meet current BAAQMD standards. • Policy CON 2.5: Continue to require all construction projects and ground disturbing activities to implement BAAQMD dust control and abatement measures. • Policy CON 2.7: Continue to aggressively implement the greenhouse gas (GHG) reduction measures contained in the 2008 Cotati Greenhouse Gas Emissions Reduction Action Plan. • Policy CON 3.1: Continue to require all new public and privately constructed buildings to meet and comply with CALGreen Tier 1 standards.

• Policy CON 3.2: Support innovative and green building best management practices, including LEED certification, for all new development, and encourage project applicants to exceed CALGreen Tier 1 standards, if feasible. • Policy CON 3.3: Promote the use of alternative energy sources in new development. • Policy CON 3.7: Encourage tree planting, including widespread use of trees as windbreaks to maximize the effects of cooling westerly winds and planting of deciduous trees to help reduce summer temperatures, either in conjunction with new development or through private sector participation. • Policy CON 3.8: Promote water conservation among water users. • Policy CON 3.9: Require the use of drought-tolerant and regionally native plants in landscaping. • Policy CON 3.10: Ensure that the layout and design of new development and significant remodels encourages the use of transportation modes other than automobiles and trucks. • Policy CON 3.16: Improve and maintain landscaping around commercial areas in order to minimize the "heat island" effect, provide shade, soften the harshness of such commercial areas, and create a more leisurely ambience.

Green Building Standards:

CALGreen is a set of mandatory green building standards for new construction that went into effect throughout California on January 1, 2011. The 2013 California Green Building Standards Code went into effect on January 1, 2014. New, more stringent standards went into effect in January 2017. These building standards apply to all new public and privately-constructed commercial and residential buildings. CALGreen is referred to officially as the California Green Building Standards Code and includes a matrix of mandatory requirements tailored to residential and non-residential building classifications, as well as two sets of voluntary measures (CALGreen Tier 1 and Tier 2) that provide a host of more stringent sustainable building practices and features. Cotati's City Council rescinded Cotati's Sustainable Building Program and replaced it with the CALGreen Mandatory plus Tier 1, which includes a detailed list of green building features that address energy efficiency, water efficiency, waste reduction, material conservation and indoor air quality. The requirements apply to new construction of residential and non-residential facilities. Among the key mandatory provisions are requirements that new buildings: • Reduce indoor potable water use by at least 20% below current standards; • Recycle or salvage at least 50% of construction waste; • Utilize low VOC-emitting finish materials and flooring systems; • Install separate water meters tracking non-residential indoor and outdoor water use; • Utilize moisture-sensing irrigation systems for larger landscape areas; • Mandatory inspections by local officials of building energy systems, such as HVAC and mechanical equipment, to verify performance for non-residential buildings exceeding 10,000 square feet; and • Include parking for fuel-efficient and carpool vehicles.

Table 1. BAAQMD CEQA Air Quality Significance Thresholds

Criteria Air Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	Average Daily Emissions (lbs./day)	Annual Average Emissions (tons/year)
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82 (Exhaust)	82	15
$PM_{2.5}$	54 (Exhaust)	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Health Risks and Hazards	**Single Sources Within 1,000-foot Zone of Influence**	**Combined Sources (Cumulative from all sources within 1000-foot zone of influence)**	
Excess Cancer Risk	>10 per one million	>100 per one million	
Hazard Index	>1.0	>10.0	
Incremental annual $PM_{2.5}$	>0.3 µg/m³	>0.8 µg/m³	
Greenhouse Gas Emissions			
Land Use Projects – direct and indirect emissions	Compliance with a Qualified GHG Reduction Strategy OR 1,100 metric tons annually or 4.6 metric tons per service population *		

Note: ROG = reactive organic gases, NOx = nitrogen oxides, PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less. GHG = greenhouse gases.
*BAAQMD does not have a recommended post-2020 GHG threshold.

Air Quality Impact Discussion:

Illingworth & Rodkin prepared an Updated 380 Blodgett/597 Helman Lane Warehouse Project Air Quality and Greenhouse Gas Emissions Assessment for the project on February 2, 2022 (**Appendix B**). The results of the evaluation have been incorporated into the impact discussion below.

5.3(a) (Conflict with or obstruct implementation of the Applicable Air Quality Plan?) ***Less Than Significant Impact:*** The BAAQMD adopted the 2017 Bay Area Clean Air Plan (CAP) on April 19, 2017 to comply with state air quality planning requirements set forth in the California Health & Safety Code. The 2017 CAP includes a wide range of control measures designed to decrease emissions of the air pollutants most harmful to Bay Area residents and which include particulate matter (PM), ozone (O_3), and toxic air contaminants (TACs). The CAP further endeavors to reduce emissions of methane and other "super-greenhouse gases (GHGs)" that are potent climate pollutants in the near-term and to decrease emissions of carbon dioxide by reducing fossil fuel combustion.

The proposed control strategy for the 2017 CAP consists of 85 distinct measures targeting a variety of local, regional, and global pollutants. The CAP includes control measures for stationary sources, transportation, energy, buildings, and agriculture, natural and working lands, waste management, water, and super-GHG pollutants. Implementation of some of the control measures could involve retrofitting, replacing, or installing new air pollution control equipment, changes in product formulations, or construction of infrastructure that have the potential to create air quality impacts.

The BAAQMD CEQA Guidelines set forth criteria for determining consistency with the CAP. In general, a project is consistent if a) the project supports the primary goals of the CAP, b) includes control measures and c) does not interfere with implementation of the CAP measures.

The proposed project would have a less than significant impact due to a conflict with the Clean Air planning efforts since the project a) supports the goals of the CAP in that it limits urban sprawl by proposing development within city limits; b) includes control measures to protect air quality during construction by implementing best control measures set forth by BAAQMD; and c) would generate air quality emissions well below the BAAQMD criteria pollutant thresholds (see Section 5.3(b) below). The project would be required to comply with City requirements including applicable General Plan policies and implementing actions. Therefore, the project will have less than significant impacts due to a conflict with the regional air quality plan.

5.3(b) (Cumulatively Considerable Net Increase of Criteria Pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard?) ***Less Than Significant with Mitigation*****:** The Bay Area is considered a non-attainment area for ground-level ozone and PM2.5 under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered nonattainment for PM10 under the California Clean Air Act, but not the Federal act. The area has attained both State and Federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for ozone and PM10, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for ozone precursor pollutants (ROG and NOX), PM10, and PM2.5 and apply to both construction period and operational period impacts.

Construction Period Emissions:

The California Emissions Estimator Model (CalEEMod) Version 2020.4.0 was used to estimate emissions from the project's on-site construction activity, construction vehicle trips, and evaporative emissions. The project land use types and size and anticipated construction schedule were input to CalEEMod. Traffic generated by construction (i.e., off-site construction activities), which included worker trips, vendor deliveries, and material hauling trips were computed separately using the CARB EMission FACtors 2021 model (EMFAC2021). The model output from CalEEMod along with construction inputs are included as Attachment 2 of the report, and EMFAC2017 calculations and outputs are included as Attachment 3 of the report.

CalEEMod Inputs

Land Uses

The proposed project land uses were entered into CalEEMod as described in Table 2:

Table 2. Summary of Project Land Use Inputs

Project Land Uses	Size	Units	Square Feet	Acreage
Construction - 597 Helman Lane Project				
Unrefrigerated Warehouse-No Rail	50.06	1,000 sf	50,600	3.40
Parking Lot	45.00	Space	40,000	

Construction - 380 Blodgett Lane Project				
Unrefrigerated Warehouse-No Rail	35.50	1,000 sf	35,500	2.70
Parking Lot	32.00	Space	12,800	
Other Asphalt Surfaces	31.60	1,000 sf	31,600	
Other Non-Asphalt Surfaces	18.60	1,000 sf	18,600	

Construction Inputs

CalEEMod computes annual emissions for construction that are based on the project type, size, and acreage. The model provides emission estimates for both on-site and off-site construction activities. On-site activities are primarily made up of construction equipment emissions, while offsite activity includes worker, hauling, and vendor traffic. The CalEEMod model develops default construction values for typical construction site scenarios that this project would meet. For this project, the construction schedule and soil hauling volumes were based on data provided by the project applicant. Since the site is undeveloped, there would not be a demolition phase. Equipment usage, worker traffic, and vendor traffic were based on the CalEEMod default assumptions. The construction schedule assumed that the earliest possible start date would be August 2022 with the project completed around early 2023. During that period, there would be at least 250 construction workdays. The earliest full year of operation was assumed to be 2024. In addition to CalEEMod default worker and vendor trips, there would be hauling truck trips for 3,000 cy of soil material, 185 cement deliveries, and 600 cy of asphalt import.

Construction Traffic Emissions

Construction would produce traffic in the form of worker trips and truck traffic. The traffic-related emissions are based on worker and vendor trip estimates produced by CalEEMod and haul trips that were computed based on the soil material imported and/or exported to the site, and the estimate of cement and asphalt truck trips. CalEEMod provides daily estimates of worker and vendor trips for each applicable phase. The total trips for those were computed by multiplying the daily rate by the number of days in that phase. Haul trips for grading were estimated from the provided grading volumes by assuming each truck could carry 10 tons per load. The number of asphalt total round haul trips was provided for the project and converted to total one-way trips, assuming two trips per delivery. The latest version of the CalEEMod model is based on the older version of the CARB EMFAC 2017 motor vehicle emission factor model. This model has been superseded by the EMFAC2021 model; however, CalEEMod has not been updated to include EMFAC2021. Therefore, construction traffic information was combined with EMFAC2021 motor vehicle emissions factors to estimate construction site trip emissions. EMFAC2021 provides aggregate emission rates in grams per mile for each vehicle type. The vehicle mix for this study was based on CalEEMod default assumptions, where worker trips are assumed to be comprised of light-duty autos (EMFAC category LDA) and light duty trucks (EMFAC category LDT1and LDT2). Vendor trips are comprised of delivery and large trucks (EMFAC category MHDT and HHDT) and haul trucks, including cement trucks, are comprised of large trucks (EMFAC category HHDT). Travel distances are based on CalEEMod default lengths, which are 10.8 miles for worker travel, 7.3 miles for vendor trips and 20 miles for hauling (soil import/export). Since CalEEMod does not address cement or asphalt trucks, these were treated as vendor travel distances (7.3 miles). Each trip was assumed to include an idle time of 5 minutes. Emissions associated with vehicle starts were also included. On road emissions in Sonoma County for the years 2021-2022 were used in these calculations.

Summary of Computed Construction Period Emissions:

Average daily emissions were annualized for each year of construction by dividing the annual construction emissions and dividing those emissions by the number of active workdays during that year. Table 3 shows the annualized average daily construction emissions of ROG, NOX, PM10 exhaust, and PM2.5 exhaust during construction of the project. As indicated in Table 3, predicted annualized project construction emissions would not exceed the BAAQMD significance thresholds during any year of construction.

Table 3. Construction Period Emissions

Year	ROG	NOx	PM10 Exhaust	PM2.5 Exhaust
Construction Emissions Per Year (Tons)				
2021 – 597 Helman	0.06	0.66	0.03	0.03
2022 - 597 Helman	0.37	0.93	0.05	0.04
2022 - 380 Blodgett	0.12	0.96	0.04	0.04
2023 - 380 Blodgett	0.32	0.92	0.04	0.04
Average Daily Construction Emissions Per Year (pounds/day)				
2021 – 597 Helman (88 construction days)	1.99	20.92	1.01	0.91
2022 - 597 Helman (179 construction days)	5.79	14.45	0.74	0.67
2022 - 380 Blodgett (100 construction days)	2.34	19.21	0.84	0.80
2023 - 380 Blodgett (150 construction days)	4.21	12.32	0.53	0.50
BAAQMD Thresholds (pounds per day)	*54* lbs./day	*54* lbs./day	*82* lbs./day	*54* lbs./day
Exceed Threshold?	No	No	No	No

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM10 and PM2.5. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less-than-significant if best management practices are implemented to reduce these emissions. Mitigation Measure AQ-1 would implement BAAQMD-recommended best management practices.

Mitigation Measure AQ-1: **Include measures to control dust and exhaust during construction**.

During any construction period ground disturbance, the applicant shall ensure that the project contractor implement measures to control dust and exhaust. Implementation of the measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a less-than-significant level. Additional measures are identified to reduce construction equipment exhaust emissions. The contractor shall implement the following best management practices that are required of all projects: 1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. 2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered. 3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. 4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph). 5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. 6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. 7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer’s specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. 8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District’s phone number shall also be visible to ensure compliance with applicable regulations.

Effectiveness of Mitigation Measure AQ-1

The measures above are consistent with BAAQMD-recommended basic control measures for reducing fugitive particulate matter that are contained in the BAAQMD CEQA Air Quality Guidelines.

Operational Period Emissions:

Operational air emissions from the project would be generated primarily from autos driven by future employees. Evaporative emissions from architectural coatings and maintenance products (classified as consumer products) are typical emissions from these types of uses. CalEEMod was used to estimate emissions from operation of the proposed project.

CalEEMod Inputs

Land Uses

The project operational land uses were entered into CalEEMod as shown in Table 5:

Table 5. Summary of Project Land Use Inputs

Project Land Uses	Size	Units	Square Feet
Unrefrigerated Warehouse-No Rail	85.56	1,000 sf	85,560
Parking Lot	81.00	Space	32,400
User Define Industrial[1]	1.00	User Define	0

[1] Separate model run used to model off-road equipment (forklift) and truck traffic.

Model Year

Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CalEEMod. The earliest year of operation would be 2023 with the earliest full year of operation in 2024. Model year 2023 was used to model full operation.

Traffic Information

CalEEMod allows the user to enter specific vehicle trip generation rates. Therefore, the project-specific daily trip generation rate provided by the traffic consultant was entered into the model. As described, the project would produce 61 daily trips. There would be approximately 76 delivery-type trips, assumed to be Medium heavy-duty trucks (MHDT) that use diesel. There would be approximately 12 large truck trips assumed to be made by Heavy heavy-duty truck trips powered by diesel. The rest of the vehicles were assumed to be light-duty automobiles (LDT) or light-duty trucks (LDT). The default trip types and lengths specified by CalEEMod were used.

Energy

CalEEMod defaults for energy use were used, which include the 2019 Title 24 Building Standards. GHG emissions modeling includes those indirect emissions from electricity consumption. The CalEEMod default emission factor of 119.98 pounds of CO_2 per megawatt of electricity produced by Sonoma Clean Power was used.

Truck Trips and Forklifts

A separate model run was used to model the operational forklifts and truck traffic. The construction portion of the model was used to model these sources, since the Tier level of the forklift and the truck type could be specified. Delivery trucks were specified as MHDT and Haul trucks were specified as HHDT. A trip distance of 10 miles was used for each truck trip type. Since the project would use a new forklift, a Tier 4 final forklift was selected in this model run, using the Mitigation tab.

Other Inputs

Default model assumptions for emissions associated with solid waste generation and water/wastewater use were applied to the project.

Summary of Computed Operational Emissions

Annual emissions were predicted using CalEEMod and daily emissions were estimating assuming 365 days of operation. Table 6 shows average daily construction emissions of ROG, NOX, total PM10, and total PM2.5 during operation of the project. The operational period emissions would not exceed the BAAQMD significance thresholds.

Table 6. Operational Period Emissions

Scenario	ROG	NOx	PM10	PM2.5
2024 Annual Project Operational Emissions	1.74	0.51	0.79	0.21
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Exceed	*No*	*No*	*No*	*No*
2024 Daily Project Operational Emissions	9.52	2.81	4.35	1.18
BAAQMD Thresholds	*54* lbs.	*54* lbs.	*82* lbs.	*54* lbs.
Exceed	*No*	*No*	*No*	*No*
Notes: [1]Assumes 365-day operation.				

Impact AIR-3: Expose sensitive receptors to substantial pollutant concentrations? Less-Than-Significant Impact.

Project impacts related to increased community risk can occur either by introducing a new source of TACs with the potential to adversely affect existing sensitive receptors in the project vicinity or by significantly exacerbating existing cumulative TAC impacts. This project would introduce new sources of TACs during construction (i.e., on-site construction and truck hauling emissions) and operation (i.e., standby diesel generator).

Project construction activity would generate dust and equipment exhaust that would affect nearby sensitive receptors. The project would also include truck traffic and a forklift powered by a diesel engine, which would produce TAC and air pollutant emissions.

Project impacts to existing sensitive receptors were addressed for temporary construction activities and long-term operational conditions. There are also several sources of existing TACs and localized air pollutants in the vicinity of the project. The impact of the existing sources of TAC was also assessed in terms of the cumulative risk which includes the project contribution.

<u>Community Risk Methodology for Construction and Operation</u>:

Community risk impacts were addressed by predicting increased cancer risk, the increase in annual PM2.5 concentrations and computing the Hazard Index (HI) for non-cancer health risks. The risk impacts from the project are the combination of risk from construction and operation sources. These sources include on-site construction activity, construction truck hauling, and increased traffic from the project. To evaluate the increased cancer risks from the project, a 30-year exposure period was used, per BAAQMD guidance, with the sensitive receptors being exposed to both project construction and operation emissions during this timeframe.

The project increased cancer risk is computed by summing the project construction cancer risk and operation cancer risk contribution. Unlike the increased maximum cancer risk, the annual PM2.5 concentration and HI values are not additive but based on an annual maximum risk for the entirety of the project. The project maximally exposed individual (MEI) is identified as the sensitive receptor that is most impacted by the project's construction and operation. The methodology for computing community risks impacts is contained in Attachment 1 of the Report. This involved the calculation of TAC and PM2.5 emissions, dispersion modeling of these emissions, and computations of cancer risk and non-cancer health effects.

Modeled Sensitive Receptors:

Receptors for this assessment included locations where sensitive populations would be present for extended periods of time (i.e., chronic exposures). This includes the nearby existing residences to the north and south of the project site, as shown in Figure 1. Residential receptors are assumed to include all receptor groups (i.e., third trimester, infants, children, and adults) with almost continuous exposure to project emissions.

Community Risks from Project Construction:

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known TAC. These exhaust air pollutant emissions would not be considered to contribute substantially to existing or projected air quality violations. Construction exhaust emissions may still pose health risks for sensitive receptors such as surrounding residents. The primary community risk impact issue associated with construction emissions are cancer risk and exposure to PM2.5. Diesel exhaust poses both a potential health and nuisance impact to nearby receptors. A health risk assessment of the project construction activities was conducted that evaluated potential health effects to nearby sensitive receptors from construction emissions of DPM and PM2.5. This assessment included dispersion modeling to predict the offsite and onsite concentrations resulting from project construction, so that increased cancer risks and non-cancer health effects could be evaluated.

Construction Emissions:

The CalEEMod model provided total annual PM10 exhaust emissions (assumed to be DPM) for the off-road construction equipment and for exhaust emissions from on-road vehicles, with total emissions from all construction stages of 0.08 tons (157 pounds) for the 597 Helman portion (Building 1) and 0.08 tons (163 pounds) for the 380 Blodgett portion (Building 2). The on-road emissions are a result of haul truck travel during demolition and grading activities, worker travel, and vendor deliveries during construction. A trip length of one mile was used to represent vehicle travel while at or near the construction site. Uncontrolled fugitive PM2.5 dust emissions were calculated by CalEEMod and EMFAC2021 as 0.10 tons (201 pounds) for the 597 Helman (Building 1) portion and 0.03 tons (50 pounds) for the 380 Blodgett (Building 2) portion.

Dispersion Modeling:

The U.S. EPA ISCST3 dispersion model was used to predict DPM and PM2.5 concentrations at sensitive receptors (residences) in the vicinity of the project construction area. The ISCST3 dispersion model is a BAAQMD-recommended model for use in modeling analysis of these types of emission activities for CEQA projects. Emission sources for the construction site were grouped into two categories: exhaust emissions of DPM and fugitive PM2.5 dust emissions.

To represent the construction equipment exhaust emissions, an area source emission release height of 20 feet (6 meters) was used for the area sources. The release height incorporates both the physical release height from the construction equipment (i.e., the height of the exhaust pipe) and plume rise after it leaves the exhaust pipe. Plume rise is due to both the high temperature of the exhaust and the high velocity of the exhaust gas. It should be noted that when modeling an area source, plume rise is not calculated by the AERMOD dispersion model as it would do for a point source (exhaust stack). Therefore, the release height from an area source used to represent emissions from sources with plume rise, such as construction equipment, should be based on the height the exhaust plume is expected to achieve, not just the height of the top of the exhaust pipe.

For modeling fugitive PM2.5 emissions, a near-ground level release height of 7 feet (2 meters) was used for the area source. Fugitive dust emissions at construction sites come from a variety of sources, including truck and equipment travel, grading activities, truck loading (with loaders) and unloading (rear or bottom dumping), loaders and excavators moving and transferring soil and other materials, etc. All of these activities result in fugitive dust emissions at various heights at the point(s) of generation. Once generated, the dust plume will tend to rise as it moves downwind across the site and exit the site at a higher elevation than when it was generated. For all these reasons, a 7-foot release height was used as the average release height across the construction site. Emissions from the construction equipment and on-road vehicle travel were distributed throughout the modeled area sources.

Health risk impacts from construction operation were based on the construction emissions computed by CalEEMod and modeled with the ISCST3 model using 5 years of meteorological data (1990-1994) from the BAAQMD Valley Ford meteorological station The Valley Ford station is about 10 miles west-southwest from the project site. DPM and PM2.5 emissions from construction activities during 2021 and 2022 were modeled as area sources. Concentrations were calculated at nearby residential receptors at a receptor height of 1.5 meters. There are no other sensitive receptor types within 1,000 feet of the project site. Construction was assumed to occur for 9 hours per day (7:00am – 4:00pm).

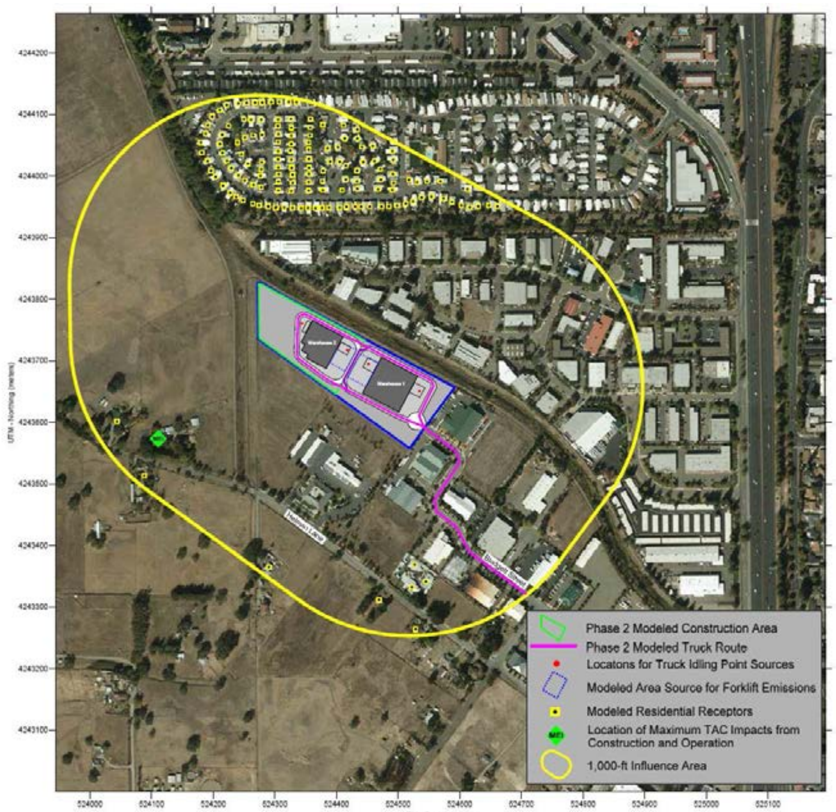
Summary of Construction Community Risk Impacts:

The increased cancer risk calculations were based on applying the BAAQMD recommended age sensitivity factors to the TAC concentrations, as described in Attachment 1 of the report. Age-sensitivity factors reflect the greater sensitivity of infants and small children to cancer causing TACs. Infant and adult exposures were assumed to occur at all residences during the entire construction period.

The maximum modeled annual $PM_{2.5}$ concentration was calculated based on combined exhaust and fugitive concentrations. The maximum computed HI value was based on the ratio of the maximum DPM concentration modeled and the chronic inhalation reference exposure level of 5 $\mu g/m^3$.

The maximum modeled annual DPM and $PM_{2.5}$ concentrations, which includes both the DPM and fugitive $PM_{2.5}$ concentrations, were identified at nearby sensitive receptors to find the MEI. The maximum construction impacts occurred at a residence southwest of the project site (see Figure 1). Table 7 lists the community risks from construction at the location of the residential MEI. Attachment 3 to th3 report includes the emission calculations used for the construction modeling and the cancer risk calculations.

Figure 1. Location of Project Construction Site, Modeled Project Operations, Off-Site Sensitive Receptors, and Maximum TAC Impact (MEI)



Community Risks from Project Operation – Traffic and Off-Road Equipment:

Operation of the project would have long-term emissions from mobile sources (i.e., truck traffic and forklift). While these emissions would not be as intensive at or near the site as construction activity, they would contribute to long-term effects to sensitive receptors. Operational impacts were calculated for project operation beginning in 2023. Emission sources evaluated included truck travel, truck idling at loading docks, and forklift operation.

Truck Traffic

Diesel powered vehicles are the primary traffic concern with local traffic-generated TAC impacts. This project would generate delivery (MHDT) and large (HHDT) truck trips that are assumed to be diesel powered.

Truck travel emissions were calculated for travel on Blodgett Street within 1,000 feet of the project site and for on-site travel. DPM (PM_{10} exhaust) and $PM_{2.5}$ ($PM_{2.5}$ exhaust and tire and brake wear) emissions were calculated using MHDT and HHDT diesel truck aggregate speed emission factors from the EMFAC2021 model for Sonoma County (SF) with the county default vehicle mix. Fugitive $PM_{2.5}$ paved road dust emissions were calculated using an emission factor from the CT-EMFAC2017 model for Sonoma County traffic. Truck travel emissions were modeled using line-volume sources. Emissions were assumed to occur 24 hours per day and modeled as such. The road segment used in modeling on- and off-site truck travel is shown in Figure 1.

Truck idling is expected to occur at the project loading docks for arriving and departing trucks. There are two loading docks at the project warehouse, one on the east side of the warehouse and the other on the west side. MHDT and HHDT truck idling DPM and $PM_{2.5}$ emissions were calculated based on EMFAC2021 emission factors for travel at 5 mph and assuming 5 minutes idle per trip for a total of 10 minutes per truck visiting the site. Idling emissions were modeled using two-point sources, one at each loading dock (see Figure 1). Emissions were assumed to occur 24 hours per day. Idle emission calculations and emission source parameters are contained in Attachment 3 of the Report. Dispersion modeling was conducted for operational sources in the same manner as described above for construction activities.

<u>Forklift(s)</u>

The project would include one or two forklifts to load and unload storage Pods that weight up to 15,000 pounds. A diesel forklift was assumed for this operation. It was conservatively assumed that total forklift hours of operation would be 12 hours per day on site. Emission rates from the forklift were computed using CalEEMod, assuming the forklift was representative of equipment meeting Tier 4 final (i.e., model 2014 or newer).

Annual DPM and $PM_{2.5}$ exhaust emissions from the diesel forklift were calculated in CalEEMod. Emissions from forklift operation were also modeled with ISCST3 as an area source (DPM & $PM_{2.5}$) with an assumed 5-meter release height. The area source was located on the west side of the warehouse adjacent to the loading dock. The forklift was modeled as operating 12 hours per day from 7:00 am to 5:00 pm. The location of the modeled area sources is also shown in Figure 1.

Table 7 lists the community risks from project truck traffic and the forklift at the location of residential MEI. The emissions and health risk calculations for project traffic and forklift are included in Attachment 3 of the report.

<u>Summary of Project-Related Community Risks at the Offsite Project MEI:</u>

The risk impacts from a project are the combination of construction and operation sources. These sources include on-site construction activity, project forklift, and increased truck traffic from the project. The project impact is computed by adding the construction cancer risk for an infant to the increased cancer risk for the project operational conditions for the roadway and forklift at the MEI over a 30-year period. The project MEI is identified as the sensitive receptor that is most impacted by the project's construction and operation.

Summary of Project-Related Community Risks at the Offsite Project MEI The risk impacts from a project are the combination of construction and operation sources. These sources include on-site construction activity, project forklift, and increased truck traffic from the project. The project impact is computed by adding the construction cancer risk for an infant to the increased cancer risk for the project operational conditions for the roadway and forklift at the MEI over a 30-year period. The project MEI is identified as the sensitive receptor that is most impacted by the project's construction and operation.

Project risk impacts are shown in Table 7. The maximum increased cancer risks, maximum PM2.5 concentration, and health hazard indexes from construction at the MEI do not exceed their respective BAAQMD single-source thresholds.

Table 7. Project Construction and Operation Risk, and Cumulative Risk Impacts at the Off-Site Project MEI

	Cancer Risk (per	**Annual PM2.5**	**Hazard**
Project Impacts			
Project Construction: 597 Helman Year 1-2 Unmitigated	5.2 (infant)	0.06	0.01
380 Blodgett Year 2-3 Unmitigated	6.9 (infant)	0.05	0.01
Mitigated	*3.2 (infant)*	*0.03*	*<0.01*
Project Operation: Trucks &Forklift Years 2-30 Unmitigated	0.6 (child/adult)	<0.01	<0.01
Project Total/Maximum: Unmitigated	12.7 (infant/child/adult)	0.06	0.01
Mitigated	9.0 (infant/child/adult)		
BAAQMD Threshold – Project Sources	**10**	**0.3**	**1.0**
Exceed Threshold?	No	No	No

Cumulative Community Risks of all TAC Sources at the Off-Site Project MEI:

Community health risk assessments typically look at all substantial sources of TACs that can affect sensitive receptors that are located within 1,000 feet of a project site (i.e., influence area). These sources include freeways or highways, rail lines, busy surface streets, and stationary sources identified by BAAQMD.

A review of the project area and based on provided traffic information indicated that no roadways within the influence area would have traffic exceeding 10,000 vehicles per day. A review of BAAQMD's stationary source map website identified three stationary sources with the potential to affect the project MEI. Figure 2 shows the location of the sources affecting the MEI. Community risk impacts from these sources upon the MEI reported in Table 6. Details of the cumulative modeling and community risk calculations are included in Attachment 5 of the report.

Figure 2. Project Site and Nearby TAC and $PM_{2.5}$ Sources

BAAQMD Permitted Stationary Sources:

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's Permitted Stationary Sources 2018 GIS website, which identifies the location of nearby stationary sources and their estimated risk and hazard impacts, including emissions and adjustments to account for new OEHHA guidance. Three sources were identified using this tool with one source being a gas dispensing facility and the other two sources unknown. A Stationary Source Information Form (SSIF) containing the identified sources was prepared and submitted to BAAQMD. BAAQMD provided input and clarification about the stationary sources. BAAQMD identified Sources #8674 and #10411 as permit shutdowns, so these two sources were not assessed.

The screening level risks and hazards provided by BAAQMD for the one stationary source was adjusted for distance using BAAQMD's Distance Adjustment Multiplier Tool for Gas Dispensing Facilities. Community risk impacts from the stationary sources upon the MEI are reported in Table 8.

<u>Summary of Cumulative Risks at the Project MEI:</u>

Table 8 reports both the project and cumulative community risk impacts at the sensitive receptors most affected by construction (i.e., the MEI). The project's community risk from project construction and operational activities would not exceed the maximum increased cancer risk, maximum PM2.5 concentration, or HI single-source thresholds. In addition, the combined project and cumulative sources impacts would not exceed the cumulative-source thresholds.

Table 8. Cumulative Community Risk Impacts at the Location of the Project MEI

Source	Cancer Risk (per million)	Annual PM2.5 ($\mu g/m^3$)	Hazard Index
Project Impacts			
Total/Maximum Project Impact - Unmitigated *Mitigated*	12.7 *<9.0*	0.06	0.01
BAAQMD Single-Source Threshold	***10***	***0.3***	***1.0***
Exceed Threshold? Unmitigated	*No*	*No*	*No*
Cumulative Sources			
Marin/Sonoma Mosquito & Vector Control (Facility ID #100856, Gas Dispensing Facility), MEI at 1000+ feet	<0.1	-	-
Combined Sources Unmitigated Mitigated	<12.8 <9.1	0.06	0.01
BAAQMD Cumulative Source Threshold	***100***	***0.8***	***10.0***
Exceed Threshold? Unmitigated	*No*	*No*	*No*

Mitigation Measure AQ-2: Use Construction equipment that has low diesel particulate matter exhaust emissions.

Implement a feasible plan to reduce diesel particulate matter emissions from new construction by 50 percent such that increased cancer risk and annual $PM_{2.5}$ concentrations from construction would be reduced below TAC significance levels is as follows:

1. All off-road mobile construction equipment larger than 25 horsepower used at the site for more than two continuous days or 20 hours total shall meet U.S. EPA Tier 4 emission standards for PM (PM_{10} and $PM_{2.5}$). Note that engines meeting the U.S. EPA Tier 2 or 3 standards that include particulate matter emissions control equivalent to CARB Level 3 verifiable diesel emission control devices would meet this standard.
2. Provide line power to the site during the early phases of construction to minimize the use of diesel-powered stationary equipment.
3. Alternatively, the applicant may develop another construction operations plan demonstrating that the construction equipment used on-site would achieve a reduction in construction diesel particulate matter emissions by 50 percent or greater. Elements of the plan could include a combination of some of the following measures:
    - Implementation of No. 1 above to use Tier 2 or 3 engines with DPF Level 3 or alternatively fueled equipment,
    - Installation of electric power lines during early construction phases to avoid use of diesel generators and compressors,
    - Use of electrically-powered equipment,
    - Forklifts and aerial lifts used for exterior and interior building construction shall be electric or propane/natural gas powered,
    - Change in construction build-out plans to lengthen phases, and
    - Application of different building methods that result in less diesel equipment usage.

Such a construction operations plan would be subject to review by an air quality expert and approved by the City prior to construction.

Effectiveness of Mitigation Measure AQ-1 and AQ-2

CalEEMod was used to compute emissions associated with the implementation of Mitigation Measures AQ-1 and AQ-2, assuming that all off-road mobile equipment meets U.S. EPA Tier 4 engines standard and BAAQMD best management practices for construction were included. With these measures implemented, the project's total construction cancer risk levels (assuming infant exposure) would be reduced to 8.4 chances per million. A plan that reduces DPM emissions from Building 2 construction by 50 percent would reduce total construction and operation cancer risk to about 9.1 chances per million, which would be below the BAAQMD single-source significance threshold.

5.3(d) (Other Emissions) Less Than Significant Impact: There may occasionally be other emissions which could lead to localized odors during site development associated with construction equipment, paving and the application of architectural coatings. Any emissions that lead to odors generated during construction would be temporary and not likely to be noticeable beyond the immediate construction zone. As a warehouse to be used by a moving and storage company operation of the project will not create other emissions adversely affecting a substantial number of people. Therefore, the project will have less than significant impacts to air quality due to other emissions.

5.4. Biological Resources

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (Formerly Fish and Game) or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations, or by the California Department of Fish and Wildlife (formerly Fish and Game) or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☒	☐

Sources: City of Cotati 2015 General Plan; General Plan EIR; Santa Rosa Plain Conservation Strategy, prepared by U.S. Fish and Wildlife Service, December 2005; Recovery Plan for the Santa Rosa Plain, prepared by U.S. Fish and Wildlife Service, May 2016; Biological Resources Report and Addendum, prepared by Sol Ecology, January 2022 and July 21, 2022, respectively; project plans dated July 18, 2022; California Department of Fish and Wildlife MND comment letter dated July 20, 2021.

Biological Resources Setting:

Biological resources are protected by state and federal statutes including the Federal Endangered Species Act (FESA), the California Endangered Species Act (CESA), the Clean Water Act (CWA), and the Migratory Bird Treaty Act (MBTA). These regulations provide the legal protection for plant and animal species of concern and their habitat at the state and federal level. As reported in the General Plan, the biological diversity within the city limits includes agriculture (63 acres), annual grassland (87 acres), and freshwater emergent wetland (2 acres).

The project site, like of much of Cotati and Sonoma County, is designated as critical habitat for California tiger salamander (CTS). The CTS was federally listed as endangered in 2003 and state-listed as a threatened species in 2010. In 2011, the USFWS designated revised critical habitat for the Sonoma County "Distinct Population Segment" of the California tiger salamander. In total, approximately 47,383 acres of land were designated as critical habitat for the Sonoma County "Distinct Population Segment" of the California tiger salamander under the revised Final Rule. The project site is within the mapped critical habitat.

CTS occur in grasslands and open oak woodlands that provide suitable aestivation (over summering) and/or breeding habitats. They spend most of their lives underground and typically only emerge from their subterranean refugia for a few nights each year during the rainy season to migrate to breeding ponds. The maximum migration distance of California tiger salamanders to/from their breeding pools to upland over-summering habitat is typically 1.3 miles.

In Sonoma County, subterranean refugia likely include Botta's pocket gopher (*Thomomys bottae*) burrows, deep fissures in desiccated clay soils, and debris piles (e.g., downed wood, rock piles). Stock ponds, seasonal wetlands, and deep vernal pools typically provide most of the breeding habitat used by California tiger salamanders. Occasionally, they are found breeding in slow moving streams or ditches. Seasonal wetlands that are used for breeding typically must hold water into the month of May to allow enough time for larvae to fully metamorphose. Typically, in Sonoma County pools that are 16 inches or deeper in the peak winter months will remain inundated long enough to provide good breeding conditions for California tiger salamanders. Late spring rainfall events often allow California tiger salamanders to successfully breed in shallower pools.

A site-specific Biological Resources Report and Addendum were prepared by Sol Ecology (**Appendix C**) in January 2022 and July 2022, respectively, to gather information necessary to complete a review of potential biological resource impacts from development of the proposed project, under the guidelines of the California Environmental Quality Act (CEQA) for applicable state and federal regulations. The report describes the results of the Project Study Area survey and assessment for the presence of sensitive biological resources protected by local, state, and federal laws and regulations. The report also contains an evaluation of potential impacts to sensitive biological resources that may occur from the proposed project and potential mitigation measures to compensate for those impacts as warranted. The report is based on information available at the time of the study and on-site conditions that were observed on the dates of the site visits.

Literature Review

To evaluate whether special status species or other sensitive biological resources(e.g., wetlands) could occur in the study area and vicinity, Sol Ecology biologists reviewed the following: ● California Native Plant Society's (CNPS's) Inventory of Rare and Endangered Plants of California search for U.S. Geological Survey (USGS) 7.5-minute Cotati quadrangle and eight adjacent quadrangles (CNPS 2021a); ● California Natural Diversity Database (CNDDB) records search for USGS 7.5-minute Cotati quadrangle and eight adjacent quadrangles (California Department of Fish and Wildlife [CDFW] 2021); ● U.S. Fish and Wildlife Service (USFWS) list of threatened and endangered species for the Project Study Area (IPaC) (USFWS 2021a); ● CDFG publication "California's Wildlife, Volumes I-III" (Zeiner et al. 1990) ● CDFG publication California Bird Species of Special Concern (Shuford and Gardali 2008) ● CDFW and University of California Press publication California Amphibian and Reptile Species of Special Concern (Thomson et al. 2016) ● USFWS National Wetlands Inventory, Wetlands Mapper (USFWS 2021b); and ● U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Web Soil Survey (USDA 2019).

Based on information from the above sources, Sol Ecology developed lists of special status species and natural communities of special concern that could be present in the Project vicinity (Appendix B of Report). Figures 2 and 3 in the report present the results of a 5-mile CNDDB record search around the study area for special status plants and wildlife (Appendix A of report). All biological resources are evaluated for their potential to occur within the study area in Section 3.0 of the report.

Field Surveys

On January 12, 2021, the Project Study Area was traversed on foot by Sol Ecology biologists to determine the presence of (1) plant communities both sensitive and non-sensitive, (2) special status plant and wildlife species, (3) presence of essential habitat elements for any special status plant or wildlife species, and (4) a preliminary assessment of the presence and extent of wetland and non-wetland waters.

Sol Ecology has conducted biological resource surveys on the property on January 12, March 16, April 14, and May 13, 2021, and made multiple visits in October 2021 prior to the start of grading for Building 1 and during 2022 following the commencement of construction of Building 1. Field surveyor qualifications are in Appendix C of the report. Biologists walked throughout the entire study area identifying all plant and wildlife species encountered and mapping vegetation communities. Plant species were recorded and identified to a taxonomic level sufficient to determine rarity using the second edition of the Jepson Manual (Baldwin et al. 2012). All plant species observed in the study area are included in Appendix D of the report – Observed Species Table. Vegetation communities were identified using the online version of A Manual of California Vegetation (CNPS 2021b). Foraging habitat, refugia or estivation habitat, and breeding (or nesting habitat) were noted for wildlife species.

In cases where little information is known about species occurrences and habitat requirements, the species evaluation was based on best professional judgment of Sol Ecology biologists with experience working with the species and habitats. If a special status species was observed during the site visit, its presence was recorded and discussed. For some threatened and endangered species, a site survey at the level conducted for this report may not be sufficient to determine presence or absence of a species to the specifications of regulatory agencies.

Protocol-level special status plant surveys were performed within the Study Area on March 16, April 14, and May 13, 2021. Surveys were performed by walking throughout the entire Study Area. Surveys were conducted during the appropriate season and were floristic in nature. All plants encountered during the surveys were identified to the highest taxonomic level necessary to determine rarity. The Jepson Manual was consulted for detailed biological, distributional, and phenological information, and used as a standard for nomenclature. All special status plant populations and sensitive communities, if found, were mapped using a handheld Global Positioning System (GPS) unit with sub-meter accuracy. No special status plant species were observed during the special status plant surveys within the Study Area. Table 2 of the report lists all the plant species observed within the Study Area during the special status plant surveys.

On January 12, 2021, Sol Ecology performed a preliminary wetland assessment to confirm the current presence and extent of previously delineated wetlands within the study area had not changed. A formal wetland delineation was conducted in 2008 (Macmillan 2008). In 2008, Lucy Macmillan identified wetland and non-wetland waters potentially subject to regulation by the federal government (U.S. Army Corps of Engineers [USACE]) and the state of California (Regional Water Quality Control Board [RWQCB] and CDFW). A Jurisdictional Determination was issued by the USACE on June 3, 2010. The delineation of wetland boundaries was based on the presence/absence of indicators of hydrophytic vegetation, hydric soil, and wetland hydrology. The boundaries of non-wetland waters were identified by locating the ordinary high-water mark (OHWM).

Results

Existing Conditions and General Wildlife Use - Elevations within the Project Study Area range from approximately 27 to 30 meters (91 to 99 feet) above mean sea level. The Project Study Area encompasses one soil map unit identified by the USDA, NRCS (USDA 2019):

- Clear Lake clay, sandy substratum, drained, 0 to 2 percent slopes, MLRA 14: This soil map unit is poorly drained and occurs on basin floors. The soil parent material is basin alluvium derived from volcanic and sedimentary rock over fan alluvium derived from volcanic and sedimentary rock. Clear lake clay is rated as a hydric soil. Minor components include Haire (5%), Whight (5%), and Reyes (5%).

Vegetation communities present in the study area were classified using the online version of A Manual of California Vegetation (CNPS 2021b). However, in some cases it is necessary to identify variants of community types or to describe non-vegetated areas that are not described in the literature. Vegetation communities were classified as non-sensitive or sensitive natural communities as defined by CEQA and other applicable laws and regulations. Photographs of the study area are provided in Appendix E of the Biology report.

Non-Sensitive Natural Communities

California Annual Grassland - California annual grassland is continuous throughout the herbaceous layer within the Project Study Area. The study area is regularly disked and therefore, the grassland community has developed following repeated disturbance. The grassland community consists primarily of non- native (invasive) annual grasses and non-native forbs. Non-native annual grass species observed include oats (Avena sp.), rye grass (Festuca perennis), and soft chess (Bromus hordeaceus). Non- native forb species observed within the grassland include bristly ox-tongue (Helminthotheca echioides), carrot (Daucus carota), and radish (Raphanus sativus).

Sensitive Natural Communities

Seasonal Wetlands -Approximately 0.88 acres of seasonal wetlands were delineated within the Project Study Area in 2008, verified by the USACE on June 3, 2010 (File No. SPN-2001-25967-N). The seasonal wetlands were dominated by hydrophytic vegetation including buttercup (Ranunculus muricatus), rye grass, semaphore grass (Pleuropogon californicus), and soft chess. Hydric soils within the seasonal wetlands displayed a depleted matrix (10YR 3/2 or 3/1) with heavy mottling and/or oxidized rhizospheres in the top 10 inches. The presence of a biotic crust (algal matting) was the primary Indicator of hydrology within the wetlands (Macmillan 2008).

Special Status Plants

Special status plant species include plant species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing under the Federal Endangered Species Act (ESA) or California Endangered Species Act (CESA). These acts afford protection to both listed species and those that are formal candidates for listing. Plant species on CNPS' Inventory of Rare and Endangered Plants of California with California Rare Plant Ranks of 1 and 2 are also considered special status plant species and must be considered under CEQA. Further, California Rare Plant Ranks 3 and 4 are evaluated within this report to ensure locally important plant species are included for impact significance.

Protocol-level botanical surveys were performed on the approximately 8.5-acre property in 2008 and in 2009 by Roy Buck, EcoSystems West Consulting Group and in 2018 by Jane Valerius Environmental Consulting in accordance with Santa Rosa Conservation Strategy Appendix D Plant Survey Protocol (USFWS 2005). No special status plants were found during any of the surveys. Additional surveys were performed by Sol Ecology on March 16, April 14, and May 13, 2021, in accordance with the USFWS and CDFW 2018 protocols. The surveys were performed over the entire site, including wetlands mapped on the western and southern borders and were floristic in nature. Target species included Sonoma sunshine (*Blennosperma bakeri*), Burke's goldfields (*Lasthenia burkei*), and Sebastopol meadowfoam (*Limnanthes vinculans*). Reference visits to the Alton Conservation Bank were performed prior to each survey to verify bloom. No special status plants were observed on or adjacent to the Project Study Area; the results of the 2021 surveys are provided in Appendix D of the report.

Based upon a review of the resources and databases given in Section 2.1, 84 special status plant species have been documented within a 9-quad search of the study area (Appendix B of the report). Based on the presence of vegetation communities described above and soils at the site, the presence of active cultivation for the last 20 years or more, and negative findings during protocol-level surveys in 2008, 2009, 2018, and 2021, the site is unlikely to support any of the special status species found in similar habitats within the vicinity. Other special status plant species documented within the 9-quad search are unlikely or have no potential to occur in the study area for one or more of the following reasons:

● Hydrologic conditions (e.g., vernal pools, bogs and fens, freshwater marshes and swamps) necessary to support the special status plants do not exist on site. ● Edaphic (soil) conditions (e.g., sandy, rocky, gravelly, talus) necessary to support the special status plants do not exist on site. ● Topographic conditions (e.g.,slopes) necessary to support the special status plants do not exist on site. ● Unique pH conditions (e.g., serpentine) necessary to support the special status plant species are not present on site. ● Associated vegetation communities (e.g., chaparral, coastal bluffs, oak woodland, conifer forest) necessary to support the special status plants do not exist on site.

Special Status Wildlife

In addition to wildlife listed as federal or state endangered and/or threatened, federal and state candidate species, CDFW Species of Special Concern, CDFW California Fully Protected species, USFWS Birds of Conservation Concern, and CDFW Special-status Invertebrates are all considered special status species. Although these species generally have no special legal status, they are given special consideration under CEQA. The federal Bald and Golden Eagle Protection Act also provides broad protections to both eagle species that are roughly analogous to those of listed species. Bat species are also evaluated for conservation status by the Western Bat Working Group (WBWG), a non-governmental entity; bats named as a "High Priority" or "Medium Priority" species for conservation by the WBWG are typically considered special status and considered under CEQA; bat roosts are protected under CDFW Fish and Game Code. In addition to regulations for special status species, most native birds in the United States(including non-status species) are protected by the federal Migratory Bird Treaty Act of 1918 (MBTA) and the California Fish and Game Code (CFGC), i.e., sections 3503, 3503.5 and 3513. Under these laws, deliberately destroying active bird nests, eggs, and/or young is illegal.

Based on the databases given in Section 2.1 of the report, 48 special status wildlife species have been documented within a 9-quad search of the study area (Appendix B of the report). Based on the presence of biological communities described above, and as identified by the California Department of Fish and Wildlife as included in their letter dated July 20, 2021 to the City of Cotati, the Project Study Area has the potential to support three (3) of these species, one of which is both federal and state listed (Table 1). The remaining species found in the database search are unlikely or have no potential to occur for one or more of the following reasons:

● Limited small mammal forage habitat for raptors and other species due to annual disking. ● No suitable roosting habitat such as barns, old buildings, or large snags (e.g., for Townsend's big-eared bat or pallid bat). ● No suitable coastal prairie or vernal pool habitat (e.g., obscure bumble bee). ● No suitable stream or pond habitat (e.g., for foothill yellow-legged frog, California red- legged frog, California freshwater shrimp or western pond turtle). Note that the Laguna de Santa Rosa may support pond turtle, however Sonoma County Water Agency chain-link fencing located along the southern boundary of the Laguna prevents pond turtle from accessing the site. ● No suitable riparian, freshwater marsh, woodland, or forest habitat (e.g., western yellow-billed cuckoo, tricolored blackbird, Northern spotted owl).

Table 1. Special Status Wildlife with Potential to Occur in the Study Area

Scientific Name/ Common Name	Status 1	Habitat	Potential for Occurrence
Birds			
white-tailed kite (WTK) *Elanus leucurus*	CFP	Year-round resident in coastal and valley lowlands with scattered trees and large shrubs, including grasslands, marshes, and agricultural areas. Nests in trees, of which the type and setting are highly variable. Preys on small mammals and other vertebrates.	**Low potential**. Suitable nesting substrate is not present in the project study area, though a few sparse trees and shrubs around the perimeter may offer marginal nesting opportunity. Suitable foraging habitat is present.
burrowing owl (BUOW) *Athene cunicularia*	SSC	Occur in annual and perennial grasslands and agricultural areas. It is believed that burrowing owls may potentially occur wherever there is ground squirrel (e.g., *Spermophilus beecheyi*) colonies as this owl uses ground squirrel burrows throughout the year. Burrows are the essential component of burrowing owl habitat (CDFG 1995). BUOW may utilize multiple burrows/sites throughout the year (e.g., small seasonal migrations).	**Low potential.** Annual grasslands are present within study area and agricultural areas exist to the south and west. However, no evidence of suitably sized burrows is present on or immediately adjacent to the study area. The site is not suitable because there are no sandy soils on site, as BUOW requires friable soils. However, BUOW may overwinter on adjacent parcels. BUOW does not nest in Sonoma County (Shuford and Gardali).
Amphibians and Reptiles			
California tiger salamander (CTS) *Ambystoma californiense*	FE, ST	Inhabits grassland, oak woodland, ruderal, and seasonal pool habitats. Adults are fossorial and utilize mammal burrows and other subterranean refugia. Breeding occurs primarily in vernal pools and other seasonal water features.	**Moderate potential.** Wetland habitats on the site are seasonal in nature and do not likely pond for a sufficient duration to support breeding. Suitable upland habitat is present. The site is surrounded by multiple CTS occurrences, the nearest of which is approximate 800 feet to the south. The Project Study Area provides only marginal upland habitat due to historic land use practices and the presence of clay soils. Burrow density is relatively low except on the outer perimeter on the western and northwestern side of the property.

[1] FE/SE – Federal/State Endangered; FT/ST – Federal/State Threatened; SCE/T – State Candidate Endangered/Threatened; CFP – California Fully Protected; SSC – Species of Special Concern; BCC – Bird of Conservation Concern; SSI – Special Status Invertebrate; LC – Species of Local Concern; WBWG – Western Bat Working Group – Medium or High Priority Species **(**Burrowing owl (BO) *Athene cunicularia* is included as a part of Table 1 based upon the recommendation of the CDFW due to the mapping of suitable soil on adjacent property for wintering refugia for burrowing owl).

Potential Impacts and Mitigation

The assessment of impacts under CEQA is based on the change caused by the Project relative to the existing conditions within the Project Study Area. In applying CEQA Appendix G, the terms “substantial” and “substantially” are used as the basis for significance determinations in many of the thresholds but are not defined qualitatively or quantitatively in CEQA or in technical literature. In some cases, the determination requires application of best professional judgment based on knowledge of site conditions as well as the ecology and physiology of biological resources present in a given area. The CEQA and State CEQA Guidelines defines “significant effect on the environment” as “a substantial adverse change in the physical conditions which exist in the area affected by the proposed project.” Pursuant to Appendix G, Section IV of the State CEQA Guidelines, the proposed Project would have a significant impact on biological resources if it would:

A. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. B. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service. C. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. D. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. E. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. F. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Biological Resources Impact Discussion:

5.4(a-b) (Adverse Effects to Sensitive Species and Habitats) Less Than Significant with Mitigation: Sensitive Natural Communities - Seasonal wetlands are sensitive natural communities occurring within the Project Study Area. The seasonal wetlands within the study area are regulated by the USACE and RWQCB. Project activities resulting in fill or modification (including diversion) of seasonal wetlands within the study area must be authorized by the USACE pursuant to Section 404 of the Clean Water Act, and the RWQCB pursuant to Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Based on preliminary calculations, approximately 0.88 acre of seasonal wetland habitat is present and will be avoided by the proposed project as shown in Appendix A. A minimum 30-foot setback from the top of bank of the Laguna de Santa Rosa is provided. The Laguna de Santa Rosa is separated from the project site by a maintained levee road and chain link fence. Approximately one half of the proposed project activities will be set back 50 feet or more from any jurisdictional seasonal wetland habitat. The closest point proposed project activities will come to seasonal wetlands is approximately 25 feet along the southern perimeter access road. Impacts to wetland habitat from project construction or operation are considered significant under CEQA; based on the current site plan the proposed project will have no effect on any sensitive natural communities.

Special-Status Plant Species - A total of eleven (11) protocol-level surveys conducted in 2008, 2009, 2018, and 2021 concluded no special status species are present, including those listed species potentially present in seasonal wetland habitat on the Santa Rosa Plain. Given that no special status plant species have been observed during protocol-level surveys and due to the highly disturbed nature of the site, no impacts to special status plants are anticipated.

Special Status Wildlife Species - Three special status wildlife species have potential to occur within the Project Study Area: white-tailed kite, burrowing owl, and California tiger salamander. In addition, the study area provides suitable nesting substrate for several migratory bird species protected under the MBTA.

<u>Migratory Birds, Burrowing Owl (BUOW) and White-Tailed Kite (WTK)</u> - The Project Study Area provides suitable nesting substrate (trees, shrubs, grasses) for many non-status migratory birds. Annual disking likely precludes most bird species from nesting on the site and the lack of sandy soil reduces the potential for overwintering BUOW. Proposed construction activities have the potential to impact nesting birds and/or wintering BUOW if present adjacent to activities. Impacts to BUOW or nesting birds resulting in nest abandonment or direct mortality to chicks or eggs is considered a significant impact under CEQA.

<u>California Tiger Salamander (CTS)</u> - The Project Study Area provides suitable upland estivation habitat for CTS and is within 2,200 feet of at least two breeding occurrences, the nearest of which is approximately 800 feet from the south end of the site. Little burrowing habitat is present due to agricultural practices on the site. Nonetheless, the project has the potential to impact CTS given proximity to nearby occurrences and the absence of any barriers to dispersal. Given this species is both federal and state listed, any direct mortality is considered significant under CEQA. Impacts to CTS may occur during ground-disturbing activities if present. Because the site is bounded by the Laguna de Santa Rosa and the proposed project will be designed to be close to existing development on Blodgett Street, the project will not result in any permanent barrier to dispersing adults. The site itself is not within any obvious corridor between breeding occurrences and likely represents only limited upland estivation habitat for CTS the breed in the vicinity. project would result in the adverse modification of critical habitat for CTS given its location on the Santa Rosa Plain. A total of approximately 2.834 acres of upland habitat would be affected by the proposed project, including 2.752 acres of permanent impact for the construction of Building 2 AOD, bioretention areas, and upland habitat in the northeast corner which will be isolated as a result of the project. A total of 0.083 acre of CTS upland habitat will be temporarily impacted to allow for exclusion fencing and access to the outer curb for construction and installation of permanent barrier fencing. Lastly, compensatory mitigation for the project would likely come from permittee-responsible mitigation (PRM) lands which could result in minor impacts to CTS upland habitat through construction of breeding ponds, if necessary.

The following mitigation measures will be implemented:

MM BIO-1. Best Management Practices

Best management practices should be employed to prevent discharge or spilling of materials or liquids into the adjacent seasonal wetlands. The 25-foot setback (or adjusted setback) should be demarcated using either orange construction fence and/or wildlife exclusion fence described in MM BIO-5. No refueling of vehicles or equipment shall occur outside of the project footprint.

MM BIO-2. Nesting Bird Surveys. If construction begins during the nesting bird season between February 1 and August 31, the following is recommended to ensure potentially significant impacts to migratory nesting birds and raptors (including WTK) are avoided:

- Pre-construction nesting bird surveys should be performed within the project study area and up to 500 feet of proposed activities no more than 7 days prior to construction. If a lapse of 7 days or more in construction occurs, another survey shall be conducted.
- If nests are found, a no-disturbance buffer should be placed around the nest until young have fledged or the nest is determined to be no longer active by the biologist. The size of the buffer may be determined by the biologist based on species, ambient conditions, and proximity to project-related activities. Avoidance buffers for raptors shall be a minimum of 500 feet unles otherwise approved in writing by CDFW. Larger buffers are not likely necessary due to ambient conditions. Any active nests shall be monitored by a qualified biologist daily at a minimum for the first week to ensure the buffer is adequate to avoid nest disturbance, then weekly thereafter.

MM BIO-3. Burrowing Owl. A qualified biologist shall follow the California Department of Fish and Game (now CDFW) 2012 Staff Report on Burrowing Owl Mitigation (CDFW 2012 Staff Report) habitat assessment and survey methodology prior to project activities occurring during the burrowing owl wintering season from September 1 to January 31. If work is initiated outside of the wintering season, no surveys are needed. The habitat assessment and surveys shall encompass a sufficient buffer zone to detect owls nearby that may be impacted. Time lapses between surveys or project activities shall trigger subsequent surveys, as determined by a qualified biologist, including but not limited to a final survey within 24 hours prior to ground disturbance and before construction equipment mobilizes to the Project area. The qualified biologist shall have a minimum of two years of experience implementing the CDFW 2012 Staff Report survey methodology resulting in detections. Detected burrowing owls shall be avoided pursuant to the buffer zone prescribed in the CDFW 2012 Staff Report, unless otherwise approved in writing by CDFW, and any eviction plan shall be subject to CDFW review.

CDFW does not consider eviction of burrowing owls (i.e., passive removal of an owl from its burrow or other shelter) as a "take" avoidance, minimization, or mitigation measure; therefore, offsite habitat compensation shall be included in the eviction plan. Habitat compensation acreages shall be approved by CDFW, as the amount depends on site-specific conditions, and completed before project construction. It shall also include placement of a conservation easement and preparation and implementation of a long-term management plan.

MM BIO-4. Section 2081 Permitting and Compensatory Mitigation. At minimum, the Applicant shall consult with the CDFW and obtain a Section 2081 Incidental Take Permit (ITP) for CTS prior to commencing construction-related activities on the project site. Compensatory mitigation shall be provided at a ratio of 2:1 for all permanent impacts, and at 1:1 for any temporary effects. Mitigation shall be purchased at a CDFW-approved conservation bank or through a CDFW- approved off-site mitigation site prior to issuance of the ITP. Copies of the CDFW's 2081 ITP and copies of USFWS concurrence or Minor Habitat Conservation Plan (HCP) if required shall be provided to the City of Cotati prior to commencement of grading or other construction activities on the site. The Applicant shall conform with all of the measures set forth in the ITP and/or HCP if required, including any off-site compensatory mitigation requirements (e.g., construction of CTS breeding pools in upland habitat, if required).

MM BIO-5. Wildlife Exclusion Fencing (WEF). Prior to the start of construction, WEF will be installed at the edge of the project footprint in all areas where CTS could enter the construction area. The location of the fencing shall be determined by the onsite project manager and the CDFW-approved biologist in cooperation with CDFW prior to the start of staging or surface disturbing activities. A conceptual fencing plan shall be submitted to CDFW for review and approval prior to WEF installation. The WEF shall remain in place throughout the duration of the project and shall be inspected weekly and fully maintained. Repairs to the WEF shall be made within 24 hours of discovery. Upon project completion the WEF shall be completely removed and replaced with permanent barrier fencing.

MM BIO-6. Relocation Plan. A Relocation Plan shall be prepared and be consistent with the Guidelines for the relocation of California tiger salamander (*Ambystoma californiense*) (Shaffer et. al. 2008). The Relocation Plan shall contain the name(s) of the Service-approved biologist(s) to relocate CTS, method of relocation (if different than number 3 below), a map, and description of the proposed release site(s) and burrow(s), and written permission from the landowner to use their land as a relocation site.

MM BIO-7. Protocol for Species Observation, Handling, and Relocation. Only Service-approved biologists shall participate in activities associated with the capture, handling, relocation, and monitoring of CTS. If a CTS is encountered, work activities within 50 feet of the individual shall cease immediately and the Onsite Project Manager and Service-approved biologist shall be notified. Based on the professional judgment of the Service-approved biologist, if project activities can be conducted without harming or injuring the individual(s), it may be left at the location of discovery and monitored by the Service-approved biologist.

MM BIO-8. Biological Monitors. Qualified biological monitor(s) will be on site each day during all earth moving activities. The biological monitor(s) shall conduct clearance surveys at the beginning of each day and regularly throughout the workday when construction activities are occurring that may displace, injure, or kill CTS through contact with workers, vehicles, and equipment. Where feasible and only on a case-by-case basis, rodent burrows and other ground openings suspected to contain CTS that would be destroyed from project activities may be carefully excavated with hand tools. Pre-soaking the area prior to ground disturbance may also increase emergence of the species for translocation.

Before the start of work each day, the biological monitor will check for animals under all equipment such as vehicles and stored pipes. The biological monitor will check all excavated steep-walled holes or trenches greater than one foot deep for any CTS. CTS will be removed by the biological monitor and relocated according to the Relocation Plan.

To prevent inadvertent entrapment of animals during construction, all excavated, steep-walled holes or trenches more than 6 inches deep will be covered with plywood (or similar materials) that leave no entry gaps at the close of each working day or provided with one or more escape ramps constructed of earth fill or wooden planks. The Biological Monitor shall inspect all holes and trenches at the beginning of each workday and before such holes or trenches are filled. All replacement pipes, culverts, or similar structures stored in the project footprint overnight will be inspected before they are subsequently moved, capped, and/or buried.

MM BIO-9. Biological Monitoring Records. The biological monitor(s) shall maintain monitoring records in accordance with applicable permits. All monitoring records shall be provided to the applicable agency(ies) within 30 days of the completion of monitoring work.

MM BIO-10. Proper Use of Erosion Control Materials. Plastic or synthetic monofilament netting will not be used in order to prevent CTS from becoming entangled, trapped, or injured. This includes products that use photodegradable or biodegradable synthetic netting, which can take several months to decompose. Acceptable materials include natural fibers such as jute, coconut, twine, or other similar fibers.

MM BIO-11. Vegetation Removal. A Service-approved biologist will be present during all vegetation clearing and grubbing activities. Grasses and weedy vegetation should be mowed to a height no greater than 6 inches prior to ground-disturbing activities. All cleared vegetation will be removed from the project footprint to prevent attracting animals to the project site. Prior to vegetation removal, the Service-approved biologist shall thoroughly survey the area for CTS. Once the qualified biologist has thoroughly surveyed the area, clearing and grubbing may continue without further restrictions on equipment; however, the qualified biologist shall remain onsite to monitor for CTS until all clearing and grubbing activities are complete.

MM BIO-12. Nighttime Activities. Construction and ground disturbance will occur only during daytime hours and will cease no less than 30 minutes before sunset and will not begin again prior to no less than 30 minutes after sunrise.

MM BIO-13. Trash. All foods and food-related trash items will be enclosed in sealed trash containers at the end of each day and removed from the site every three days.

MM BIO-14. Wet Weather Restrictions. If work is proposed to occur during the wet weather season between October 15 and April 15, no grading shall be permitted when a ¼-inch or more precipitation is forecasted within 72 hours to avoid impacts to CTS that may be leaving estivation habitat and moving to nearby breeding sites. Work shall be suspended until at least 24 hours following a major rain event.

MM-15. Revegetation of Temporarily Disturbed Vegetation within the Wetland Setback. The 0.08 acre of temporarily disturbed vegetation will be revegetated upon completion of the Project. After all construction related debris, including stormwater pollution and prevention materials, are removed, a 4-inch layer of imported topsoil will be spread over the disturbed area to ensure that there are sufficient nutrients to facilitate and maintain plant growth. After topsoil has been placed, a seed mix composed of plants typically found in/near wetlands in the project vicinity (Table 2) will be hand broadcasted over the topsoil. A thin layer of light mulch or organic compost will be broadcast over the seed to protect it from predators and wind and stormwater erosion. Revegetation will occur in late October so that the seeds do not become spoiled by late summer/early fall heat and benefit from the rainy season.

Table 2. Wetland-Setback Plant Seed Mix

Scientific Name	Common Name	Pounds / Acre
Bromus carinatus	California brome	16
Hordeum californicum	California meadow barley	12
Juncus effusus	Bog rush	6
Elymus triticoides	Beardless wild rye	8
Danthonia californica	California oatgrass	10
Stipa pulchra	Purple needle grass	10
Pleuropogon californicus	Semaphore grass	10

5.4(c) (Adverse Effects on State or Federally Protected Wetlands) Less Than Significant: The Army Corps of Engineers has jurisdiction over the 0.88 acres of seasonal wetland located on the project site. On March 22, 2022, the U.S. Army Corps of Engineers confirmed that the proposed project will not result in the placement of fill within waters or wetlands subject to Corps regulation on the project site, and therefore no Department of Army (DA) permit would be required.

5.4(d) (Adverse Effect to Wildlife Movement) Less Than Significant Impact: Movement corridors for wildlife through the City of Cotati include creeks, drainages, open space, as well as various low density or rural developed areas. Species using these areas include aquatic, terrestrial, and avian species.

The proposed project will not interfere with the movement of native wildlife. The project site is immediately west of an existing developed business park and south and north of developed properties developed with urban uses. The project site borders the Laguna de Santa Rosa and Washoe Creek which will remain in their current state. Development of the project site will not adversely impact any significant or regional wildlife movement corridor. Therefore, impacts due to a conflict with a movement corridor would be less than significant.

5.4(e) (Conflict with Local Ordinances) No Impact: The City of Cotati's Tree Preservation and Protection Ordinance (Chapter 17.54 of the Municipal Code) contains provisions to preserve and protect native and non-native trees. The provisions of the ordinance apply to the removal or relocation of any tree with a circumference of 12 inches or more, measured at 54 inches above natural grade. The project site is an open field with no trees, and therefore, there will be no impact.

5.4(f) (Conflicts with Habitat Conservation Plans) Less Than Significant Impact: Sonoma County does not have any California Regional Conservation Plans, as identified in the California Department of Fish and Wildlife's (CDFW) Natural Community Conservation Planning (NCCP) Map.[1] The Santa Rosa Plain Conservation Strategy Plan (SRPCSP) and the Recovery Plan were reviewed to assess the project's potential to impact any protected plant or animal species. The SRPCSP mapping (Figure 3 dated 4.16.2007) shows that the project site is in an area designated as "Future Development." The project site is not located within a "Conservation Area" of the Santa Rosa Plain according to the Recovery Plan (Figure 1 dated 5.30.2015). Accordingly, the USFWS anticipated that this project site would be developed when it prepared the Conservation Strategy.

The USFWS 2007 Programmatic Biological Opinion is based on the biological framework presented in the Conservation Strategy. Projects that require a Corps permit, that remain consistent with objectives stated in the Conservation Strategy, can be appended to the Programmatic Biological Opinion at the discretion of the USFWS. Projects that are appended to the Programmatic Biological Opinion will be provided individual take authorization for impacts to federally-listed species.

As described in 5.4 (a-b) above, development of the proposed project will result in impacts to California tiger salamander habitat. Mitigation Measure BIO-4 requires the applicant to purchase conservation

[1] California Regional Conservation Plans, prepared by California Department of Fish and Wildlife, April 2019, https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=68626&inline, Accessed April 11, 2022.

credits for CTS special-status species at replacement to impacts ratios identified in the USFWS' 2007 Programmatic Biological Opinion (or any successor Programmatic Biological Opinion). Therefore, the project does not conflict with any local policies or adopted conservation plans, and impacts resulting from a conflict with an adopted conservation plan from project implementation would be considered less than significant.

5.5. Cultural Resources

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

Sources: City of Cotati 2015 General Plan; General Plan EIR; and Cultural Resources Study, prepared by Scott McGaughey, Anthropological Studies Center, Sonoma State University, June, 2021.

Cultural Resources Setting:

As shown on General Plan EIR Figure 3.4-1: Sensitive Archaeological Areas, the project site is in an area considered sensitive for prehistoric archaeological deposits. The project site is not located within the Historic Corridor. As shown in Figure 3.8-1: Watersheds of the General Plan EIR, the project site is located adjacent to the Laguna de Santa Rosa and Washoe Creek.

Cultural Resources Study

Scott McGaughey at the Anthropological Studies Center (ASC) at Sonoma State University conducted a Cultural Resources Study for the proposed project (**Appendix D**).

A historical resource under CEQA (also called a cultural resource [14 CCR Appendix A]) is "any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California . . . Generally, a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing on the California Register of Historical Resources [CRHR]" (CCR §15064.5[a][3]). The eligibility criteria for listing cultural resources, both archaeological and historical, in the CRHR are defined in CRHR publications (California Office of Historic Preservation 1998) and in the CEQA guidelines (CCR §15064.5).

Any resource that is eligible for listing in the California Register must be given consideration under the CEQA process (PRC §21084.1; CCR §15064.5; CCR §15021); adverse effects to cultural resources eligible for listing on the CRHR must be avoided or the effect must be mitigated where feasible (CCR §15021).

The archaeological resources study comprised four main parts: a records and literature search at the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS), administered by the California Office of Historic Preservation (OHP); a further literature review of publications, files, and maps at ASC and online for ethnographic, historic-era, and prehistoric resources and background information; communication with the Native American Heritage Commission (NAHC) to request a review of the Sacred Lands File and contact information for the appropriate Tribal communities, who ASC then contacted regarding the project; and a pedestrian archaeological survey of the parcel. Based on the results of this study, this report concludes with an assessment of the potential for surficial and buried archaeological resources in the project area.

ASC Archaeological Technician Sydni Kitchel conducted the records and literature search at the NWIC on June 9, 2021, supplemented by further literature review at ASC and online. ASC Staff Archaeologist Scott McGaughey handled the NAHC contacts and carried out the pedestrian archaeological field survey of the parcel on June 11, 2021.

The records search found no previously recorded cultural resources on the parcel, and that a small portion of the parcel had been previously studied. No previously recorded cultural resources were identified within 0.25-miles of the parcel. The parcel’s sensitivity for buried archaeological resources is moderate. The parcel’s sensitivity for unrecognized surficial archaeological resources is also moderate. The pedestrian archaeological survey identified no archaeological resources on the property.

RESULTS OF PEDESTRIAN SURVEY: The pedestrian archaeological survey found no archaeological resources. Because of the poor visibility, however, the existence of buried or hidden cultural resources cannot be entirely ruled out.

CONCLUSIONS: The records search and literature review identified no previously recorded cultural resources in the Project Area or Study Area, and that a portion of the Project Area had been previously studied. Background research indicates a moderate sensitivity for small prehistoric archaeological resources on the surface and a moderate sensitivity for historic era archaeological resources on the surface within the Project Area. The area’s sensitivity for buried prehistoric archaeological resources is also moderate. To date, no information has been received from the NAHC or the people on the list of contacts provided by the NAHC that suggests the presence of cultural resources in the Project Area. The pedestrian archaeological survey located no archaeological resources in the Project Area

METHODS: Prior to the pedestrian archaeological survey, the author of the report conducted a records search and literature review on June 9, 2021 at the NWIC. The NWIC, at Sonoma State University in Rohnert Park, California, is administered by the State of California Office of Historic Preservation (OHP) as one of the centers that maintain the California Historical Resources Information System (CHRIS), the official state repository for records and reports on historical resources, including archaeological resources. The NWIC's records cover an 18- county area that includes Sonoma County. Additional research was conducted using maps, files, reports, and publications at ASC and online.

The records search and literature review examined the following documents: • NWIC maps (USGS 7.5-minute topographic maps with NWIC annotations), to identify recorded archaeological sites, recorded archaeological surveys, and recorded historic era resources of the built environment (buildings, structures, and objects) within the Study Area. • Site records and study reports on file at the NWIC corresponding to those marked on the NWIC maps within the Study Area. • The California Department of Parks and Recreation's (1976) California Inventory of Historic Resources and the OHP's (2019) Built Environment Resource Directory (BERD, December 2019), to identify California Historical Landmarks, California Points of Historic Interest, and California historic properties that are listed in, or determined eligible for listing in, the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR) located within the Study Area. • Historic-era maps (diseños, General Land Office maps, and 19th- and early-20th-century USGS 15- and 7.5-minute topographic maps), to identify additional historic-era buildings, structures, objects, and areas of archaeological sensitivity located in or near the Study Area. • Handbook of North American Indians, Volume 8: California (Heizer 1978) to identify ethnographic village locations in or near the Study Area. Online resources including historical map collections, the United States Department of Agriculture (USDA) Web Soil Survey website, United States Geological Survey online map and geological information, websites of local historical museums and societies, Tribal websites, and subject-specific search results.

Cultural Resources Impact Discussion:

5.5(a) (Historic Resources) No Impact: As described above, the project site is not located within the Historic Corridor as identified on Figure 3.4-1 of the General Plan EIR. In addition, the site is completely vacant and undeveloped. Therefore, no impacts to historic resources would occur from the proposed project.

5.5(b) (Archaeological Resources) Less Than Significant with Mitigation: As described above, during the site survey, no archaeological resources were found on the surface of the project site. However, as described in the General Plan EIR, and as shown on Figure 3.4-1, the project site is in an area considered sensitive for prehistoric archaeological deposits. As such, undiscovered cultural resources within the project site could be encountered during construction activities. **Mitigation Measure CUL-1** provides that a preconstruction cultural resources awareness training be conducted. **Mitigation Measure CUL-2** provides that in the event that archeological resources are encountered during grading or excavation, all ground disturbing activity shall be halted immediately until a qualified archaeologist can evaluate the potential resource and recommend further action. Implementation of measures CUL-1 and CUL-2 will ensure that in the event of accidental discovery the potential for the project to adversely impact or result in a change to the significance of archeological resources would be reduced to less-than-significant levels.

5.5(c) (Discovery of Human Remains) Less Than Significant with Mitigation: No evidence suggests that human remains have been interred within the boundaries of the project site. However, in the event that during ground disturbing activities human remains are discovered to be present, the applicant would be subject to **Mitigation Measure CUL-3**, which mandates the immediate cessation of ground disturbing activities near or in any area potentially overlying adjacent human remains and contacting the Sonoma

County Coroner. If it is determined by the Coroner that the discovered remains are of Native American descent, the Native American Heritage Commission shall be contacted immediately. If appropriate, the property owner shall retain a City-qualified archeologist to provide adequate inspection, recommendations, and retrieval. Compliance with CA HSC Section 7050.5, as required under state law, and performance of actions therein, will ensure that in the event of accidental discovery of human remains, impacts will be reduced to levels below significance.

Mitigation Measures:

CUL-1: A preconstruction cultural resource awareness training shall be held prior to commencement of ground-disturbing activities in order to familiarize the team with the potential to encounter prehistoric artifacts or historic-era archaeological deposits, the types of archaeological material that could be encountered within the project area, and procedures to follow in the event that archaeological deposits and/or artifacts are observed during construction. Historic-era resources potentially include all by-products of human land use greater than 50 years of age, including alignments of stone or brick, foundation elements from previous structures, minor earthworks, brick features, surface scatters of farming or domestic type material, and subsurface deposits of domestic type material (glass, ceramic, etc.). Artifacts that are typically found associated with prehistoric sites in the area include humanly modified stone, shell, bone or other materials such as charcoal, ash and burned rock that can be indicative of food procurement or processing activities. Prehistoric domestic features include hearths, fire pits, house floor depressions and mortuary features consisting of human skeletal remains.

CUL-2 If during the course of ground disturbing activities, including, but not limited to excavation, grading and construction, a potentially significant prehistoric or historic resource is encountered, all work within a 100 foot radius of the find (or as otherwise directed by a qualified archeologist) shall be suspended for a time deemed sufficient for a qualified and city-approved archeologist to adequately evaluate and determine significance of the discovered resource, confer with tribal representative, as appropriate, and provide treatment recommendations. Should a significant cultural resource be identified, a qualified archaeologist shall prepare a resource mitigation plan and monitoring program to be carried out during all construction activities.

CUL-3 In the event of the accidental discovery or recognition of any human remains, CEQA Guidelines Section 15064.5; Health and Safety Code Section 7050.5; Public Resources Code Section 5097.94 and Section 5097.98 shall be followed. If during the course of project development there is accidental discovery or recognition of any human remains, the following steps shall be taken:

1. There shall be no further excavation or disturbance within 100 feet of the remains until the Sonoma County Coroner is contacted to determine if the remains are Native American and if an investigation of the cause of death is required. If the coroner determines the remains to be Native American, the coroner shall contact the NAHC within 24 hours, and the NAHC shall identify the person or persons it believes to be the most likely descendant of the deceased Native American. The most likely descendant may make recommendations for the excavation work within 48 hours, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98.

2. Where the following conditions occur, the landowner or authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity either in accordance with the recommendations of the most likely descendant or on the project site in a location not subject to further subsurface disturbance: a) The NAHC is unable to identify a most likely descendent or the most likely descendent failed to make a recommendation within 48 hours after being given access to the site. b) The descendant identified fails to make a recommendation. c) The landowner or authorized representative rejects the recommendation of the descendant, and mediation by the NAHC fails to provide measures acceptable to the landowner.

5.6. ENERGY

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

Sources: City of Cotati 2015 General Plan; General Plan EIR; BAAQMD 2017 Bay Area Clean Air Plan; Sonoma County Regional Climate Action Plan 2020 and Beyond, prepared July 2016; and California Energy Commission various publications.

Energy Setting:

Energy resources include electricity, natural gas, and other fuels. The production of electricity requires the consumption or conversion of energy resources, including water, wind, oil, gas, coal, solar, geothermal, and nuclear resources into energy. Energy production and energy use both result in the depletion of nonrenewable resources (e.g., oil, natural gas, coal, etc.) and emission of pollutants. Energy consumption is measured using the British Thermal Unit (BTU). BTU is the amount of energy that is required to raise the temperature of one pound of water by one-degree Fahrenheit. As points of reference, the approximate amount of energy contained in a gallon of gasoline, 100 cubic feet (one therm) of natural gas, and a kilowatt hour of electricity are 123,000 BTUs, 100,000 BTUs, and 3,400 BTUs, respectively.

Electricity

The production of electricity requires the consumption or conversion of energy resources, including water, wind, oil, gas, coal, solar, geothermal, and nuclear resources into energy. The delivery of electricity involves a number of system components, including substations and transformers that lower transmission line power (voltage) to a level appropriate for on-site distribution and use. The electricity generated is distributed through a network of transmission and distribution lines commonly called a power grid. Conveyance of electricity through transmission lines is typically responsive to market demands.

Energy capacity, or electrical power, is generally measured in watts while energy use is measured in watt-hours. For example, if a light bulb has a capacity rating of 100 watts, the energy required to keep the bulb on for 1 hour would be 100 watt-hours. If ten 100-watt bulbs were on for 1 hour, the energy required would be 1,000 watt-hours or 1 kilowatt-hour (kWh). On a utility scale, a generator's capacity is typically rated in megawatts, which is one million watts, while energy usage is measured in megawatt-hours or gigawatt-hours (GWh), which is one billion watt-hours.

Natural Gas

Natural gas is a combustible mixture of simple hydrocarbon compounds (primarily methane) that is used as a fuel source. Natural gas consumed in California is obtained from naturally occurring reservoirs and delivered through high-pressure transmission pipelines. The natural gas transportation system is a nationwide network. Natural gas is used in electricity generation, space heating, cooking, water heating, industrial processes, and as a transportation fuel. Natural gas is measured in terms of cubic feet.

California Energy Consumption

According to the California Energy Commission (CEC), total system electric generation for California in 2019 was 277,704 gigawatt-hours (GWh).[2] California's non-CO_2 emitting electric generation categories (nuclear, large hydroelectric, and renewable generation) accounted for more than 56 percent of total in-state generation for 2019. California's in-state electric generation was 200,475 GWh and electricity imports were 77,229 GWh.

According to the CEC, nearly 45 percent of the natural gas burned in California was used for electricity generation, with the remainder consumed in the residential (21 percent), industrial (25 percent), and commercial (9 percent) sectors. In 2012, total natural gas demand in California for industrial, residential, commercial, and electric power generation was 2,313 billion cubic feet.[3]

According to the CEC, gasoline has remained the dominant fuel within the transportation sector, with diesel fuel and aviation fuels following. In 2016, California consumed approximately 15 billion gallons of

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[2] California Energy Commission, Total System Electric Generation (2019) http://www.energy.ca.gov/almanac/electricity_data/total_system_power.html, Accessed April 14, 2022.

[3] California Energy Commission, Supply and Demand of Natural Gas in California, https://www.energy.ca.gov/data-reports/energy-almanac/californias-natural-gas-market/supply-and-demand-natural-gas-california, Accessed April 14, 2022.

gasoline and approximately 3.35 billion gallons of diesel fuel. An increasing amount of electricity is being used for transportation energy, which is chiefly attributed to the acceleration of light-duty plug-in electric vehicles. In 2016, transportation in California, consisting of light-duty vehicles, medium/heavy-duty vehicles, trolleys, and rail transit, consumed approximately 1.53 million megawatt hours (MWh).[4]

Sonoma County Climate Action Plan 2020

In 2005, the ten local governments within Sonoma County pledged to reduce GHG emissions community-wide to 25 percent below 1990 levels by 2015 (Cotati adopted 30% by 2015, Resolution 05-66). The Regional Climate Protection Authority (RCPA) was created in 2009 to help each jurisdiction reach its goal. Climate Action 2020 is a collaborative effort led by the RCPA and includes nine cities, the County of Sonoma, and several partner entities to take further actions to reduce GHG emissions community-wide and respond to the threats of climate change.

As presented in the Climate Action Plan 2020, Section 5.2: Cotati, the City of Cotati is focused on infill development and "green" priorities for new building. Energy efficiency is at the core of the City of Cotati's General Plan policies and regulations, see following discussion below. In addition, Cotati requires that all projects comply with the CalGreen Building Code, which is set forth in Municipal Code Chapter 14.04.130 and establishes Tier 1 as mandatory for new residential and non-residential structures.

Cotati General Plan

The proposed project is subject to the goals, objectives, policies, and actions outlined in the Cotati General Plan aimed at reducing energy consumption. The following from the General Plan are particularly applicable to the subject project:

Policy CON 2.10: Encourage local businesses and industries to engage in voluntary efforts to reduce GHG emissions and energy consumption.

Objective CON 3A: Achieve a high level of energy efficiency in new buildings and in significant remodels.

Policy CON 3.1: Continue to require all new public and privately constructed buildings to meet and comply with CalGreen Tier 1 standards.

Policy CON 3.2: Support innovative and green building best management practices, including LEED certification, for all new development, and encourage project applicants to exceed CalGreen Tier 1 standards, if feasible.

Policy CON 3.3: Promote the use of alternative energy in new development.

Policy CON 3.4: Incorporate innovative green building techniques and best management practices in the site design, construction, and renovation of all public projects.

[4] California Energy Commission, 2017 Integrated Energy Policy Report, Publication Number: CEC-100-2017-001-CMF.

Policy CON 3.7: Encourage tree planting, including widespread use of trees as windbreaks to maximize the effects of cooling westerly winds and planting of deciduous trees to help reduce summer temperatures, either in conjunction with new development or through private sector participation.

Policy LU 1.5: Sustainable best management practices (BMP) in green building, stormwater management, and conservation to mitigate infrastructure impacts, while minimizing effects on water, sewer, and energy.

Cotati Municipal Code

The proposed project is subject to the relevant sections of the Municipal Code related to energy conservation, including Chapter 17.51 (Resource Conservation) and Section 14.04.090 (California Energy Code). In particular, the proposed project will be subject to Section 17.51.030 (Citywide energy conservation standard), which requires that the new structures be designed and constructed to achieve a minimum of fifteen percent greater energy efficiency than otherwise required by the California Code of Regulations, Title 24, and to implement the city's sustainable building program adopted by council resolution.

Cotati Energy Consumption

Energy consumption in Cotati is from fuels used for transportation, building energy, wastewater treatment, and water conveyance. In 2010 the average household in the City of Cotati consumed 6,051 kWh of electricity, 395 Therms of Natural Gas, and 60,624 gallons of water.

Energy Impact Discussion:

5.6(a) (Wasteful, Inefficient, Unnecessary Consumption of Energy) Less Than Significant Impact: Development of the proposed project would involve the use of energy during construction and at operation. Site preparation, grading, paving, and building construction would consume energy in the form of gasoline and diesel fuel through the operation of heavy off-road equipment, trucks, and worker trips. Consumption of such resources would be temporary and would cease upon the completion of construction. Due to the limited scale of the proposed project and the provision to limit idling set forth above in **Mitigation Measure AQ-1** (see Section 5.3 Air Quality) construction activities would not result in inefficient energy consumption during construction. As such, construction-related energy impacts would be less than significant.

Long-term operational energy use associated with the project includes electricity and natural gas consumption associated with the new buildings (e.g., lighting, electronics, heating, air conditioning, refrigeration), energy consumption related to water usage and solid waste disposal, and fuel consumption (gasoline and diesel) by vehicles associated with the project through the generation of new vehicle trips.

The project is subject to local policies related to energy conservation including the City of Cotati General Plan, Cotati Municipal Code, and California Building Code CalGreen Tier 1 standards. For example, the project would be required to comply with Section 17.51.030 of the Municipal Code, which requires that the new structures be designed and constructed to achieve a minimum of fifteen percent greater energy efficiency than otherwise required by the California Code of Regulations, Title 24, and to implement the city's sustainable building program adopted by council resolution. The proposed project will also conform to Policy CON 3.7, which encourages tree planting to maximize the effects of cooling westerly winds and help reduce summer temperatures. Additionally, the project is subject to **Mitigation Measure GHG-1** (Section 5.8 Greenhouse Gas Emissions), which requires implementation of local measures set forth in the Region's Climate Action Plan, Climate Action 2020 and Beyond. As such, the proposed project would not result in the wasteful, inefficient, and unnecessary consumption of electricity and natural gas during project operation. Therefore, operational-related energy impacts related to electricity and natural gas would be less than significant.

Energy would be consumed through daily activities at operation of the project including the delivery of water for potable and irrigation purposes, heating, cooling, and ventilation systems, solid waste management, and vehicle use. While the long-term operation of the project would result in an increase in energy consumption compared to existing conditions, the project will incorporate design measures (related to electricity, natural gas and water use) in compliance with Title 24, the Cotati General Plan, and the Cotati Municipal Code to minimize energy consumption. Therefore, operation of the proposed project would not result in the wasteful, inefficient, and unnecessary consumption of energy and impacts would be less than significant.

5.6(b) (Conflict with State or Local Plan) Less Than Significant Impact: As previously described, the proposed project would have a less than significant impact due to a conflict with the 2017 CAP related to energy since a) the project supports the goals of the CAP in that it limits urban sprawl by proposing development within existing urban limits on an underutilized site; b) includes control measures to reduce construction-related energy consumption by implementing BMPs set forth by BAAQMD; and c) as a storage-warehouse facility subject to the latest building code, the proposed project would not interfere with implementation of the energy control measures identified in the 2017 CAP. Therefore, the project will have less than significant impacts due to a conflict with the BAAQMD 2017 CAP.

In December 2007, the CEC prepared the State Alternative Fuels Plan in partnership with the CARB and in consultation with the other state, federal, and local agencies. The plan presents strategies and actions California must take to increase the use of alternative non-petroleum fuels in a manner that minimizes costs to California and maximizes the economic benefits of in-state production. The plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce greenhouse gas emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality. As a storage-warehouse facility that would install energy conservation features, the proposed project would not conflict with or obstruct implementation of the State Alternative Fuels Plan and impacts would be less than significant.[5]

The City of Cotati requires that all new development demonstrate compliance with CalGreen Tier 1 Building standards. CalGreen Tier 1 reduces energy consumption for heating, air conditioning, and ventilation and requires use of low-water irrigation systems (Water Efficient Landscape Ordinance

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[5] California Energy Commission, Final Adopted State Alternative Fuels Plan, Adopted December 2007, http://www.energy.ca.gov/ab1007/, Accessed April 14, 2022.

(WELO)), water efficient appliances and faucets, cool roofs, short- and long-term bicycle parking, electric vehicle charging spaces, outdoor energy performance lighting and other mandatory energy efficiency measures. Prior to issuance of a building permit, the proposed structures onsite will be required to demonstrate compliance with CalGreen Tier 1 standards. Therefore, new structure onsite will not conflict with state or local energy efficiency plans and impacts will be less than significant.

Mitigation Measures: None Required.

5.7. Geology and Soils

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Publication 42.	☐	☐	☐	☒
ii. Strong Seismic ground shaking?	☐	☐	☒	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☒	☐	☐
iv. Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☒	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☒	☐	☐

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

Sources: City of Cotati 2015 General Plan; General Plan EIR; and Soil and Geotechnical Feasibility Evaluation, prepared by Reese and Associates, March 26, 2021; Letter from Joe Mauney and Jeffrey Reese, Reese and Associates, to Bert Sandell dated September 13, 2021; Email from Joe Mauney, Reese and Associates to Bert Sandell dated December 22, 2021.

Geology and Soils Setting:

The City of Cotati is located within the San Andreas Fault system, which is 44 miles wide and extends throughout much of the North Bay Area. The nearest active faults to the project site are: Rodgers Creek (4.25 miles east), Healdsburg (13 miles north), Maacama (16 miles north), and San Andreas (16 miles west). No active faults directly traverse the City; however, potential exists for geologic hazards citywide associated with ground shaking, including: liquefaction, ground failure, and seismically-induced landslides.

Reese and Associates conducted a Soil Investigation and Geotechnical Feasibility Evaluation for the project site (**Appendix E**). The Evaluation included a review of readily-available reference documents, site reconnaissance performed on January 20, 2021 and March 6, 2021 to observe existing conditions, an assessment of geologic and geotechnical hazards, a description of the geologic/geotechnical factors affecting the feasibility of the proposed development, and preliminary design criteria.

Regional geologic mapping by the California Geological Survey indicates that the project site is underlain by Pleistocene alluvial fan deposits consisting of undivided silt, clay, sand and gravel. Subsurface conditions at the site consist of recent alluvial deposits, mainly clays and sands. In general, the adobe clays are underlain by stiff to hard sandy clays of moderate to expansion potential and medium dense to very dense clayey and silty sands of low expansion potential.

A paleontological resources search performed using the University of California Museum of Paleontology's (UCMP) Miocene Mammal Mapping Project (MioMap) indicated no previous finds of paleontological resources on or in the immediate vicinity of the project site.[6] According to the MioMap database, the closest paleontological find is located approximately 8.75 miles southeast of the project site.

[6] University of California Museum of Paleontology, Miocene Mammal Mapping Project (MioMap), http://www.ucmp.berkeley.edu/miomap/, Accessed February 11, 2019.

Geology and Soils Impact Discussion:

5.7(a.i) (Faults) No Impact: Fault rupture occurs when the ground surface fractures as a result of fault movement during an earthquake and almost always follows preexisting fault traces, which are zones of weakness. Given that the project site is not part of the Alquist-Priolo Earthquake Fault Zone and no identified active faults traverse the site, there is no expectation that the site would be vulnerable to fault rupture. The nearest faults with surface rupture include the Rodgers Creek Fault and the San Andreas Fault. The Alquist-Priolo Zone of the Rodgers Creek Fault is located approximately 4.8 miles east of the project site). The Alquist-Priolo Zone of the San Andreas Fault is located approximately 16 miles west of the project site. As such, there is no risk of fault-related ground rupture during earthquakes within the limits of the site due to a known Alquist-Priolo Earthquake Fault Zone. Therefore, there are no impacts expected due to fault rupture at the project site.

5.7(a. ii) (Ground-Shaking) Less Than Significant Impact: The proximity of the City of Cotati and the project site to the active Rodgers Creek Fault places it within Zone 8 (Very Strong) of the Modified Mercalli Intensity Shaking Severity Level. As such, the project site holds potential to expose people and structures to substantial adverse effects resulting from strong seismic ground shaking. The resulting vibrations would likely cause primary damage to the proposed buildings and improvements with secondary effects being ground failures in loose alluvium or poorly compacted fill. Both the primary and secondary effects pose a potential risk of loss of life or property.

Conformance with standards set forth in the Building Code of Regulations and the California Public Resources Code will ensure that potential impacts from seismic shaking are less than significant. Adherence to Class D specifications for ground motion parameters, in particular, will ensure that the proposed buildings and associated improvements onsite would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death as a result of seismic activity. Therefore, potential impacts from ground shaking will have a less than significant impact.

5.7(a. iii) (Seismic-related ground failure/liquefaction) Less Than Significant With Mitigation: Liquefaction is a phenomenon associated with fine-grained, loosely-packed sands and gravels subjected to ground shaking as a result of seismic activity. Liquefaction can lead to total and/or differential settlement and is largely dependent upon the intensity of ground shaking and response of soils underlying the site. As shown on Figure 3.5-2 of the General Plan EIR and the Susceptibility Map of the San Francisco Bay Area, the project site is mapped as having a moderate susceptibility to liquefaction.

According to the Geotechnical Feasibility Evaluation, the sandy soils encountered in the test borings are sufficiently dense, contain a sufficient amount of clayey fines, or overlain by a sufficiently thick surface layer of non-liquefiable soils such that the risk of building distress due to liquefaction and /or densification would be considered low.

As such, the proposed project is required to implement **Mitigation Measure GEO-1**, which requires that all recommendations outlined in the Geotechnical Feasibility Evaluation be incorporated. Further, **Mitigation Measure GEO-2** would be implemented, which would require the preparation of a site-specific geotechnical investigation report prior to the issuance of grading permits to confirm the absence of soils susceptible to liquefaction. GEO-1 also requires that all recommendations of the site-specific geotechnical investigation report be incorporated. With implementation of GEO-1 and GEO-2, hazards related to ground failure and/or liquefaction will be less than significant.

5.7(a. iv) (Landslide) No Impact: The risk of landslide is dictated by several factors including precipitation conditions, soil types, steepness of slope, vegetation, seismic conditions and level of human disturbance. When certain conditions are present, landslides can be triggered as a result of seismic activity. Landslides have been known to occur within Sonoma County, but are typically confined to slopes steeper than 15% and occur in areas underlain by geologic units that have demonstrated stability problems. Based on the site's relatively flat topography, and as shown on Figure 3.5-6 of the General Plan EIR, the project site is located in an area with a very low landslide potential. Therefore, the project will have no impacts due to loss of structures or life from landslides.

5.7(b) (Erosion) Less Than Significant with Mitigation: Development of the project will require site preparation and grading activities that will potentially result in soil erosion or the loss of topsoil if not properly controlled. Water and wind serve as the primary catalysts of soil erosion, with steeper slopes intensifying the effects. Vegetation removal as part of the site preparation process as well as grading and ground disturbing activities associated with development can heighten the potential for and accelerate soil erosion.

Project activities are not expected to generate a substantial loss in topsoil but will involve the removal of vegetation such as of grass and similar vegetation. Accordingly, construction activities do hold the potential to result in soil erosion if not properly performed.

In order to ensure that potential impacts related to soil erosion are reduced to levels below significance during site preparation and project operation, the project is required to implement **Mitigation Measure GEO-3**, which requires the applicant to comply with erosion and sediment control standards as stipulated in Chapter 14.36 of the Cotati Municipal Code which requires, amongst other things, an erosion control plan prepared by a Civil Engineer or other qualified professional that outlines appropriate measures to minimize soil erosion, and sedimentation and that complies with design and construction standards contained in the City's Municipal Code. The applicant is also required to comply with the RWQCB NPDES permit requirements which will further reduce potential for erosion (see **Mitigation Measure HYDRO-1**).

Adherence to uniformly applied development standards through implementation of GEO-3, including the preparation of an Erosion and Sediment Control Plan, as well implementation of HYDRO-1, will ensure that any potential impacts due to erosion and sedimentation will be mitigated to less than significant levels. Therefore, the project will generate a less than significant impact with mitigation related to soil erosion or loss of topsoil.

5.7(c,d) (Unstable Geologic Unit, Expansive Soils) Less than Significant with Mitigation: Lateral spreading, lurching, and associated ground failure can occur during strong ground shaking on certain soil substrate typically on slopes. Lurching generally occurs along the tops of slopes where stiff soils are underlain by soft deposits or along steep channel banks whereas lateral spreading generally occurs where liquefiable deposits flow towards a "free face," such as channel banks, during an earthquake.

Given the relatively level slopes throughout the City of Cotati, the potential for lateral spreading is very low. The potential for lateral spreading increases in the foothills and mountains to the east and west of the city. Based on the site's relatively flat topography, the project site has a very low potential for lateral spreading.

During the site reconnaissance, Reese and Associates determined the presence of weak, compressible upper soils and near-surface highly expansive clays. The initial report concluded that the weak, compressible upper soils should be removed and replaced with properly compacted fill. The report concluded that from a soil engineering standpoint, the site can be used for the proposed construction. Subsequently, Reese and Associates, in their letter to the property developer dated September 13, 2021, determined that on-site soils treated with high calcium lime could be used in the upper 30 inches of the building pad as an alternative to imported fill.

The proposed project is required to implement **Mitigation Measure GEO-1**, which requires preparation of a site-specific geotechnical investigation report prior to the issuance of grading permits and implementation of design level recommendations. With implementation of GEO-1, the project would have less than significant impacts due to the presence of expansive soils or a geologic unit or soil that is unstable, or that would become unstable as a result of the project.

5.7(e) (Septic Tanks) No Impact: There are no onsite septic tanks or alternative wastewater treatment facilities proposed as part of the Project. Therefore, there would be no impacts due to the disposal of wastewater where sewers are not available.

5.7(f) (Paleontological Resources) Less Than Significant with Mitigation: Neither the City of Cotati General Plan nor the General Plan EIR identifies the presence of any paleontological or unique geological resources within the boundaries of the City limits. As described above, the closest paleontological find is located approximately 8.75 miles southeast of the project site. Therefore, limited expectation exists for paleontological resources to be present on the project site. Nevertheless, the potential remains for the discovery of buried paleontological resources. Because the potential for inadvertent discovery of paleontological or unique geological resources exists, **Mitigation Measure GEO-3**, as set forth below, shall be implemented. GEO-3 will ensure that proper procedures are followed in the event of a paleontological discovery; thereby reducing potential impacts to levels below significance.

Mitigation Measures:

GEO-1: Prior to issuance of a grading permit, a site-specific geotechnical investigation with subsurface exploration and laboratory testing shall be conducted to provide design-level recommendations and criteria for the project (pursuant to the recommendations of the Geotechnical Feasibility Evaluation prepared by Reese and Associates on March 26, 2021). The geotechnical investigation report shall be prepared and submitted to the City Engineer for review. The site-specific geotechnical investigation shall include, but not be limited to, the following: conduct subsurface exploration to confirm the absence of loose, saturated granular layers; and evaluate and provide recommendations for expansive soil mitigation measures. All recommendations of the site-specific geotechnical investigation report shall be incorporated into the project design, construction documents and improvement plans, or as otherwise determined by the City Engineer and/or Chief Building Official. The project’s geotechnical engineer shall inspect the construction work and shall certify to the City, prior to issuance of a certificate of occupancy, that the improvements have been constructed in accordance with the geotechnical investigation report.

GEO-2: In the event that paleontological resources, including individual fossils or assemblages of fossils, are encountered during construction activities all ground disturbing activities shall halt and a qualified paleontologist shall be procured to evaluate the discovery and make treatment recommendations.

GEO-3: The applicant shall comply with erosion and sediment control standards as stipulated in Chapter 14.36 of the Cotati Municipal Code which requires, amongst other things, an Erosion and Sediment Control Plan prepared by a Civil Engineer or other qualified professional that outlines appropriate measures to minimize soil erosion and sedimentation and that complies with design and construction standards contained in the City's Municipal Code.

5.8. GREENHOUSE GAS EMISSIONS

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

Sources: City of Cotati 2015 General Plan; General Plan EIR; Bay Area Air Quality Management District (BAAQMD) 2017 Bay Area Clean Air Plan; BAAQMD CEQA Guidelines 2017; Sonoma County Regional Climate Action Plan 2020 and Beyond, prepared July 2016; and Updated 380 Blodgett/597 Helman Lane Warehouse Project Air Quality and Greenhouse Gas Emissions Assessment, prepared by Illingworth & Rodkin, February 2, 2022.

Greenhouse Gas Emissions Setting:

Global temperatures are affected by naturally occurring and anthropogenic-generated (generated by humankind) atmospheric gases, such as water vapor, carbon dioxide, methane, and nitrous oxide. Gases that trap heat in the atmosphere are called green house gases (GHGs). Solar radiation enters the earth's atmosphere from space, and a portion of the radiation is absorbed at the surface. The earth emits this radiation back toward space as infrared radiation. GHGs, which are mostly transparent to incoming solar radiation, are effective in absorbing infrared radiation and redirecting some of this back to the earth's surface. As a result, this radiation that otherwise would have escaped back into space is now retained, resulting in a warming of the atmosphere. This is known as the greenhouse effect. The greenhouse effect helps maintain a habitable climate. Emissions of GHGs from human activities, such as electricity production, motor vehicle use, and agriculture, are elevating the concentration of GHGs in the atmosphere, and are reported to have led to a trend of unnatural warming of the earth's natural climate, known as global warming or global climate change. The term "global climate change" is often used interchangeably with the term "global warming," but "global climate change" is preferred because it implies that there are other consequences to the global climate in addition to rising temperatures. Other than water vapor, the primary GHGs contributing to global climate change include the following gases:

• Carbon dioxide (CO_2), primarily a byproduct of fuel combustion; • Nitrous oxide (N_2O), a byproduct of fuel combustion; also associated with agricultural operations such as the fertilization of crops; • Methane (CH_4), commonly created by off-gassing from agricultural practices (e.g. livestock), wastewater treatment and landfill operations; • Chlorofluorocarbons (CFCs) were used as refrigerants, propellants and cleaning solvents, but their production has been mostly prohibited by international treaty; • Hydrofluorocarbons (HFCs) are now widely used as a substitute for chlorofluorocarbons in refrigeration and cooling; and • Perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6) emissions are commonly created by industries such as aluminum production and semiconductor manufacturing.

These gases vary considerably in terms of Global Warming Potential (GWP), a term developed to compare the propensity of each GHG to trap heat in the atmosphere relative to another GHG. GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and the length of time of gas remains in the atmosphere. The GWP of each GHG is measured relative to CO_2. Accordingly, GHG emissions are typically measured and reported in terms of CO_2 equivalent (CO_2e). For instance, SF_6 is 22,800 times more intense in terms of global climate change contribution than CO_2.

The State of California is addressing the issue of GHG through legislation, policy guidance, and outreach programs. CO_2 is the primary GHG emitted from land use and industrial projects. In 2006 California enacted AB 32 – the Global Warming Solutions Act, which requires that statewide GHG emissions be reduced to 1990 levels by 2020. In 2017, the California Air Resources Board (CARB) adopted the current Climate Change Scoping Plan in response to AB 32. This plan describes the strategies that the State will implement to reduce future emissions by 40% from 1990 levels by 2030, and by 80% from 1990 levels by 2050. BAAQMD's California Environmental Quality Act (CEQA) Air Quality Guidelines are used to assess GHG emissions from land use projects. BAAQMD's analysis of future land use development in the Bay Area and applicable AB 32 GHG reduction strategies lead to the development of emission-based significance thresholds for the projects in the Bay Area, which include Sonoma County.

Cotati Greenhouse Gas Reduction Plan:

The City of Cotati developed a Greenhouse Gas Emissions Reduction Action Plan Analysis as a way to reduce City GHG emissions. These apply to City actions and not those of private developments. In 2018, the City adopted section 5.2 of the Sonoma County Regional Climate Action Plan. This section includes those relatively short-term measures that apply specifically to Cotati.

Greenhouse Gas Emissions Impact Discussion:

BAAQMD has identified project screening sizes for assessing whether a project might result in potentially significant greenhouse gas emissions. Due to the project size, construction exhaust and operational period emissions would be less-than-significant. In their 2017 update to the CEQA Air Quality Guidelines, BAAQMD identified the size of land use projects that could result in significant air pollutant emissions. For greenhouse gas emission impacts, the Warehouse facility project screening size was identified at

64,000 square feet. While the project size could fluctuate during the planning stage, we would expect less-than-significant impacts for several reasons: (1) the screening sizes are based on older modeling with higher emissions rates and (2) this type of facility tends to result in relatively low trips rates and traffic from land use projects tends to be the primary source of GHG emissions.

5.8(a) (Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?) ***Less Than Significant Impact***

Illingworth & Rodkin prepared an Updated 380 Blodgett/597 Helman Lane Warehouse Project Air Quality and Greenhouse Gas Emissions Assessment (Appendix B) for the Building 2 on February 2, 2022. The CalEEMod modeling for the proposed project, included in Attachment 2 of the Assessment, shows total direct and indirect GHG emissions from the project at 563 metric tons during full operation in 2024. This is well below the bright-line threshold of 1,100 metric tons annually recommended by BAAQMD in the CEQA Air Quality Guidelines. Construction period emissions would range from 83 to 340 metric tons per year. Total construction emissions are 598 metric tons. As shown in Table 1, annual emissions from the project are predicted to be 1,432 MT of CO_2e in 2024.

Table 1. Annual Project Operational GHG Emissions (CO_2e) in Metric Tons

Source Category	Proposed Project in 2024
Area	0
Energy Consumption	14
Mobile	63
Solid Waste Generation	17
Water Usage	14
Trucks and Forklift	455
Metric Ton	**563**
Bright-Line Significance	*660*

[1] BAAQMD-recommended bright line threshold of 4.6 metric tons for 2020 adjusted to State reduction goals for 2030.

5.8(b) (Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of greenhouse gases?) ***Less Than Significant Impact***

The project would be subject to City requirements and policies and new requirements under rule making developed at the State and local level regarding greenhouse gas emissions and are subject to local policies that may affect emissions of greenhouse gases. This type of project is not anticipated to conflict with any strategy to reduce greenhouse gas emissions.

5.9. HAZARDS/HAZARDOUS MATERIALS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport of public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

Sources: City of Cotati 2015 General Plan; General Plan EIR; and EnviroStor and GeoTracker Databases, Accessed 4/1/2022.

Hazardous Material Setting:

The California Department of Toxic Substances Control (DTSC) defines a hazardous material as: "a substance or combination of substances that, because of its quantity, concentration or physical, chemical, or infectious characteristics, may either: 1) cause, or significantly contribute to an increase in mortality or an increase in serious, irreversible, or incapacitating illness; or 2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed." Regulations governing the use, management, handling, transportation and disposal of hazardous waste and materials are administered by Federal, State and local governmental agencies. Pursuant to the Planning and Zoning Law, DTSC maintains a hazardous waste and substances site list, also known as the "Cortese List."

Hazardous waste management in Cotati is administered by the Sonoma County Waste Management Agency (SCWMA), through the Countywide Integrated Waste Management Plan. The Certified Unified Program Agency (CUPA) program oversees five hazardous materials programs: Hazardous Materials Management Plans (HMMP) program, California Accidental Release Prevention (CalARP) program, underground storage tank (UST) programs, aboveground storage tank (AST) programs, and hazardous waste generation and disposal. The California Department of Industrial Relations, Division of Occupational Safety and Health (DOSH) (formerly known as Cal/OSHA), is charged with enforcement of state regulation and the supervision of workplaces in California that are not under direct federal jurisdiction. State worker health and safety regulation applicable to construction workers include training requirements for hazardous waste operation and emergency response.

There are several sites within the City's Planning Area that are included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5. These sites have a history of contamination with hazardous materials and are subject to various state and federal laws and regulators, including the CERCLA, EPA, DTSC, and RWQCB. As presented in the General Plan EIR and CUPA website, of the 20 sites listed pursuant to Government Code Section 65962.5, 14 have completed all required clean-up measures and have had their cases closed. Only six sites remain as open cases and are under various levels of remediation and clean-up compliance.

A review of available records, databases (EnviroStor and GeoTracker) and reports demonstrate that the project site is not listed as a known contamination site and that contamination sites are not expected to have impacted the subject site as they are not in close proximity.

The California Department of Forestry and Fire Protection (CAL FIRE) is required by law to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. CAL FIRE's Statewide and County maps depict Fire Hazard Severity Zones (FHSZs) that are within the State Responsibility Area (SRA). The SRA is the area of the state where the State of California is financially responsible for the prevention and suppression of wildfires. The SRA does not include lands within city boundaries or in federal ownership. The FHSZs in the SRA are further classified as being Moderate, High, or Very High.

In addition, CAL FIRE has prepared and transmitted recommendations for Very High FHSZs in those areas where local governments have financial responsibility for wildland fire protection, known as Local Responsibility Areas (LRA). Only lands zoned as Very High FHSZ are identified within the LRA. The City of Cotati in its entirety, including the project site, is categorized as Non-VHFHZ by CAL FIRE.

Hazards/Hazardous Materials Impact Discussion:

5.9(a,b) (Routine Transport, Upset and Accident Involving Release?) Less Than Significant Impact with Mitigation: Site preparation and construction activities will result in the temporary presence of potentially hazardous materials including, but not limited to fuels and lubricants, paints, solvents, insulation, electrical wiring, and other construction related materials onsite. Although these potentially hazardous materials may be present onsite during construction, the applicant is required to comply with all existing federal, state and local safety regulations governing the transportation, use, handling, storage and disposal of potentially hazardous materials. Once construction is complete there will not be any ongoing use or generation of hazardous materials onsite.

During site preparation and construction activities, Best Management Practices (BMPs) will be implemented in accordance with the Cotati Municipal Code Chapter 13.68 Storm Water Ordinance. BMPs include measures to prevent spills and require onsite materials for cleanup. The applicant is required to comply with all federal and state regulations as overseen by Sonoma County's CUPA.

The project site may potentially support one or more buried underground (septic) tanks. To ensure that groundwater is protected during tank removal **Mitigation Measure HAZ-1** shall be implemented, which requires any underground holding tanks, septic or otherwise, shall be removed and properly disposed of in accordance with Sonoma County regulations. Implementation of measures HAZ-1 through HAZ-2 and compliance with other required regulations governing hazardous materials will ensure that potential hazards to the public or the environment due to upset or accidental release of hazardous materials, will be reduced to less than significant levels.

The project applicant, Bert Sandell, confirmed on June 24, 2021, that clients of the proposed moving and storage use will not be allowed to store hazardous materials in the storage containers, and that the lease with the moving and storage company will not allow hazardous materials to be stored on the property.

5.9(c) (Emit or Handle Hazardous Materials Within ¼ Mile of School?) No Impact: The project site is not located within ¼ mile of a school and no schools are proposed within a ¼ mile of the project site.

5.9(d) (Existing Hazardous Material Sites?) No Impact: The California Environmental Protection Agency (CAL-EPA) annually updates the California Hazardous Waste and Substances Site List (also known as the "Cortese List"). The Department of Toxic Substances Control (DTSC) compiles a record of sites to be included on the list, which is then submitted to the CAL-EPA. A search of EnviroStor, performed on April 1, 2022, showed no active cleanup sites within the project vicinity. A search of Geotracker, performed on April 1, 2022, showed no active cleanup sites within the project vicinity. The project will not create a significant hazard to the public or the environment by virtue of it being located on an identified Cortese site. Therefore, the project will have no impacts due to existing hazardous materials onsite or in the vicinity.

5.9(e) (Public Airport Land Use Plans) No Impact: The project is not located within the boundaries of an airport land use plan; the nearest airports are the Petaluma Municipal Airport located approximately 9 miles southeast of the project site, and the Charles M. Schulz - Sonoma County Airport located approximately 13 miles north of the project site. Therefore, the project would have no impacts associated with airport-related hazards.

5.9(f) (Impair Emergency Response Plan) No Impact: The project would not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. Site plans include ingress and egress access driveways with adequate width necessary to accommodate emergency vehicles and provide connectivity to the existing circulation and street system. California has developed an emergency response plan to coordinate emergency services by federal, state, and local government, including responding to hazardous materials incidents. There are no aspects of the proposed project that will interfere with an adopted emergency or evacuation plan. Therefore, the project will have no impacts due to a conflict with the emergency response plan.

5.9(g) (Wildland Fire Hazards) Less Than Significant Impact: Wildland fires are of concern particularly in expansive areas of native vegetation of brush, woodland, grassland. The project site is located within the

City's UGB, is categorized as a Non-VHFHZ by CAL FIRE and surrounded by land designated as Non-VHFHZ on all sides. While the project site is surrounded by roadways and mostly developed land uses, it is also boarded by large expanses of grassland to the south and west. In addition, the project site is located approximately 0.25 mile from land that is designated as "Moderate Fire Hazard Severity Zone" by CAL FIRE. As such, the project could potentially expose people or structures to impacts related to wildland fires.

The Rancho Adobe Fire Protection District (RAFPD) is responsible for protecting life, property, and the environment from fire. The RAFPD responds to calls including structure, wildland, and other fires. Service is provided by three stations located at 1 East Cotati Avenue; 11000 Main Street in Penngrove and 99 Liberty Road in Petaluma. The project site is located approximately 1 mile driving distance of the fire station located at 1 East Cotati Avenue.

The RAFPD has automatic aid agreements with neighboring districts, including the California Department of Forestry (CDF), the City of Rohnert Park and the City of Petaluma. The CDF provides automatic aid for emergency incidents in the west portions of the District and to State Responsibility Area fires. CDF will also provide fire response to anywhere in the District at the District's request. Under the automatic aid agreement between RAFPD and the City of Rohnert Park, the City of Rohnert Park responds to certain structure fire, water-flow alarm-sounding, vegetation, and vehicle collision calls in the RAFPD service area, including locations in Cotati, and RAFPD provides the City of Rohnert Park with a battalion chief and/or engine and personnel support for certain calls in the City of Rohnert Park. As such, the City of Cotati is well served by fire protection services, which will be extended to the proposed project.

New buildings and structures introduced onsite will be constructed in accordance with the latest building and fire code standards including fire prevention elements such as site design, interior sprinkler systems, fire resistant building materials, onsite fire hydrants, and water pressure. Therefore, impacts related to the exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires will be less than significant.

Mitigation Measures:

HAZ-1: Any buried holding tanks including septic systems shall be properly decommissioned in accordance with applicable regulations established by the County of Sonoma (Permit & Resource Management Department). Removal of underground tanks shall be immediately followed by backfill in accordance with Engineering recommendations. Materials shall be properly disposed of at permitted facilities.

HAZ-2: In the event that the project involves onsite storage of potentially hazardous materials in sufficient quantities, a Hazardous Materials Business Plan (HMBP) shall be prepared and submitted to the Sonoma County CUPA agency for review and approval. The applicant shall fully comply with all provisions of a HMBP should one be required.

5.10. Hydrology and Water Quality

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

Sources: City of Cotati 2015 General Plan; General Plan EIR; Preliminary Hydraulics and Hydrology Report prepared by CALICHI Design Group, January 10, 2022; Storm Water Low Impact Development Report, prepared by CALICHI Design Group, April 8, 2022; FEMA letter dated March 18, 2021

Hydrology and Water Quality Setting:

The project site is located within the North Coast hydrologic region, which covers approximately 19,500 square miles and includes all portions of Modoc, Siskiyou, Del Norte, Trinity, Humboldt, Mendocino, Lake, and Sonoma counties, and small areas of Shasta, Tehama, Glenn, Colusa, and Marin counties. The project site is also located within the Russian Hydrologic Unit, which covers approximately 950,249 acres. More specifically, the project site is located within the Upper Laguna de Santa Rosa subarea (Russian), which encompasses 39,712 acres.

The City of Cotati has one water body listed on the 2010 Section 303(d) list of impaired water bodies. Section 303(d) of the Federal Clean Water Act requires States to identify waters that do not meet the water quality standards or objectives and thus, are considered “impaired.” Once listed, Section 303(d) mandates prioritization and development of a total maximum daily load (TMDL). The Laguna De Santa Rosa is listed as a category 5 segment, meaning that it is a water segment that is impaired and a TMDL is required. Pollutants listed for this segment include: indicator bacteria, mercury, nitrogen, dissolved oxygen, phosphorous, sedimentation/siltation, and temperature. TMDLs for the pollutants listed above are currently under development by the North Coast Regional Water Quality Control Board (RWQCB).

The City of Cotati is subject to flooding along creeks and drainages that traverse city limits. The Laguna de Santa Rosa and Cotati Creek are the most prominent drainages in Cotati that are subject to flooding. The 100-year floodplain extends onto many properties that are located immediately adjacent to these drainages. Additionally, land to the west of US 101 in the northern part of the city, and a portion of the Downtown Specific Plan Area, is within the 500-year floodplain.

The Federal Emergency Management Agency’s (FEMA’s) flood hazard mapping program provides important guidance for the City in planning for flooding events and regulating development within identified flood hazard areas. FEMA’s National Flood Insurance Program is intended to encourage State and local governments to adopt responsible floodplain management programs and flood measures. As part of the program, the FEMA defines floodplain and floodway boundaries that are shown on the Flood Insurance Rate Maps (FIRMs).

Dischargers whose projects disturb one or more acres of soil, or whose projects disturb less than one acre, but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity Construction General Permit Order 2009-0009-DWQ from the State Water Resources Control Board.[7] Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling, or excavation. The Construction General Permit requires

[7]State Water Resources Control Board, Construction General Permit Order 2009-0009-DWQ, http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml, Accessed April 4, 2022.

the development of a Storm Water Pollution Prevention Plan (SWPPP) by a certified Qualified SWPPP Developer.

Surface water quality is regulated by the North Coast RWQCB via the Water Quality Control Plan for the North Coast Region (Basin Plan). The RWQCB is responsible for implementing Section 401 of the Clean Water Act through the issuance of a Clean Water Certification when development includes potential impacts to jurisdictional areas such as creeks, wetlands or other Waters of the State.

Chapter 13.68 of the Cotati Municipal Code regulates stormwater discharge. Grading and erosion control requirements are set forth in chapter 14.36 of the Municipal Code. Low Impact Development (LID) requirements establish limitations on the stormwater runoff generated by development sites. New development is required to mimic pre-developed conditions, protect water quality and retain runoff from impervious surfaces onsite in accordance with the Santa Rosa Storm Water Low Impact Development Technical Design Manual (LID Manual).

As shown in Figure 3.8-1: Watersheds of the General Plan EIR, the project site is located adjacent to the Laguna de Santa Rosa and Washoe Creek. As shown in Figure 3.8-2: Flood Hazard Map of the General Plan EIR, a portion of the site is located within the 100-year Flood Zone (1.0% annual chance flood hazard). The portion of the site within the 100-year base floodplain was removed by FEMA from the Special Flood Area (SFHA 1.0% annual chance of flood hazard) as delineated in the FEMA Letter of Map Amendment Determination Document (Removal) dated March 18, 2021, Case No: 21-09-0709A. A small portion of the site (1,402 sq. ft.) remains within the 100-year floodplain. The portion of the site remaining within the 100-year floodplain is not proposed for development.

Hydrology and Water Quality Impact Discussion:

Warehouse Building and Facilities

5.10(a) (Violate Water Quality Standards, Otherwise Degrade Surface or Ground Water Quality) Less Than Significant Impact with Mitigation: Construction activities have the potential to result in runoff that contains sediment and other pollutants that could degrade water quality if not properly controlled. Sources of potential pollution associated with construction include fuel, grease, oil and other fluids, concrete material, sediment, and litter. These pollutants have the potential to result in impacts due to chemical contamination from the release of construction equipment and materials that could pose a hazard to the environment or degrade water quality if not properly managed.

In order to ensure that proper controls and treatment are in place to prevent pollutants from entering stormwater runoff, the project shall adhere to NPDES requirements including the preparation and implementation of a SWPPP and compliance with the RWQCB Order No. R1-2009-0045, Waste Discharge Requirements. Erosion control requirements are stipulated in the NPDES Permit issued by the RWQCB. These requirements include the preparation and implementation of a SWPPP that contains BMPs. The purpose of the SWPPP is to identify potential sediment sources and other pollutants and prescribe BMPs to ensure that potential adverse erosion, siltation, and contamination impacts would not occur during construction activities.

Mitigation Measure HYDRO-1 below requires that the project implement a SWPPP with BMPs that include but are not limited to fiber roll protection at all drains, the use of gravel at access driveways during construction, designated washout areas, and the development and implementation of a hazardous materials spill prevention plan. These and other BMPs are designed to protect water quality from potential contaminants in stormwater runoff emanating from construction sites. With implementation of HYDRO-1, the project's potential to result in a violation of water quality standards during construction would be reduced to levels below significance.

A Storm Water Low Impact Development (LID) Report was prepared by Calichi Design Group for the proposed project (**Appendix F**) on July 11, 2022. As stated therein, this project will create over 10,000 SF of impervious area, which will trigger the need to implement permanent storm water BMP's, inlcluding 100% volume capture and treatment of runoff. In addition, all tributary areas contain new impervious area, and will therefore need to implement trash capture measures. The trash enclosure is required to have a floor drain and connect to the sanitary sewer for any potential seepage.

Pollution Prevention and Runoff Reduction Measures:

The site will capture and retain 100% of its runoff volume based on the Santa Rosa LID Manual.

Types of Proposed Best Management Practices (BMP's):

This site uses one type of Best Management Practices or BMPs: Roadside bio-retention containing drain rock with 0.40 void space to satisfy the 100% Volume Capture Requirement. For reference throughout this report and the calculations, these will be referred to as BMP-1, -2, -3, and -4.

The delineated drainage basins, described in more detail within the accompanied Hydraulics and Hydrology Report, all flow to their respective roadside bio-retention BMP's (BMP-1 through BMP-4) where the 10-year storm is retained. An overflow inlet has been designed in each BMP in order to capture and convey runoff in excess of the required volume capture quantity. There are four of these BMP's spread throughout the site and referenced as BMP-1, BMP-2, BMP-3 and BMP-4.

These BMPs are considered Priority 2 of the city standard details. In certain areas, the detail has been slightly modified to work with the specific site conditions and the soil and retention materials have been modified and approved by the City of Cotati for Building 1 and these changes will be implemented in the subject Project (Building 2) as well. The BMPs are sized using the Santa Rosa Low Impact Development calculator and specifically placed to capture all the runoff throughout the site.

The Santa Rosa Calculation Spreadsheet has been used to size the BMPs. Within the calculator, the drainage basins are separated by the type of cover within each basin in order to calculate an accurate CN value for each section. The composite CN number is then used to determine the required amount of hydromodification that is required for each basin.

Drain rock is proposed to be placed throughout the entire section of the bio-retention trench. The depths of the drain rock vary from BMP to BMP. Additionally, all of the BMPs have been sized with an assumed porosity of 0.40 for the drain rock volume. The required volume, provided volume and depth of drainage rock for each retention chamber is shown in the table below.

Subsurface Retention Pond	Required Retention Volume (cf)	Provided Retention Volume (cf)	Depth of Drain Rock (ft)
BMP-1	821.9	1,032.1	2.9
BMP-2	972.7	1204.3	2.9
BMP-3	551.9	601.6	2.9
BMP-4	2,662.9	2,811.5	2.9

These values can also be found in ***Appendix C*** of the Report.

To help clarify the location of the bio-treatment planters and subsurface retention trenches, the following descriptions are given. These can also be seen on the Stormwater Control Plan in ***Appendix B*** of the Report.

BMP-1: This BMP accepts runoff from PR-1A, PR-1B, & PG-1C. It's located just south of the Southeast quadrant of the building and the outfall pipe runs south and eventually discharges to an existing outfall to the Laguna at the Northwest corner of the site.

BMP-2: This BMP accepts runoff from PR-2B and is located near the southeastern corner of the site and the outfall pipe runs northwest and eventually discharges to an existing outfall at the Laguna in the Northwest corner of the site. It should be noted that this BMP was sized to include the area of PR-2C, however, PR-2C does not actually drain into it due to the elevation being approximately 3ft lower than the surrounding grades and is infeasible to route drainage into a BMP.

BMP-3: This BMP accepts runoff from PR-3A and PR-3B. It's located near the Northeast corner of the site and the outfall pipe runs northwest and eventually discharges to an existing outfall to the Laguna in the Northwest corner of the site.

BMP-4: This BMP accepts runoff from PR-4A & PG-4B. It's located near the Northwest corner of the site and the outfall pipe runs north and eventually discharges to an existing outfall to the Laguna in the Northwest corner of the site.

Maintenance and Responsible Party

BMP Maintenance:

At a minimum, each roadside bio-retention needs to be inspected twice annually for standing water beyond the drawdown period, excessive erosion of soil, or dead vegetation and plantings within the planter. If ponded water is observed, the perforated pipes and / or inlets within the planter may need maintenance and regrading or replacement of the soils may be necessary to prevent mosquito breeding.

<u>Trash Capture Maintenance:</u>

These filters should be cleaned twice annually. This will involve the removal of the filter, vacuuming out all sediment and debris, pressure washing the device and inlet, and replacing the device.

The property owner will be the responsible party for the inspection and maintenance of each BMP.

5.10(b) (Groundwater Supply and Recharge) Less Than Significant Impact: The moving and storage warehouse will utilize potable water from the City's water system for all onsite water needs including indoor use and outdoor irrigation. Potable water supplies will be provided to the site via connection to the existing 10-inch water main pipeline located within Blodgett Street. The project's water demand is consistent with the City's overall water demand that is anticipated by the City of Cotati 2015 General Plan and Urban Water Management Plan. Groundwater reserves will not be significantly impacted by the proposed development as no groundwater extraction will occur onsite, nor is the project located in a groundwater recharge area (Sonoma County Ground Water Availability Map, 2016). Therefore, the project will have a less than significant impact to groundwater supplies and recharge and would not impede sustainable groundwater management of the basin.

5.10(ci – civ) (Erosion or Siltation, Flooding On- or Off-site, Storm Drain Capacity, Impede or Redirect Flood Flows) Less Than Significant Impact:

<u>Existing Drainage</u>:

A Preliminary Hydraulics and Hydrology Report for the project was prepared by Calichi Design Group on January 10, 2022 (**Appendix G**). The existing site is relatively level with an average slope of approximately 0.5% and generally drains towards various low points throughout the parcel. A high point, at approximately 98 ft above sea level, exists near the middle of the Northern property line and the site drains to the south and west. The site's storm water mainly pools on-site and infiltrates into the soils. In addition, a small portion on each side of the property has offsite runoff from adjacent parcels. Finally, a small amount of runoff along the Northeastern property line flows directly into the Laguna De Santa Rosa. In summary, the entirety of any excess runoff that does not infiltrate into the on-site soils ultimately outfalls into Laguna de Santa Rosa.

<u>Impacts of Proposed Drainage</u>:

The storm system has been designed to treat, retain, and restrict the 10-year peak flow prior to releasing it at or below historic conditions via existing storm infrastructure located in landscape areas on the southwest, southeast, and northeast corners of the property and discharges to an existing outfall on the industrial property to the east, which ultimately outfalls to the Laguna de Santa Rosa. The proposed conditions will not adversely affect the downstream conditions. The water quality & retention ponds, discussed in more detail in Section 2 of the report, are sized to retain the 10-year peak storm and detain the 100-year storm. Any additional flow will overtop overflow inlets set at 0.50 feet above the top of media and will ultimately outfall into the Laguna de Santa Rosa via overland release as is done in the existing condition.

<u>Hydrology & Hydraulic Calculations:</u>

For the existing conditions, Calichi Design Group (CDG) used the survey that was prepared by Sousa Land Surveys on February 22, 2021 to create a Pre-Construction Drainage Map with a single drainage basin delineated to depict the runoff from the limits of disturbance since the entire site ultimately flows to the Laguna De Santa Rosa. This basin is denoted as EX-1 for calculations and reference in the report.

For the proposed condition, the site was separated into ten drainage basins. Each basin has been paired with a flow-through planter which is determined to be the Best Management Practice denoted as BMP-1 through BMP-4. These basins incorporate surface flow along with roof drainage for both treatment and hydromodification by flowing into the same BMP prior to being conveyed to the water quality & retention ponds. Along with using the typical sheet flow, concentrated flow, and pipe flow to calculate Time of Concentration, CDG included 5-minutes of roof drainage and 5-minutes of infiltration time through the flow-through planters. Hydrology Calculations outlining the Time of Concentration and the Flow Rate which both can be found in Appendix B of the report. The water quality and retention ponds are combined into a single BMP with a flow through planter at the top and drain rock with an imported soil porosity of 0.4 or larger. Detailed calculations outlining the Retention Calculations beneath the Flow-Through Planters can be found in the Santa Rosa Low Impact Development (LID) Report to be submitted at the time of a grading permit.

In general, the basins all flow via gutter to their respective bio-swale planters where the 10-year storm is treated and then flows lower to the drain rock section below the perforated pipe which is to be retained and ultimately infiltrated into the ground below. Any excess water beyond the required infiltration volume or the treatment volume either enters straight to the storm drain conveyance system via overflow inlet in the bio-swale or via the perforated pipe at the boundary between bio-swale treatment media and the drain rock below. Each bio-swale planter is designed to capture and convey runoff above the required 10-year storm event up to the 100-year storm event. There are four of these combined bio-swale and retention trenches spread throughout the site and referenced as RET-1, RET-2 RET-3, and RET-4. See Appendix A for the Pre-Construction Drainage Map and Stormwater Control Plan included with the report that outlines these locations and delineate the drainage basins. Any flows above the 100-year event will overflow any drainage elements and flow to the Laguna de Santa Rosa via overland flow.

The proposed subject site does not currently flow into the public storm sewer system, but rather ultimately flows into the Laguna De Santa Rosa directly. The proposed design ensures that the total flow that enters the existing storm system is not exceeded. In order to bring clarity to the Proposed Drainage Area Map, the following descriptions break down the drainage areas.

PR-1A: Basin PR-1A includes the southwest quadrant of the building. The runoff is conveyed via roof drain which splashes at grade and flows to BMP-1 bio-swale for treatment and then is infiltrated via infiltration trench RET-1 below the bio-swale soil media. Any excess flows enter overflow inlets or perforation pipe at the bottom of the soil media in the bio-swale and flows via the on-site storm drain system west to the existing outfall into Laguna de Santa Rosa.

PR-1B: Basin PR-1B includes the southeast quadrant of the building. The runoff is conveyed via roof drain which splashes at grade and flows to BMP-1 bio-swale for treatment and then is infiltrated via infiltration trench RET-1 below the bio-swale soil media. Any excess flows enter overflow inlets or perforation pipe at the bottom of the soil media in the bio-swale and flows via the on-site storm drain system west to the existing outfall into Laguna de Santa Rosa.

PG-1C: Basin PG-1C includes the drainage area just south of the building and includes concrete walkways and landscape areas only. The runoff surface flows to BMP-1 bio-swale for treatment and then is infiltrated via infiltration trench RET-1 below the bio-swale soil media. Any excess flows enter overflow inlets or perforation pipe at the bottom of the soil media in the bio-swale and flows via the on-site storm drain system west to the existing outfall into Laguna de Santa Rosa.

PR-2A: Basin PR-3A includes the northeast quadrant of the building. The runoff is conveyed via roof drain which splashes at grade and flows to BMP-2 bio-swale for treatment and then is infiltrated via infiltration trench RET-2 below the bio-swale soil media. Any excess flows enter overflow inlets or perforation pipe at the bottom of the soil media in the bio-swale and flows via the on-site storm drain system west to the existing outfall into Laguna de Santa Rosa.

PG-2B Basin PG-2B includes the southeast drainage area of the site. The runoff surface flows generally South to BMP-2 bio-swale for treatment and then is infiltrated via infiltration trench RET-2 below the bio-swale soil media. Any excess flows enter overflow inlets or perforation pipe at the bottom of the soil media in the bio-swale and flows via the on-site storm drain system west to the existing outfall into Laguna de Santa Rosa.

PG-2C: Basin PG-2C is the proposed truck dock on the east side of the building. The truck dock is 4 feet lower than the Building 2 finish floor elevation and is infeasible to route to a BMP or RET for treatment or infiltration. However, BMP-2 and RET-2 was designed to treat and retain/infiltrate an equivalent quantity of water as if PG-2C was being routed to it. The drainage from the truck dock is captured via trench drain and then is routed to the northwest to the existing outfall into Laguna de Santa Rosa.

PG-3A: Basin PG-3A is the drainage area to the northeast of the building that includes the drive aisle north of the proposed building, parking, walkways, and some landscape areas in the northeast corner of the site. The runoff surface flows to BMP-3 bio-swale for treatment and then is infiltrated via infiltration trench RET-3 below the bio-swale soil media. Any excess flows enter overflow inlets or perforation pipe at the bottom of the soil media in the bio-swale and flows via the on-site storm drain system west to the existing outfall into Laguna de Santa Rosa.

PR-4A: Basin PR-4A includes the northwest quadrant of the building. The runoff is conveyed via a roof drain which splashes at grade and flows to BMP-4 bio-swale for treatment and then is infiltrated via infiltration trench RET-4 below the bio-swale soil media. Any excess flows enter overflow inlets or perforation pipe at the bottom of the soil media in the bio-swale and flows via the on-site storm drain system west to the existing outfall into Laguna de Santa Rosa.

PG-4B: Basin PG-4B includes the entire area west of the building. The runoff surface flows to BMP-4 bio-swale for treatment and then is infiltrated via infiltration trench RET-4 below the bio-swale soil media. Any excess flows enter overflow inlets or perforation pipe at the bottom of the soil media in the bio-swale and flows via the on-site storm drain system west to the existing outfall into Laguna de Santa Rosa.

PG-5A: Basin PR-5B is located at the northeast corner of the site. Because of how the grading of Building 2 interfaces with the grading of Building 1 in this area, it is infeasible to treat the runoff from this area in any of the adjacent bio-swales and it instead sheet flows to the east to the catch basin in the northwest corner of the parking area for Building 1 where it is collected and piped to Building 1 BMP-3 bio-swale for treatment and then is infiltrated via infiltration trench RET-3 below the bio-swale soil media. Any excess flows enter overflow inlets or perforation pipe at the bottom of the soil media in the bio-swale and flows via the on-site storm drain system west to the existing outfall into Laguna de Santa Rosa.

Hydraulic Calculations: For hydraulic calculations, the time of concentrations, 10-year peak design storm flow rates and 100-year check storm for each individual drainage basin were determined using the county provided requirements and data. This information was then used in Civil 3D's Hydraflow Storm Sewers Extension to determine the size and slope of the entire storm network.

Post-Development Storm Water Levels and Pollutant Discharges: Post-development discharge will not exceed existing discharge per design. Additionally, the required amount of treatment has been achieved through the use of flow-through planters (BMP-1, BMP-2, BMP-3, and BMP-4) and 100% volume capture within the retention drain rock beneath the flow-thru planters (RET- 1, RET-2, RET-3, and RET-4). Additional information regarding treatment and retention of the stormwater is contained in the SWLID Report (Appendix F). The proposed project will not alter the course of a stream or river. The majority of the project site consists of grasses. The soils in the project area are moderately well-draining clay loams with a clay subsoil underlain by old terrace-alluvium.[8] Impervious surfaces currently occupy a portion of the project site including hardscape area of gravel and buildings. Stormwater currently percolates into the project site where well-draining soils are present and runoff via sheet flow where impervious surfaces exist or as onsite soils become saturated. Excess stormwater runoff from the project site currently flows southeasterly towards Alder Avenue and into the City's existing stormdrain system.

While the proposed project would introduce new impervious surfaces onsite, implementation of the Initial Storm Water LID Submittal would ensure that the proposed project would not substantially increase the rate or amount of surface runoff, nor provide additional sources of polluted runoff. Therefore, the project will not cause substantial erosion or siltation on- or off-site nor will it cause flooding on- or off-site. Impacts to the drainage pattern, storm drain system, or related to polluted runoff as a result of the proposed project would be less than significant. Furthermore, implementation of the proposed project will result in less than significant impacts related to impeding or redirecting flood flows, as almost the entire project site, and the surrounding properties are not within high-risk flood areas. In addition, the project will not alter any stream.

5.10(d) (Release Pollutants Due to Project Inundation) Less than Significant Impact: As shown in Figure 3.8-2: Flood Hazard Map of the General Plan EIR and FEMA maps a small portion of the project site (20,468 sq. ft.) is located within the 100-year Flood Zone, which is considered to be a flood hazard area. FEMA has approved a LOMA which removes all but, 1,400 sq. ft. from the 100-year floodplain. This small portion of the site within the floodplain is not proposed for development. As described above, the project proposes onsite stormwater collection and treatment facilities which minimize the likelihood of the project site being inundated during a flood.

[8] Cultural Resources Study, prepared by Tom Origer & Associates, June 23, 2016.

The project site is not located near any large bodies of water that would be susceptible to a seiche. The City of Cotati is sufficiently distant from the San Francisco Bay to preclude effects from a tsunami. Furthermore, according the California Department of Conservation, the project site is not located within an affected USGS Quadrangle on the Sonoma County Tsunami Inundation Map.[9] Therefore, the project would have no impacts related to the release of pollutants due to project inundation from a tsunami or seiche.

5.10(e) (Water Quality Control Plan or Sustainable Groundwater Management Plan) Less Than Significant Impact: The City of Cotati is within a regional watershed administered by the North Coast RWQCB. The RWQCB has established regulatory standards and objectives for water quality presented in the North Coast Basin Plan, June 2018. Cotati is also included in the Groundwater Sustainability Plan for the Santa Rosa Plain Subbasin (GSB), adopted in January 2022. As described in 5.10(a), impacts related to water quality or the degradation of surface or groundwater quality are considered less than significant. Therefore, the proposed project will not result in a conflict with or obstruct implementation of the Basin Plan or GSP, and impacts are less than significant.

Mitigation Measures:

HYDRO-1: In accordance with the National Pollution Discharge Elimination System regulation, the applicant shall prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) during all stages of construction. The SWPPP shall address erosion and sediment controls, proper storage of fuels, temporary erosion control including fiber rolls, staked straw bales, geofabric, sandbags, and materials for the cleanup of hazardous spills. Sediment shall be retained onsite by a system of sediment basins, traps, or other appropriate measures. A Notice of Intent, fees, and other required documentation shall be filed with the Regional Water Quality Control Board. During construction, a monitoring report shall be conducted weekly during dry conditions and three times a day during storms that produce more than 1/2" of precipitation.

5.11. LAND USE AND PLANNING

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the	☐	☐	☒	☐

9 *California Department of Conservation*, Sonoma County Tsunami Inundation Map, https://www.conservation.ca.gov/cgs/tsunami/maps/sonoma, Accessed April 11, 2022

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purpose of avoiding or mitigating an environmental effect?

Sources: City of Cotati 2015 General Plan; General Plan EIR; and Cotati Bicycle and Pedestrian Master Plan, prepared by Sonoma County Transportation Authority, adopted December 2008, updated April 22, 2014.

Land Use and Planning Setting:

Cotati is predominantly a single-family residential community, with lower (rural) densities located west of Highway 101 and a range of densities from rural residential to higher density multi-family located east of Highway 101. Commercial uses are located downtown along Old Redwood Highway and in commercial centers along Gravenstein Highway and East Cotati Avenue. Offices are located downtown, within the industrial park on the City's northwest border, and along East Cotati Avenue. The Redwood Drive industrial area houses the bulk of the City's warehousing, distribution, and manufacturing uses. Rural and agricultural lands are located to the south and west of Cotati.

The proposed project is subject to land use policies outlined in the Cotati General Plan which has been adopted for the purpose of avoiding or mitigating an environmental effect. The following policies, goals and objectives from the General Plan are particularly applicable to the subject project:

Goal LU-1: Establish an efficient, harmonious, and environmentally sensitive land use pattern that enhances Cotati's small-town character, provides adequate space to accommodate sustainable economic and housing growth, and encourages orderly growth.

Policy LU 1.1: Maintain a supply of developable mixed-use, commercial, industrial, and residential lands sufficient to meet desired growth and economic needs over the planning period.

Objective LU 1B: Ensure that new growth is focused around existing development and does not facilitate the inefficient extension of city services.

Action LU1b: Combine the Commercial/Industrial and General Industrial Districts into a single district that accommodates the range of industrial and commercial uses allowed in the Commercial Industrial Land use designation.

Cotati Bicycle and Pedestrian Master Plan

Existing and planned bicycle and pedestrian facilities in Cotati are shown in the Cotati Bicycle and Pedestrian Master Plan, adopted in December 2008 and updated April 2014. The Plan identifies two Pedestrian Districts in Cotati (areas of high activity where pedestrian improvements should be prioritized) including downtown/Old Redwood Highway between SR 116 and Henry Street, and the area immediately surrounding the Thomas Page Elementary School. Bicycle circulation in Cotati is supported by an existing network of multi-use paths, on-street bike lanes, and bicycle routes. Notable facilities include a segment of the Laguna de Santa Rosa bike path between Commerce Boulevard (in Rohnert Park) and the southern City limits (with one small gap just south of East Cotati Avenue), and on-street bicycle lanes within the city limits on West Sierra Avenue and East Cotati Avenue.

As stated in Objective CI 2A of the General Plan, the City is striving to maintain and develop a network of sidewalks and pathways to provide for safe and convenient pedestrian travel. In particular, Policy CI 2.3 requires development projects to construct sidewalks and walkways on- and off-site in order to maintain consistency with the Cotati Bicycle and Pedestrian Master Plan, and as dictated by the location of transit stops and common pedestrian destinations.

According to the Cotati Bicycle and Pedestrian Master Plan, and as shown on Figure 2.2 of the General Plan, there are no existing bicycle or pedestrian facilities adjacent to the project site. The Sonoma County Transportation Authority (SCTA) Countywide Bicycle and Pedestrian Master Plan includes a proposed Class 1 Bike path along the north side of the Laguna de Santa Rosa.

Land Use and Planning Impact Discussion:

5.11(a) (Divide an Established Community) No Impact: Division of an established community typically occurs when a new physical feature, in the form of an interstate or railroad, physically transects an area, thereby removing mobility and access within an established community. The division of an established community can also occur through the removal of an existing road or pathway, which would reduce or remove access between a community and outlying areas.

The project proposes development on a previously undeveloped parcel within the city limits and the west end of Blodgett Street which is developed with light industrial uses.

Construction of the proposed project would not introduce a new physical feature that would remove mobility and access within an established community. Likewise, the project does not propose the removal of an existing road or pathway that could reduce or remove access between a community and outlying areas. Therefore, the project would have no impact due to the physical division of an established community.

5.11(b) (Land Use Plan, Policy, Regulation Conflict) Less Than Significant Impact: The proposed project is required to comply with various policy documents, including the Cotati 2015 General Plan, the City of Cotati's Zoning Ordinance, and the Bicycle and Pedestrian Master Plan. The construction of a moving and storage warehouse use is compatible with the current land use and zoning designations for the project site, which are Commercial/Industrial (land use) and Commercial/Industrial (zoning). The current zoning designation allows light industrial, commercial, and business park uses, including "Storage-warehouse, indoor storage." The proposed project requires a Use Permit for the moving and storage use as part of the project entitlement process.

Overall, the proposed project is consistent with the general policies, goals and objectives of the Cotati General Plan. Therefore, the potential impacts due to a conflict with City of Cotati regulations are less than significant.

Mitigation Measures: None Required.

5.12. Mineral Resources

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

Sources: City of Cotati 2015 General Plan; General Plan EIR; Soil and Geotechnical Feasibility Evaluation, prepared by Reese and Associates, March 26, 2021; Email from Joe Mauney, Reese and Associates to Bert Sandell dated December 22, 2021.

Mineral Resources Setting*:* The California Surface Mining and Reclamation Act of 1975 (SMARA) identifies mineral resources within California. These maps identify and classify mineral resources as to their relative value for extraction. To date, no aggregate mineral resources or other significant mineral resources have been mapped within the City of Cotati.

Mineral Resources Impact Discussion:

5.12(a-b) (Mineral Resources or Resource Plans) No Impact: There are no known mineral resources within the City of Cotati. Soil studies conducted as part of the Geotechnical Feasibility Evaluation did not reveal the presence of any mineral resources onsite. The project site has not been delineated as a locally important resource recovery site. The project will not result in the loss of availability of a known mineral resource, including those designated as "locally important." Therefore, the proposed project will have no impacts due to the loss of availability of mineral resources.

Mitigation Measures: None Required.

5.13 NOISE

Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general	☐	☒	☐	☐

plan or noise ordinance, or applicable standards of other agencies?				
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Sources: City of Cotati 2015 General Plan; General Plan EIR; Acoustical Analysis of Operational Noise, Wilson Ihrig, April 25, 2022

Noise Setting:

Noise is generally defined as unwanted sound. It is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). The sound pressure level is the most common descriptor used to characterize the loudness of an ambient (existing) sound level. The decibel (dB) scale is used to quantify sound intensity but given that the human ear is not equally sensitive to all frequencies in the entire spectrum, noise measurements are weighted more heavily for frequencies to which humans are sensitive in a process called “A-weighting,” written as “dBA” and referred to as “A-weighted decibels”. In general, human sound perception is such that a change in sound level of 1 dB cannot typically be perceived by the human ear, a change of 3 dB is just noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling the sound level.

The primary noise sources within the Cotati City limits include vehicular traffic, residential maintenance activities, residential air conditioning units and swimming pool pumps, entertainment venues, child-care centers, gas stations, car washes, school playgrounds, public parks, commercial business activities, and light industrial facilities. Commercial and light industrial uses can generate noise due to regular operations such as fans, blowers, chillers, compressors, boilers, pumps, and air conditioning systems which may run for 24 hours a day. Other sources of noise in these areas, such as horns, buzzers, and loading activities may be intermittent.

The City of Cotati regulates the noise environment through Section 17.30.050 of the Municipal Code, which establishes exterior and interior noise level limits for land uses. The maximum allowable exterior noise level at residential care facilities is 65 dBA Ldn, and the maximum allowable interior noise level is 45 dBA Ldn. The exterior and interior noise limits established in Section 17.30.050 of the Municipal Use Code are consistent with the Land use Compatibility for Community Noise Environment standards identified in the Cotati General Plan. The General Plan also establishes the following relevant goals, objectives, policies, and actions:

Objective N 1A: Minimize Noise Levels to Enhance the Quality of Existing and Future Land Uses.

Policy N 1.1: Ensure the noise compatibility of existing and future uses when making land use planning decisions.

Policy N 1.3: Require development to mitigate excessive noise through best practices, including building location and orientation, building design features, placement of noise-generating equipment away from sensitive receptors, shielding of noise-generating equipment, placement of noise-tolerant features between noise sources and sensitive receptors, and use of noise-minimizing materials such as rubberized asphalt.

Policy N 1.15: Require new development to minimize vibration impacts to adjacent uses during demolition and construction. For sensitive historic structures, a vibration limit of 0.08 in/sec PPV (peak particle velocity) will be used to minimize the potential for cosmetic damage to the building. A vibration limit of 0.30 in/sec PPV will be used to minimize the potential for cosmetic damage at buildings of normal conventional construction.

Policy N 1.6: Support noise-compatible land uses along existing and future roadways, highways, and freeways.

Policy N 1.7: The following criteria shall be used to determine the significance, for projects required by the CEQA to analyze noise impacts, of noise impacts for development, transportation, and other projects that increase noise:

Policy N 1.8: Ensure that new development does not expose indoor sleeping areas to indoor noise levels in excess of 45 dBA Ldn.

Significance Criteria for Noise

The following summarizes the City of Cotati's significance criteria for assessing project level impacts on the ambient noise environment.

- A significant impact will occur if the project results in an exceedance of the noise level standards contained in this Noise Element, or the project will result in an increase in ambient noise levels by more than 3 dB; and
- A vibration limit of 0.3 inches/second, peak particle velocity (in/sec PPV) to minimize cosmetic damage at buildings of normal conventional construction. For sensitive historic structures, a vibration limit of 0.08 in/sec PPV is established to minimize cosmetic damage to the building; and
- Where existing traffic noise levels are less than 60 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +5 dB Ldn increase in roadway noise levels will be considered significant; and
- Where existing traffic noise levels range between 60 and 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +3 dB Ldn increase in roadway noise levels will be considered significant; and
- Where existing traffic noise levels are greater than 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a + 1.5 dB Ldn increase in roadway noise levels will be considered significant.

Noise Impact Discussion:

5.13(a) (Temporary or Permanent Noise Increase) Less Than Significant Impact with Mitigation:

Construction Noise

Construction of the proposed project would result in temporary and intermittent noise increases onsite and in the project vicinity from the use of heavy equipment, truck deliveries, and off-haul of materials. Construction noise associated with the proposed project would be perceptible to established uses in the immediate including workers/customers of nearby commercial and industrial uses to the north, east, and south.

Noise impacts resulting from construction of the project depend upon the noise generated by various pieces of construction equipment, the timing and duration of noise-generating activities, and the distance between construction noise sources and noise-sensitive areas. Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (e.g., early morning, evening, or nighttime hours), in areas immediately adjoining noise-sensitive land uses, or over extended periods of time.

Construction of the proposed project is anticipated to occur over a 12-month period and would include demolition, site preparation, grading and excavation, trenching, building erection, and paving. During each stage of construction, there would be a different mix of equipment operating, and noise levels would vary based on the amount of equipment in operation and the location at which the equipment is operating.

Most construction equipment generates maximum noise levels within the range of 80 to 90 dBA Lmax at a distance of 50 feet. Typical hourly average construction-generated noise levels for residential developments are about 81 to 88 dBA Leq measured at a distance of 50 feet from the center of the site during busy construction periods (e.g., earth moving equipment, impact tools, etc.). Hourly average construction noise levels associated with the erection of the proposed buildings, such as hammer- and drilling-related noise, would range from approximately 63 to 71 dBA at a distance of 50 feet. As such, construction noises generated by project development may occasionally result in temporary increases in ambient noise levels in and around the project site and may occasionally reach intrusive levels.

Mitigation Measure NOI-1 shall be implemented which requires best construction management practices to reduce construction noise levels emanating from the site, limit construction hours, and minimize disruption and annoyance due to noise exposure. With implementation of NOI-1, exposure of existing commercial uses to excessive noise levels generated during construction activities will be reduced to less than significant levels. The site is not located in close proximity to existing residences or other noise-sensitive uses. The nearest residences are approximately 800 feet away.

Permanent Increase in Ambient Noise Levels

Noise resulting from project-generated traffic would not be expected to substantially increase ambient noise levels in the area due to the minimal amount of traffic generated by the moving and storage company.

Mechanical Equipment

The proposed project will include mechanical equipment such as heating, ventilation, and air conditioning systems, and is required to achieve standards established by the City's Noise Ordinance thresholds. Section 17.30.050 of the Municipal Code provides that the maximum allowable exterior noise level at residential land uses is 65 dBA Ldn. As currently proposed, mechanical HVAC equipment will be located on rooftops of the warehouse building, behind a parapet wall. Rooftop mechanical equipment noise levels for mid-rise structures usually range from 60 to 70 dBA Leq at a distance of 50 feet, assuming direct line of sight between receiver and mechanical equipment. Given the distance of the residential property lines from the HVAC equipment, and shielding from the parapet walls and building, noise levels at any residential property lines are not be expected to exceed 65 dBA Ldn. Therefore, noise impacts from mechanical equipment will be less than significant.

Predicted operational noise levels by the project boundaries

An Acoustical Analysis of Operational Noise was prepared by Wilson Ihrig on April 25, 2022 (**Appendix H**). Based on the operational information provided and the results of measurements conducted at a similar facility, the Analysis made predictions of expected levels of noise resulting from those operations. The operations will consist of the arrival of individual containers by small local delivery trucks and by larger Tractor/Trailer trucks which are capable of handling three containers at one time. After arrival, the trucks park in designated areas and turn their engines off. Propane-gas powered forklifts then remove and replace containers off/onto the trucks and store them inside the warehouse for long-term storage or temporarily outside. After the loading/unloading of the trucks takes place, they start their engines, idle for a few seconds and then leave the facility. Measurements of the noise produced by these operations were conducted at a facility similar to the one proposed located in the city of Benicia. Based on the result of these measurements and on the expected frequency of operations at the Cotati facility, predictions were made of the expected future level of noise by the nearest receiving land uses to the project. The approximate center points of the middle and rear yards were used as the reference locations from which the distances to the nearest property lines were calculated, as those areas are where most of the activities are expected to take place. Figure 1 in the Analysis provides a graphical description of the expected activity areas and of the distances to the nearest property lines. The expected levels of noise at the three points studied located at approximately 225 feet and 258 feet to the north, and 391 feet to the south are 33 Ldn, 32 Ldn,, and 29Ldn respectively. See the table below for the list of locations, distances, and predicted Ldn values. These levels are significantly lower than the 75 dBA Ldn in outdoor areas allowed by the Municipal Code for Office land uses and even the 65 Ldn allowed for Residential and other noise-sensitive land uses. This is due to the very brief duration of noise-producing events such as trucks entering and then parking, forklifts moving containers for very short distances which were observed to last between 10 and 15 seconds, and for the modest number of operations that are expected to take place on a given day. The worksheet in Figure 2 of the Analysis includes a summary of the assumptions made, observed noise elves produced by each equipment at short distances, and resulting noise levels at the three property line points studied.

Location of Receiver	Receiver Distance	Predicted Ldn Values
Commercial A	225 ft	33 Ldn
Commercial B	258 ft	32 Ldn
Commercial C	391 ft	29 Ldn

Based on the results from the measurements conducted at a similar facility, the expected volume of operations at the future facility, and the distances to the property lines, the predicted operational noise to be produced by the proposed facility is expected to fully comply with current City of Cotati legislation requirements.

5.13(b) (Groundborne Vibration and Noise) Less Than Significant Impact: Operation of heavy construction equipment, particularly pile driving and other impact devices such as pavement breakers create seismic waves that radiate along the surface of the earth and are experienced as ground vibration. Vibration from operation of equipment can result in effects ranging from annoyance of people to damage of structures. Varying geology and distances result in different vibration levels containing different frequencies and displacements.

Temporary construction activities associated with the SW project, such as grading and compaction have the potential to generate ground-borne vibration. Building construction, paving, and other site improvements will also require the operation of heavy-duty construction equipment, which will contribute to the ambient noise environment. As the project is not expected to require pile driving, equipment such as vibratory rollers, large bulldozers, and jackhammers are expected to generate the highest ground vibration levels.

Table 1 below provides the vibration source levels at 25 feet for various types of construction equipment:

Table 1: Vibration Source Levels for Construction Equipment

EQUIPMENT	PPV AT 25 FEET (IN/SEC)
Vibratory roller	0.210
Large bulldozer	0.089
Caisson drilling	0.089
Loaded trucks	0.076
Jackhammer	0.035
Small bulldozer	0.003

Source: Transit Noise and Vibration Impact Assessment, United States Department of Transportation, Federal Transit Agency, Office of Planning and Environment, May 2006.

The nearest existing sensitive receptors to the construction area are the existing residences north of the site (approximately 800 feet away).

5.13(c) (Airport Noise) No Impact: The proposed project is not located within two miles of a public airport or public use airport, nor is it located near a private airstrip. As such, residents and workers at the project site would not be exposed to excessive noise levels as a result of being located within an airport land use plan area or within the vicinity of a private airstrip. Therefore, no impacts due to excessive airport noise exposure would occur.

Mitigation Measures:

NOI-1: all construction activities shall be required to comply with the following and be noted accordingly on construction plans:

1. Noise-generating construction activities, including truck traffic coming to and from the construction site for any purpose, shall be limited to between the hours of 7:00 am and 7:00 pm on weekdays and 9:00 am and 5:00 pm on Saturdays (if allowed through specific project conditions of approval). No construction shall occur on Sundays or holidays.
2. All equipment driven by internal combustion engines shall be equipped with mufflers, which are in good condition and appropriate for the equipment.
3. The construction contractor shall utilize “quiet” models of air compressors and other stationary noise sources where technology exists.
4. At all times during project grading and construction, stationary noise-generating equipment shall be located as far as practicable from adjacent uses.
5. Unnecessary idling of internal combustion engines shall be prohibited.
6. Construction staging areas shall be established at locations that will create the greatest distance between the construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.
7. The required construction-related noise mitigation plan shall also specify that haul truck deliveries are subject to the same hours specified for construction equipment.

5.14 POPULATION AND HOUSING

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

Sources: City of Cotati 2015 General Plan; General Plan EIR; U.S. Census Bureau, https://www.census.gov/quickfacts/cotaticitycalifornia, Accessed April 11, 2022; and Cotati Housing Element, adopted May 19, 2015.

Population and Housing Setting:

According to the City's Housing Element, the population of Cotati has increased steadily over the years, growing from 3,346 persons in 1980 to 7,265 persons in 2010. The decade from 1980 to 1990 experienced the greatest population increase, 71 percent. From 2000 to 2010, the population increased from 6,471 to 7,265 persons, an increase of 1.2 percent per year. According to the U.S. Census Bureau, as of April 1, 2020 , the City of Cotati's population was 7,584 people.

Population and Housing Impact Discussion:

5.14(a) (Substantial Unplanned Growth) Less Than Significant Impact: The project site is located within the city limits and will not directly or indirectly induce substantial unplanned population growth. The project proposes the construction of a 35,500 sq. ft. storage warehouse to be used by a moving and storage company in an area designated for industrial uses. The proposed use would employ approximately 4 workers. The projected number of workers or industrial square footage would not constitute a substantial increase in unplanned growth. As a result, the project is consistent with the General Plan.

The project site is located within the city limits and would connect to the existing utilities within Blodgett Street. As such, the project site is well served by existing services and infrastructure and will not require the extension or construction of new utilities to provide adequate service. There are no other elements of the project that would induce growth at levels beyond what has been anticipated by the City's Planning documents. Therefore, the project will have a less than significant impact, directly or indirectly, related to unplanned growth.

5.14(b) (Displacement of People or Housing) No Impact: The project involves the construction of a storage warehouse on an underdeveloped parcel within an existing industrial/commercial business park. The project does not include the removal of any housing units. Therefore, there are no impacts related to the displacement of housing or people.

Mitigation Measures: None Required.

5.15. PUBLIC SERVICES

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

Sources: City of Cotati 2015 General Plan; General Plan EIR; and Cotati Housing Element, adopted May 19, 2015.

Public Services Setting:

The City of Cotati is well served by established public services including fire and police protection, schools, and parklands. New demands on City services resulting from full "buildout" have been previously anticipated by the General Plan, and City budgeting is based on this anticipation. In order to help offset the cost of improving or expanding certain City services to accommodate the demand generated by new development, the City charges one-time impact fees on new private development. Development impact fees finance some public service improvements, while others are covered through property tax, sales tax, and individual assessments, and combined, these sources pay for new development's fair share of the costs necessary to maintain acceptable levels of service related to fire and police protection services, open space, parkland, and other such public services.

Public Services Impact Discussion:

5.15(a) (Fire Protection) Less than Significant Impact: The project site is served by the Rancho Adobe Fire Protection District (RAFPD). The District was formed in 1993 through the combining of two smaller districts, the Cotati Fire Protection District and the Penngrove Fire Protection District. The RAFPD provides services to the Penngrove, Cotati, and unincorporated areas of Petaluma. RAFPD covers an emergency response area of roughly 86 square miles and serves approximately 28,000 people. Service is provided by three stations located at 1 East Cotati Avenue; 11000 Main Street in Penngrove and 99 Liberty Road in Petaluma. Currently, there are 24 full-time Firefighters, Engineers and Captains; three Battalion Chiefs; 3 part-time Firefighters; a full-time Fire Chief; and one Administrative Manager. At the end of the first year of the merger between the two fire districts in 1993 the call volume was approximately 1,000 calls for service. In 2017, the RAFPD responded to over 2,750 calls for service, an increase of around 5 percent a year since 1993.[10]

The RAFPD has automatic aid agreements with neighboring districts, including the California Department of Forestry and Fire Protection (CALFIRE) and the City of Rohnert Park. CALFIRE provides automatic aid for emergency incidents in the west portions of the District and to State Responsibility Area fires. CDF provides fire response to anywhere in the District at the District's request. Under the automatic aid agreement between RAFPD and the City of Rohnert Park, the City of Rohnert Park responds to structure fires, water-flow alarm-sounding, vegetation fires, and vehicle collision calls in the RAFPD service area, including locations in Cotati.

The project site is located approximately 1 mile driving distance of the fire station located at 1 East Cotati Avenue.

As stated in **Section 5.14 Population and Housing**, the project is not anticipated to induce substantial unplanned growth in the area, either directly or indirectly. Although the project will incrementally increase demands for fire services, the project is not anticipated to induce a substantial increase in the demand for fire protection services. The General Plan includes policies and action to ensure that public services are provided at acceptable levels and to ensure that development and growth does not outpace the provision of public services. New demands on fire service have been anticipated as part of General Plan buildout, and City budgeting is based on this anticipation. In addition, the project will be required to meet California Building Code requirements related to "High Pile Storage," thereby reducing fire risk at the property. Therefore, impacts to fire protection services from the project will be less than significant.

5.15(b) (Police Protection) Less than Significant Impact: The Cotati Police Department (CPD) is a 24-hour operation providing dispatch, patrol, traffic enforcement, investigation, and community crime prevention. The CPD includes a chief, one lieutenant, two sergeants, six officers (a total of 10 officers), one police canine unit, one community services officer, five dispatchers, and one support services supervisor. As of 2018, the ratio of officers to population is approximately 1.27 per 1,000 persons.

As stated in **Section 5.14 Population and Housing**, the project is not anticipated to induce substantial unplanned growth in the area, either directly or indirectly. Although the project will incrementally increase demands for police services, the project is not anticipated to induce a substantial increase in the demand for police protection services. The General Plan includes policies and action to ensure that public services are provided at acceptable level and to ensure that development and growth does not outpace the provision of public services. New demands on police services have been anticipated as part

[10] Rancho Adobe Fire Protection District, https://www.rancho-adobe-fire.org/about-rancho-adobe-fire-protection-district, Accessed April 11, 2022.

of General Plan buildout, and City budgeting is based on this anticipation. Therefore, impacts to police services will be less than significant.

5.15(c) (Schools) No Impact: Students in the City of Cotati are served by the Cotati-Rohnert Park Unified School District (CRPUSD). The CRPUSD includes eight elementary schools, two middle schools, and two high schools. The proposed project involves the construction of a storage warehouse. Since the project includes no housing and will employee approximately 4 individuals, no impacts to schools are anticipated. This project would be required to pay applicable school impact fees.

5.15(d) (Parks) No Impact: The employees of the proposed warehouse are not expected to contribute to parkland use within the city. Employees may visit parks within the City of Cotati; however due to the low number of employees and the project's location no impacts are anticipated.

5.15(e) (Other Public Facilities) No Impact: The project will not result in substantial adverse impacts associated with any other public facilities. The project site is within the city limits and is well served by existing public services. The project will not generate a substantial increase in demands that warrant the expansion or construction of other new public facilities. The project would not impact the use of the proposed Class I bicycle path located along the north side of the Laguna de Santa Rosa. Therefore, no impacts related to other public facilities will occur.

Mitigation Measures: None Required.

5.16. RECREATION

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒
Sources: City of Cotati 2015 General Plan and General Plan EIR.				

Recreation Setting:

The public parks and recreational opportunities within the city accommodate a range of uses and activities that include both active and passive recreation. Park land development and/or park acquisition impact fees are required to offset any potential impacts of the project on parks and open space.

Recreation Impact Discussion:

5.16(a) (Deterioration of Parks) Less Than Significant Impact: The project site is located adjacent to the Laguna de Santa Rosa which includes an existing pathway on the north side.

The Laguna de Santa Rosa is within property owned by the Sonoma County Water Agency and the project does not include any proposal to modify the existing/proposed walking/bike path. Therefore, impacts due to substantial physical deterioration of this existing recreational facility would be less than significant.

5.16(b) (Additional Recreational Facilities) No Impact: This project does not include the provision of any new recreational facilities and does increase the demand for additional recreational facilities. Therefore, impacts will be less than significant.

Mitigation Measures: None Required.

5.17. TRANSPORTATION

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	☒	☐
b) Conflict or be inconsistent with CEQA Guidelines 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?	☐	☐	☒	☐

Sources: City of Cotati 2015 General Plan; General Plan EIR; Traffic Impact Analysis, prepared by W-Trans, March 16, 2022; Cotati Bicycle and Pedestrian Master Plan, prepared by Sonoma County Transportation Authority, adopted December 2008, updated April 22, 2014; and Moving Forward 2050 Sonoma County's Comprehensive Transportation Plan, prepared by Sonoma County Transportation Authority, September 2021.

Transportation Setting:

The project site is located at the terminus of Blodgett Street, on the west side of Building 1. Blodgett Street is a fully improved city street with two travel lanes, parking, and sidewalks. Blodgett Street was specifically constructed as a collector street to serve the existing industrial park. City and County plans do not include any policies specific to Blodgett Street.

Public Transit

Bus service in Cotati is provided by Sonoma County Transit, Golden Gate Transit, and Paratransit. Sonoma County Transit is the primary transit provider in Cotati; it provides regularly-scheduled fixed-route service to major activity centers and transit hubs within the city limits. Golden Gate Transit Routes 74, 80, and 101 serve Cotati with stops located at either the Hub or the St. Josephs Park and Ride. Paratransit, also known as dial-a-ride or door-to-door service, is available for those that are unable to independently use the transit system due to a physical or mental disability. The project site is not served by existing or proposed public transit routes.

Rail Service

Sonoma-Marin Area Rail Transit (SMART) offers passenger rail service in Sonoma and Marin counties. SMART's initial 43 miles of rail corridor includes 10 stations, from the Sonoma County Airport to Downtown San Rafael, and includes a station in Cotati. The full project will provide 70 miles of passenger rail service and a bicycle-pedestrian pathway.

Rail freight operation on the SMART rail corridor is overseen by the North Coast Railroad Authority. Freight service currently operates between Lombard (located in Napa County where the North Coast Railroad Authority interfaces with the national rail system) and Petaluma. Several round-trip freight trains per week are expected to pass through Cotati over the next several years as freight service expands.

Bike and Pedestrian Facilities

Existing and planned bicycle and pedestrian facilities in Cotati are shown in the Cotati Bicycle and Pedestrian Master Plan, adopted in December 2008 and updated April 2014. Notable facilities include a segment of the Laguna de Santa Rosa bike path between Commerce Boulevard (in Rohnert Park) and the southern city limits (with one small gap just south of East Cotati Avenue), and on-street bicycle lanes within the city limits on West Sierra Avenue and East Cotati Avenue.

According to the Cotati Bicycle and Pedestrian Master Plan, and as shown on Figure 2.2 of the General Plan, there is a proposed Class I bicycle/pedestrian path located along the north side of the Laguna de Santa Rosa across from the project site. As stated in Objective CI 2A of the General Plan, the City is striving to maintain and develop a network of sidewalks and pathways to provide for safe and convenient pedestrian travel. In particular, Policy CI 2.3 requires development projects to construct sidewalks and walkways on- and off-site in order to maintain consistency with the Cotati Bicycle and Pedestrian Master Plan, and as dictated by the location of transit stops and common pedestrian destinations.

Sonoma County Comprehensive Transportation Plan

Moving Forward 2050, Sonoma County's Comprehensive Transportation Plan (CTP), is a 25-year plan that serves as the vision for transportation throughout Sonoma County, with goals for the transportation system and the well-being of the communities. Moving Forward 2050 establishes four goals: deliver a seamless network that allows people to use a variety of transportation types easily, affordably, and dependably; provide safe and well-maintained transportation infrastructure; implement place-based transportation projects, tailored to urban, suburban, and rural communities that will improve local mobility; and provide zero-emission transportation opportunities that meet diverse community needs, improve health, and enhance quality of life. Major roadway projects identified in Moving Forward 2050 relative to Cotati include: updating the US 101 and Railroad Avenue Interchange; widening and rehabilitation of SR 116 between Sebastopol and Cotati; constructing sidewalks along West Cotati Avenue; US 101/SR 116 north bound on-ramp improvements; US 101/West Sierra Avenue south bound off-ramp improvements; and Old Redwood Highway pavement rehabilitation from La Plaza to Gravenstein Highway.

City Roadway and Intersection Impact Criteria

THRESHOLDS OF SIGNFICANCE-Since SB 743 introduces a new mandatory metric for use in transportation impact analysis, the City is required to determine what constitutes acceptable versus unacceptable levels of VMT for CEQA analysis. This process is generally referred to as establishing significance thresholds and is governed by CEQA Section 15064.7. Land use projects may also be screened out of further analysis if they are very small or can be demonstrated to primarily attract trips that would have otherwise been traveled at a longer distance. Additionally, certain projects that decrease vehicle miles traveled in the project area compared to existing conditions may be presumed to have a less than significant transportation impact.

Transportation Impact Discussion:

5.17(a) (Conflict with Program, Plan, Policy, Ordinance) Less than Significant Impact: Construction activities from development of the proposed project would temporarily generate a negligible amount of additional traffic along roadways in the vicinity of the project site caused by construction workers and material deliveries. The increase in vehicle trips during construction is considered minimal and local street capacity would not be significantly affected.

The project will be served by two access driveways extending around Building 1 from the new cul-de-sac at the terminus of Blodgett which is part of the Building 1 construction. The project includes 36 on-site vehicle parking spaces and 6 bicycle parking spaces. There is no aspect of the project that would preclude the completion of a Class 1 Bike Path along the north side of the Laguna de Santa Rosa. Therefore, impacts to transit, bicycle and pedestrian facilities will be less than significant.

On March 16, 2022, W-Trans prepared a traffic impact analysis to evaluate the potential transportation impacts for the proposed project (**Appendix I**). The W-Trans report concluded that the project is expected to generate an average of 61 trips per day, including 6 morning peak hour trips and 6 trips during the p.m. peak hours. Based upon the small number of trips expected to be generated by the project W-Trans concluded it would have an imperceptible effect on traffic and further analysis is therefore unwarranted.

5.17(b) (Conflict with CEQA Guidelines §15064.3(b)) Less Than Significant Impact: The City of Cotati adopted thresholds of significance for vehicle miles traveled (VMT) on September 22, 2020. Guidance provided in the document recommends the use of screening thresholds to quickly identify when a project should be expected to cause a less-than-significant impact in terms of VMT without conducting a detailed study. As the proposed storage-warehouse is projected to only generate 61 daily trips, the project qualifies as a small infill project (fewer than 110 trips per day) and is assumed to be less-than-significant.

5.17(c) (Design Feature Hazard) Less Than Significant Impact: The W-Trans Traffic Report concluded that cul-de-sacs are typically free of obstructions which may hinder sight distances and vehicle operating speeds with cul-de-sacs are normally 20 mph or less. Based upon this assessment, it is expected that the sight distance at the project driveways would be adequate if parking is prohibited within the cul-de-sac and adjacent vegetation is properly trimmed. There are no design feature hazards that would be introduced by the project or proposed offsite frontage improvements. Therefore, impacts due to the project introducing a hazardous design feature would be considered less than significant.

5.17(d) (Emergency Access) Less Than Significant Impact: The minimal increase of construction vehicles traveling to and from the project site on a temporary basis would not result in inadequate emergency access. In order to construct the project, road closure is not anticipated. The project's internal circulation plan has been reviewed and meets all requirements of the Cotati Public Works & Utilities and Fire Departments. Site circulation was determined to be adequate, including sufficient street widths to allow for fire truck turn around and sufficient access to the proposed buildings. Therefore, emergency vehicle access is adequate and potential impacts will be less than significant.

Mitigation Measures: None Required.

5.18. TRIBAL CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☐	☒

ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Sources: City of Cotati General Plan; General Plan EIR; and Cultural Resources Study, prepared by Scott McGaughey, Anthropological Studies Center, Sonoma State University, June 2021.

Tribal Cultural Resources Setting:

According to Public Resources Code (PRC) Section 21074, a resource is a tribal cultural resource if it is either:

1. Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
    a. Included or determined to be eligible for inclusion in the California Register of Historical Resources; or
    b. Included in a local register of historical resources as defined in PRC Section 5020.1(k).
2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in PRC Section 5024.1(c). In applying the criteria set forth in PRC Section 5024.1(c), the lead agency shall consider the significance of the resource to a California Native American tribe.
3. A cultural landscape that meets the criteria of PRC Section 21074(a) to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.
4. A historical resource described in PRC Section 21084.1, a unique archaeological resource as defined in PRC Section 21083.2(g), or a “non-unique archaeological resource” as defined in PRC Section 21083.2(h), if it conforms with the criteria of PRC Section 21074(a).

Tribal Cultural Resources Impact Discussion:

AGENCY AND TRIBAL COMMUNICATION: The Anthropological Studies Center contacted the Native American Heritage Commission (NAHC) on June 7, 2021, requesting a review of the Sacred Lands File for information on Native American cultural resources in the Project Area. On June 17, 2021 the NAHC completed a record search for the project site and the results did not indicate the presence of a Native American Sacred Site. The NAHC also responded with a list of groups and individuals who may be able to provide information on cultural resources in the Project Area. On June 18, 2021, Scott McGaughey sent letters to the listed individuals requesting additional information. No responses have been received to date.

In accordance with PRC Section 21080.3.1(d), the City of Cotati provided written formal notification to the Federated Indians of Graton Rancheria (FIGR) on March 29, 2022, including a brief description of the proposed project and its location, the Archeological Resources Study dated June 2021 commissioned by the applicant, the City of Cotati's contact information, and a notification that the FIGR has 30 days to request consultation pursuant to this section. The City of Cotati received a request for consultation on the project under PRC Section 21080.3.1(b)(2) from FIGR on April 25, 2022, and on May 9, 2022, the City responded to FIGR to initiate consultation.

To date, no information has been received from the NAHC or the people on the list of contacts provided by the NAHC that suggests the presence of cultural resources in the project area.

5.18(a.i) (Listed or Eligible for Listing) No Impact: As stated above, a search of the Sacred Lands file was conducted and did not indicate the presence of a Native American Sacred Site within or in the immediate vicinity of the project site. Therefore, the project would have no impact on a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k).

5.18(a.ii) (Significant Resource) Less Than Significant Impact with Mitigation: The City of Cotati has not identified any tribal cultural resources and there are no known concerns associated with the proposed project impacting tribal cultural resources.

Although no Tribal Cultural resources were encountered during the cultural resources field survey conducted onsite, there remains to be a potential that tribal cultural resources may be identified during site development. As such, development within the project site has the potential to result in impacts to Tribal Cultural resources. Mitigation set forth under the Cultural Resources discussion above, provides protection of cultural resources, including Tribal Cultural Resources, in the event of accidental discovery. Therefore, the proposed project would have less than significant impacts on Tribal Cultural Resources.

Mitigation Measures: Cul-1 and Cul-2 above.

5.19. UTILITIES AND SERVICE SYSTEMS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐

c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

Sources: City of Cotati 2015 General Plan; General Plan EIR; Sonoma County Water Agency 2020 Urban Water Management Plan, prepared by Brown and Caldwell, June 2021; Santa Rosa Sanitary Sewer System Master Plan Update, prepared by Arcadis, October 2014; Cotati 2010 Urban Water Management Plan, prepared by Carollo Engineers, August 2011; and City of Santa Rosa Incremental Recycled Water Program, August 2007 Update to the Recycled Water Master Plan, prepared by Winzler & Kelly, July 2007.

Utilities and Service Systems Setting:

The City of Cotati collects impact and/or service fees for wastewater storm drain and other utilities and service systems. The one-time impact fees are charged to offset the cost of improving or expanding city facilities in order to accommodate new private development. The fees are utilized to fund the construction or expansion related to capital improvements necessitated by cumulative growth citywide.

The project site is located within the city limits and the area is currently served by existing utilities and service systems. New service connections will be installed that tie into existing facilities located within Blodgett Street. The connection of new services is not expected to require substantial infrastructure improvements to adequately serve the proposed project.

Water Supplies

The Cotati Department of Public Works and Engineering, Water Division, serves as the potable water purveyor for the City of Cotati. The City of Cotati sources approximately 67 percent[11] of its water supply from the Sonoma County Water Agency (SCWA) that is conveyed from the Russian River to the City via the 48-inch Cotati Intertie Aqueduct located in East Cotati Avenue. Within the City, the SCWA maintains three above-ground storage tanks with a total capacity of 36 million gallons. The balance of the City's

[11] City of Cotati 2018 Water Quality Report, http://p1cdn4static.civiclive.com/UserFiles/Servers/Server_9669113/File/City%20Hall/Departments/Public%20Works%20and%20Engineering/Water%20&%20Sewer/Water%20Quality%20Report%202018.pdf , Accessed April 11, 2022

water supply is served by three municipal groundwater wells owned and operated by the City. The groundwater wells also serve as the contingency supply to supplement water needs during peak periods and periods of drought.

The SCWA adopted its 2020 UWMP in June 2020. Currently, four water rights permits issued by the SWRCB authorize the SCWA to store up to 122,500 afy of water in Lake Mendocino and up to 245,000 afy of water in Lake Sonoma, and to divert up to 180 cubic feet per second (cfs) of water from the Russian River with a limit of 75,000 afy.[12] The permits also establish minimum instream flow requirements for fish and wildlife protection and recreation. The SCWA also maintains three groundwater wells in the Santa Rosa Plain Groundwater Sub-basin, with a total capacity of approximately 2,300 acre-feet per year (afy), which is used on an as-needed basis during periods of drought or when Russian River supplies are otherwise constrained. Annual production from the three wells has ranged from 172 to 1,271 afy between 2011 to 2015, with an average of 643 afy, and has declined between 2016 and 2020 to an average of 20 afy.[13]

According to the SCWA 2020 UWMP, the water agency provided 51,330 af in 2020 to its contractors and customers. The SCWA supplied 592 af to the City of Cotati, which represented approximately 1.1 percent of the total water supplied by SCWA in 2020. The SCWA projects to supply approximately 70,609 af to its contractors and customers in 2040. The City of Cotati is projected to receive 1,107 af, which represents approximately 1.6 percent of the total water to be supplied by SCWA in 2040.

Under the existing water supply agreement with SCWA, the City of Cotati has a maximum entitlement of 1,520 afy; this agreement remains in effect until January 30, 2040. The balance of the City's water supply is served by three municipal groundwater wells owned and operated by the City. The groundwater wells also serve as the contingency supply to supplement water needs during peak periods and periods of drought.

The California Water Code requires that urban water suppliers servicing 3,000 or more connections, or supplying more than 3,000 af of water annually, prepare an Urban Water Management Plan (UWMP) in accordance with the Urban Water Management Planning Act. The City of Cotati supplied 803 af of potable water to approximately 2,573 customers in 2010, and therefore was not legally required to develop an UWMP. However, the City did prepare an UWMP with the intention of taking a proactive approach to water supply planning and to promote the efficient use of water.

Wastewater Treatment

The City of Cotati owns and operates a wastewater collection system that services approximately 1,200 acres. The Sanitary Sewer system is composed of four lift stations, 140,300 linear feet of collection piping that ranges in size from six to twenty-four inches, 484 manholes, 150 cleanouts and a 24-inch transfer interceptor which conveys wastewater to the Laguna Wastewater Treatment Plant (WTP) on Llano Road in Santa Rosa.

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[12] Sonoma County Water Agency 2020 Urban Water Management Plan, prepared by Brown and Caldwell, June 2021.

[13] Ibid.

The Laguna WTP treats all wastewater generated by residential, commercial and industrial uses within the City of Santa Rosa, Rohnert Park, Cotati, Sebastopol and the South Park Sanitation District. The water recycling facility produces tertiary recycled water in compliance with the California Department of Health Services. At present, treatment capacity is at approximately 24 mgd.[14] An Incremental Recycled Water Program (IRWP) has been approved and will be implemented as growth occurs. The City of Santa Rosa IRWP, August 2007 Update to the Recycled Water Master Plan, estimates that in 2020, total average dry weather flow (ADWF) to the Laguna WTP will be approximately 25.89 mgd.[15]

As of 2014, the Laguna WTP receives approximately 15 mgd from the City of Santa Rosa, 3.3 mgd from the City of Rohnert Park, 0.7 mgd from the City of Sebastopol, and 0.5 mgd from the City of Cotati, for a total of approximately 19.5 mgd. [16] Wastewater generated by the City of Cotati is conveyed directly to the Laguna WTP via the City's Hellman Lane 24-inch trunk line. The wastewater generated by the City of Cotati represents less than 3 percent of the total wastewater treated at the Laguna WTP. Treated water from the Laguna WTP is either discharged into the Russian River via the Laguna de Santa Rosa or recycled for one or more of the following: agricultural irrigation, supply water for wetlands, urban irrigation or for Geyser recharge.

Storm Drains

Within the City of Cotati storm drains convey runoff from impervious surfaces such as streets, sidewalks and buildings to gutters that primarily drain to Copeland Creek, Cotati Creek and/or Washoe Creek and ultimately to the Russian River. The stormwater runoff is untreated and carries with it any contaminants picked up along the way such as solvents, oils, fuels and sediments. In accordance with NPDES permitting requirements, the City has developed a Storm Water Management Plan (SWMP) which establishes standard requirements and controls related to the City's storm drain system. All existing and proposed development must adhere to the city's SWMP.

Solid Waste

Solid Waste management in Cotati is overseen by the Sonoma County Waste Management Agency, a Joint powers authority for the nine cities and County of Sonoma. The City contracts with Recology for solid waste disposal and recycling services. This company provides canisters for garbage, green (plant waste) materials, and recycling. Solid waste is collected and transferred to the Sonoma County landfill sites.

Utilities and Service Systems Impact Discussion:

5.19(a) (Relocation/Expansion of Utilities) Less Than Significant Impact: The project site can be served by existing utilities located underground located at the west end of Blodgett Street. The project will not

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[14] Santa Rosa Sanitary Sewer System Master Plan Update, prepared by Arcadis, October 2014.

[15] City of Santa Rosa Incremental Recycled Water Program, August 2007 Update to the Recycled Water Master Plan, prepared by Winzler & Kelly, July 2007.

[16] Santa Rosa Sanitary Sewer System Master Plan Update, prepared by Arcadis, October 2014.

require or result in the relocation or expansion of offsite utilities. Existing water, wastewater, electric power, natural gas, and telecommunications facilities extend to the project site and have sufficient capacity to serve the proposed development. The project will not result in significant environmental impacts due to the expansion of storm water drainage facilities or construction of new facilities as improvements are limited to activities onsite and along the site frontage. Development of the proposed project will increase the amount of impervious surfaces relative to existing conditions. In order to offset the increase in stormwater runoff flows, storm drains would be utilized throughout the project site to direct stormwater from impervious areas to landscaped areas with a detention basin, and other vegetated bio-retention features consistent with the requirements of Low Impact Development (LID). Stormwater runoff would then discharge to the existing storm drain network along Blodgett Street. Therefore, the project is expected to result in less than significant impacts due to the relocation or expansion of utilities including stormwater infrastructure.

5.19(b) (Sufficient Water Supplies) Less Than Significant Impact: The project will utilize water obtained from the City's municipal water system to meet onsite potable water demands. The water demand resulting from the proposed project will increase relative to existing uses. The 2013 General Plan EIR estimates total water demand at buildout (2035) to be 1,552 afy within the City limits and 1,757 afy within the Planning Area. As described in the General Plan EIR, the projected water supply available to the City of Cotati in 2035 is 2,076 afy and consists of water from SCWA (1,246 afy), groundwater (530 afy), recycled water (32 afy) and future water conservation (268 afy). As such, the water supply available to the city exceeds the projected water demand associated with full buildout of the General Plan, including the proposed project.

The project is required to adhere to the Water Conservation Ordinance, Chapter 13.30.060 and will install ultra-low water use plumbing fixtures and appliances and water efficient landscaping that features drought tolerant plant varieties. The inclusion of a water efficient plant pallete in the landscaping design will ensure that water demands are minimized for landscaping purposes. Applicable City water fees will be collected from the applicant in order to fund the applicant's share for use of existing facilities and planned improvements. Therefore, there are sufficient water supplies to serve the project and impacts would be less than significant.

5.19(c) (Sufficient Wastewater Treatment Capacity) Less Than Significant Impact: Wastewater generated by the project is consistent with the service needs anticipated by the Cotati 2015 General Plan and will not require the expansion of treatment facilities or the construction of new facilities. Wastewater flows from the proposed project will be conveyed to the Laguna WTP, which has sufficient operating capacity to handle the additional flows generated by the proposed project. The project is not expected to exceed wastewater treatment requirements set forth by the Regional Water Quality Control Board, nor necessitate the expansion or construction of wastewater treatment facilities. The project does not propose any industrial uses that would generate wastewater requiring special treatment nor would effluent contain constituents exceeding applicable standards. City Wastewater capacity fees will be collected from the applicant in order to fund the applicant's share for use of existing facilities and planned improvements. Therefore, the project would not exceed wastewater treatment requirements and impacts would be less than significant.

As stated in the 2015 General Plan EIR, Cotati's capacity allocation under the 2002 Fourth Amendment to the Subregional Partnership with the City of Santa Rosa was 0.76 mgd. In order to meet projected flows under cumulative General Plan buildout conditions, the City's allocation needs to be increased to at least 0.83 mgd.

The City of Santa Rosa IRWP, August 2007 Update to the Recycled Water Master Plan, estimates that in 2020, total ADWF to the Laguna WTP will be approximately 25.89 mgd, which exceeds the current NPDES permit capacity of the plant. While the City of Cotati is projected to contribute approximately 3.2% of the wastewater treated at the Laguna WTP, under 2035 buildout conditions, the existing permitted capacity of the Plant would be exceeded.

Implementation of the policies and actions identified in the General Plan would assist in ensuring that adequate treatment plant capacity and permitted capacity is available to meet 2035 buildout conditions, including wastewater demands generated by the City of Cotati and the rest of the regional partners. However, as stated in the General Plan EIR, an increase in permitted capacity cannot be guaranteed and the impact was considered cumulatively considerable and significant and unavoidable.

2015 Cotati General Plan Policy CSF 2.16, and Actions 2l and 2m (identified below) would reduce this impact to the greatest degree feasible, but not to a less than significant or less than cumulatively considerable level. As a result, the City of Cotati adopted a statement of overriding considerations as a component of adopting the 2015 General Plan EIR regarding the potential to exceed wastewater treatment capacity or the requirements of the RWQCB.

Policy CSF 2.16: Work with the Santa Rosa Subregional Wastewater System and neighboring cities to assist in the maintenance of an adequate sewage treatment and disposal system for the region.

Action CSF 2l: Continue to monitor wastewater flow generation rates within the City's service area and apply to the subregional partners for an incremental increase in wastewater flow allocation to meet projected demand prior to any exceedance of the City's wastewater flow allocation under the Subregional Partnership.

Action CSF 2m: Coordinate with the Laguna Wastewater Treatment Plant to increase the National Pollutant Discharge Elimination System (NPDES) permit capacity of the plant to meet projected 2035 demand for all sources of wastewater treated at the plant.

The proposed project would generate wastewater flows that would contribute to the cumulative impacts to wastewater treatment under buildout conditions. As previously stated, the City has adopted a statement of overriding conditions for the potential to exceed wastewater treatment capacity or the requirements of the RWQCB. Applicable Wastewater Capacity fees will be collected from the applicant in order to fund the applicant's share for use of existing facilities and planned improvements. Further, the project will implement all CalGreen Tier 1 building requirements which include indoor water efficiency standard, thereby ensuring that wastewater volumes are minimized. Therefore, the project will have less than significant impacts related to the adequacy or capacity of wastewater treatment facilities.

5.19 (d, e) (Solid Waste Generation/Compliance with Solid Waste Management) Less Than Significant

Impact. During construction and operation, the project will generate solid waste, however, it is not expected to exceed landfill capacity and is not expected to result in violations of federal, state, or local statutes and regulations related to solid waste. Therefore, implementation of the project will result in less than significant impacts to the local landfill's permitted capacity for solid waste disposal, as well as federal, state, and local statutes and regulations.

Mitigation Measures: None Required.

5.20. Wildfire

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

Sources: CalFire Fire Hazard Severity Zone Maps, https://osfm.fire.ca.gov/divisions/community-wildfire-preparedness-and-mitigation/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/, Accessed April 4, 2022

Wildfire Setting:

The City of Cotati is susceptible to wildland fires due to moderate fuel loads within the Sphere of Influence and on undeveloped parcels within the UGB that contain grasslands. Global climatic conditions such as increased heat, prolonged periods of drought and extreme weather also contribute to wildfire risks. The areas most susceptible to fire hazards are located west and east of City limits; these areas are designated as “Moderate and High Fire Hazard Severity Zone” within a Local Responsible Area by CAL FIRE.

In October 2017, the Tubbs Fire (Central LNU Complex) burned approximately 36,807 acres in the northern and eastern portions of the City of Santa Rosa. Residents were exposed to direct effects of the wildfire, such as the loss of a structure, and to the secondary effects of the wildfire, such as smoke and air pollution. Smoke generated by wildfire consists of visible and invisible emissions that contain particulate matter (soot, tar, water vapor, and minerals) and gases (carbon monoxide, carbon dioxide, nitrogen oxides). Public health impacts associated with wildfire include difficulty in breathing, odor, and reduction in visibility.

The project site is located within the City’s UGB and surrounded by roadways and developed and undeveloped lands.

Wildfire Impact Discussion:

5.20(a) (Impair Emergency Plans) Less Than Significant Impact: The project site is categorized as a Non-VHFHZ by CAL FIRE. Therefore, the proposed project is not expected to substantially impair an adopted emergency response plan or emergency evacuation plan, and impacts would be less than significant.

5.20(b-d) (Wildfire Risk Exacerbation, Infrastructure Contributing to Wildfire Risk, Exposure to Wildfire-Related Risks) Less Than Significant Impact: The project site is relatively flat and surrounded by lands that are mostly developed with urban uses. New structures introduced onsite would be built according to the latest California Building Code, which requires fire resistant standards for building materials, systems, and assemblies used in the exterior design and construction of new buildings. There are no factors, such as steep slopes, prevailing winds, or the installation/maintenance of new infrastructure, that would exacerbate fire risk or expose project occupants to the uncontrolled spread of a wildfire, pollutant concentrations from a wildfire, post-fire slope instability, or post-fire flooding. Therefore, impacts would be less than significant.

***Mitigation Measures*:** None Required.

5.21. MANDATORY FINDINGS OF SIGNIFICANCE CAL. PUB. RES. CODE §15065)

A focused or full environmental impact report for a project may be required where the project has a significant effect on the environment in any of the following conditions:

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or	☐	☐	☒	☐

wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?				
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Mandatory Findings Discussion:

5.20(a) (Degrade the Environment): Less Than Significant Impact: The project is located within the City limits and consistent with the General Plan Land Use designation for the site, including its goals, objectives, policies and actions of the City of Cotati. With implementation of mitigation measures set forth above under Aesthetics, Air Quality, Biological Resources, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, and Noise, the project's potential impacts would be reduced to levels below significance. As such, the project will not degrade the quality of the environment, reduce habitat, or adversely affect cultural resources. Therefore, the project will have less than significant impacts due to degradation of the environment.

5.20(b) (Cumulatively Affect the Environment) Less Than Significant Impact with Mitigation: The CEQA Guidelines defines cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or increase in environmental impacts. The cumulative impact from several projects is the change in the environment which results from the incremental impact of the proposed project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time" (Guidelines, Section 15355(a)(b)).

The analysis of cumulative impacts for each environmental factor can employ one of two methods to establish the effects of other past, current, and probable future projects. A lead agency may select a list of projects, including those outside the control of the agency, or, alternatively, a summary of projections. These projections may be from an adopted general plan or related planning document, or from a prior environmental document that has been adopted or certified, and these documents may describe or evaluate the regional or area-wide conditions contributing to the cumulative impact.

This Initial Study evaluates cumulative impacts relative to buildout conditions anticipated by the City of Cotati's General Plan and as analyzed in the General Plan EIR. The project has the potential to incrementally contribute in the following cumulative impacts identified and analyzed in the General Plan EIR:

Traffic (General Plan EIR Impacts 3.12-1, 3.12-2, 3.12-3, 4.13): The project would contribute vehicle trips to existing streets and highways. The project is subject to a traffic impact fees for the installation of planned future improvement city-wide. The project would contribute funding to assist the City of Cotati in implementing planned future roadway improvements required under buildout of the General Plan. Therefore, the project's contribution to cumulatively considerable traffic impacts would be less than significant.

Noise (General Plan EIR Impacts 3.10-1, 3.10-7, and 4.11): The project will increase vehicle trips on local roadways and, in doing so, incrementally contribute to noise levels determined by the General Plan to be significant at build-out. However, its incremental contribution of vehicular trips is insufficient to result in a perceptible change in noise level. Therefore, the project's contribution to this potentially significant cumulative impact would not be considerable.

Utilities (General Plan EIR Impacts 3.13-3 and 4.14): The project will result in an increased wastewater flows that would contribute to the cumulative potential to exceed wastewater treatment capacity or the requirements of the RWQCB. However, as stated in the analysis above, applicable wastewater capacity fees will be collected from the applicant to fund the applicant's share for use of existing facilities and planned improvements. Public utility and service providers will be capable of serving the project with existing or planned facilities. Therefore, the project's contribution to this potentially significant cumulative impact would not be considerable.

The project implements the City's General Plan by introducing a storage-warehouse use within City limits on a site that has been identified for urban type uses. The project is located in an area developed with similar uses. Potential cumulative environmental impacts are expected to remain at, or be mitigated to, levels below significance, and long-term environmental goals are not expected to be adversely impacted by the project. The Project does not increase the severity of any of the impacts from the levels identified and analyzed in the General Plan, and development of the project site is proposed with uses consistent with those set forth in the General Plan EIR. Therefore, the project's cumulative impacts will be reduced to less than significant levels.

5.20(c) (Substantial Adverse Effect on Humans) Less Than Significant Impact: As reflected in the analysis above for each environmental topic, the project does not have the potential to result in substantial adverse impacts to humans. With mitigation measures set forth above, environmental effect that would directly or indirectly impact human beings onsite or in the project vicinity will be reduced to less than significant levels. Therefore, the project will have less than significant impacts due to substantial adverse environmental effects.

6. REFERENCE DOCUMENTS

The following information sources were referenced in the preparation of this Initial Study/Mitigated Negative Declaration and are available for review online or at the City of Cotati Planning counter during normal business hours. Questions or requests to review any of the technical appendices listed below may be directed to the project planner, Autumn Buss, at abuss@cotaticity.org.

6.1. Technical Appendices

A. Project Plans dated July 18, 2022

B. *Updated 380 Blodgett/597 Helman Lane Warehouse Project Air Quality and Greenhouse Gas Emissions Assessment*, prepared by Illingworth & Rodkin, February 2, 2022

C. *Biological Resource Report and Addendum,* prepared by Sol Ecology, January 2022 and July 21, 2022, respectively

D. *Archaeological/Cultural Resources Study* prepared by Scott McGaughey, Anthropological Studies Center, Sonoma State University, June 2021

E. *Soil and Geotechnical Feasibility Evaluation,* prepared by Reese and Associates, March 26, 2021; Letter from Joe Mauney and Jeffrey Reese, Reese and Associates, to Bert Sandell dated September 13, 2021; Email from Joe Mauney, Reese and Associates to Bert Sandell dated December 22, 2021

F. *Storm Water Low Impact Development Report* prepared by Calichi Design, July 11, 2022

G. *Preliminary Hydraulics and Hydrology Report* prepared by Calichi Design, January 10, 2022

H. *Acoustical Analysis of Operational Noise,* prepared by Wilson Ihrig, April 25, 2022

I. *Traffic Impact Analysis*, prepared by W-Trans, March 16, 2022

6.2. Other Documents Referenced

1. *BAAQMD 2017 Bay Area Clean Air Plan*, prepared by the Bay Area Air Quality Management District, April 2017.

2. *California Environmental Quality Act Air Quality Guidelines*, prepared by the Bay Area Air Quality Management District, 2017

3. *California Department of Conservation Farmland Mapping and Monitoring Program,* https://www.conservation.ca.gov/dlrp/fmmp, Accessed March 29, 2022

4. *California Department of Conservation*, Sonoma County Tsunami Inundation Map, https://www.conservation.ca.gov/cgs/tsunami/maps/sonoma, Accessed April 11, 2022

5. *California Regional Conservation Plans Map*, prepared by CDFW, April 2019. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=68626&inline, accessed April 11, 2022

6. *California Scenic Highway Mapping System*, http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm, Accessed March 29, 2022.

7. *City of Cotati 2010 Urban Water Management Plan,* prepared by Carollo Engineers, August 2011.

8. *Public Draft Environmental Impact Report for the 2013 Cotati General Plan Update* (SCH #2013082037), September 2014.

9. *Findings of Fact and Statement of Overriding Considerations for the 2013 Cotati General Plan Update*, November 2014.

10. *City of Cotati General Plan*, adopted March 24, 2015.

11. *City of Cotati Housing Element*, adopted May 19, 2015.

12. *City of Cotati Bicycle and Pedestrian Master Plan*, prepared by Sonoma County Transportation Authority, adopted December 2008, updated April 22, 2014.

13. *City of Santa Rosa Incremental Recycled Water Program, August 2007 Update to the Recycled Water Master Plan*, prepared by Winzler & Kelly, July 2007.

14. *Climate Action 2020 and Beyond,* prepared by Sonoma County Regional Climate Action Plan, July 2016.

15. *Department of Water Resources*, Division of Safety of Dams, https://water.ca.gov/damsafety, accessed April 14, 2022.

16. *Moving Forward 2050 Sonoma County's Comprehensive Transportation Plan*, prepared by Sonoma County Transportation Authority, September 2021.

17. *Rancho Adobe Fire Protection District*, http://rancho-adobe-fire.org/about_us.aspx, Accessed 4/11/22.

18. *Recovery Plan for the Santa Rosa Plain*, prepared by U.S. Fish and Wildlife Service, May 2016.

19. *Santa Rosa Plain Conservation Strategy*, prepared by U.S. Fish and Wildlife Service, December 2005.

20. *Santa Rosa Sanitary Sewer System Master Plan Update*, prepared by Arcadis, October 2014.

21. *Sonoma County Transportation Authority*, About SCTA, http://scta.ca.gov/about-scta/, accessed April 14, 2022.

22. *Sonoma County Water Agency 2020 Urban Water Management Plan*, prepared by Brown and Caldwell, June 2021.

23. *State Water Resources Control Board, Construction General Permit Order 2009-0009-DWQ*, http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml, Accessed April 14, 2022.

24. *U.S. Geological Survey*, Susceptibility Map of the San Francisco Bay Area, https://geomaps.wr.usgs.gov/sfgeo/liquefaction/susceptibility.html, Accessed April 14, 2022.

25. *University of California Museum of Paleontology*, Miocene Mammal Mapping Project (MioMap), https://ucmp.berkeley.edu/miomap/miomap_home_page.htm, accessed April 14, 2022.

26. US Census Bureau, https://www.census.gov/quickfacts/cotaticitycalifornia, Accessed April 11, 2022

27. City of Cotati 2018 Water Quality Report, http://p1cdn4static.civiclive.com/UserFiles/Servers/Server_9669113/File/City%20Hall/Departments/Public%20Works%20and%20Engineering/Water%20&%20Sewer/Water%20Quality%20Report%202018.pdf , Accessed April 11, 2022

28. CalFire Fire Hazard Severity Zone Maps, https://osfm.fire.ca.gov/divisions/community-wildfire-preparedness-and-mitigation/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/, Accessed April 4, 2022

29. California Energy Commission, Total System Electric Generation (2017) http://www.energy.ca.gov/almanac/electricity_data/total_system_power.html, Accessed October 17, 2018

30. California Energy Commission, Supply and Demand of Natural Gas in California http://www.energy.ca.gov/almanac/naturalgas_data/overview.html, Accessed October 17, 2018

31. California Energy Commission, 2017 Integrated Energy Policy Report, Publication Number: CEC-100-2017-001-CMF.

32. California Energy Commission, Final Adopted State Alternative Fuels Plan, Adopted December 2007, http://www.energy.ca.gov/ab1007/, Accessed April 14, 2022.

33. EnviroStor and GeoTracker Databases, Accessed April 1, 2022.

7. MITIGATION MONITORING AND REPORTING PROGRAM -- *ATTACHED*

Mitigation Monitoring and Reporting Program

Sandell Distribution Warehouse Building 2
380 Blodgett Street

Mitigation Measure	Implementing Responsibility	Monitoring Responsibility	Monitoring Schedule	Verification
AIR QUALITY				
AQ-1: Latest BAAQMD recommended Best Management Practices (BMPs) to control for fugitive dust and exhaust during all construction activities shall be incorporated into all demolition and construction plans to require implementation of the following: 1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered three times per day using recycled water. 2. All haul trucks transporting soil, sand, or other loose material shall be covered. 3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. 4. All vehicle speeds on unpaved roads shall be limited to 15 mph. 5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. 6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided	Project Applicant	Cotati Community Development Department Cotati City Engineer	Prior to issuance of grading permit Ongoing throughout project construction	

Mitigation Measure	Implementing Responsibility	Monitoring Responsibility	Monitoring Schedule	Verification
for construction workers at all access points. 7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper working condition prior to operation. 8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.				
<u>BIOLOGICAL RESOURCES</u> BIO-1. Best Management Practices. Best management practices should be employed to prevent discharge or spilling of materials or liquids into the adjacent seasonal wetlands. The 25-foot setback (or adjusted setback) should be demarcated using either orange construction fence and/or wildlife exclusion fence described in MM BIO-5. No refueling of vehicles or equipment shall occur outside of the project footprint.	Project Applicant	Cotati Community Development Department	Prior to issuance of grading permit Ongoing through construction	
BIO-2 Nesting Bird Surveys. If construction begins during the nesting bird season between February 1 and August 31, the following is recommended to ensure potentially significant impacts to migratory nesting birds and raptors (including WTK) are avoided: • Pre-construction nesting bird surveys should be performed within the project study area and up to 500 feet of proposed activities no more than 7 days prior to construction. If a lapse of 7 days or	Project Applicant Project Biologist	Cotati Community Development Department CDFW	Prior to issuance of ground disturbance and continuing over the course of the Project	

Mitigation Measure	Implementing Responsibility	Monitoring Responsibility	Monitoring Schedule	Verification
more in construction occurs, another survey shall be conducted. • If nests are found, a no-disturbance buffer should be placed around the nest until young have fledged or the nest is determined to be no longer active by the biologist. The size of the buffer may be determined by the biologist based on species, ambient conditions, and proximity to project-related activities. Avoidance buffers for raptors shall be a minimum of 500 feet unless otherwise approved in writing by CDFW. Larger buffers are not likely necessary due to ambient conditions. Any active nests shall be monitored by a qualified biologist daily at a minimum for the first week to ensure the buffer is adequate to avoid nest disturbance, then weekly thereafter.				
BIO-3: **Burrowing Owl.** A qualified biologist shall follow the California Department of Fish and Game (now CDFW) 2012 Staff Report on Burrowing Owl Mitigation (CDFW 2012 Staff Report) habitat assessment and survey methodology prior to project activities occurring during the burrowing owl wintering season from September 1 to January 31. If work is initiated outside of the wintering season, no surveys are needed. The habitat assessment and surveys shall encompass a sufficient buffer zone to detect owls nearby that may be impacted. Time lapses between surveys or project activities shall trigger subsequent surveys, as determined by a qualified biologist, including but not limited to a final survey within 24 hours prior to ground disturbance and before construction equipment mobilizes to the Project area. The qualified biologist shall have a minimum of two years of experience implementing the CDFW 2012 Staff Report survey methodology	Project Applicant Project Biologist	Cotati Community Development Department	Prior to issuance of grading permit Ongoing through construction	

Mitigation Measure	Implementing Responsibility	Monitoring Responsibility	Monitoring Schedule	Verification
resulting in detections. Detected burrowing owls shall be avoided pursuant to the buffer zone prescribed in the CDFW 2012 Staff Report, unless otherwise approved in writing by CDFW, and any eviction plan shall be subject to CDFW review. Please be advised that CDFW does not consider eviction of burrowing owls (i.e., passive removal of an owl from its burrow or other shelter) as a "take" avoidance, minimization, or mitigation measure: therefore, offsite habitat compensation shall be included in the eviction plan. Habitat compensation acreages shall be approved by CDFW, as the amount depends on site-specific conditions, and completed before project construction. It shall also include placement of a conservation easement and preparation and implementation of a long-term management plan.				
BIO-4: Section 2081 Permitting and Compensatory Mitigation. At minimum, the Applicant shall consult with the CDFW and obtain a Section 2081 Incidental Take Permit (ITP) for CTS prior to commencing construction-related activities on the project site. Compensatory mitigation shall be provided at a ratio of 2:1 for all permanent impacts, and at 1:1 for any temporary effects. Mitigation shall be purchased at a CDFW-approved conservation bank or through a CDFW- approved off-site mitigation site prior to issuance of the ITP. Copies of the CDFW's 2081 ITP and copies of USFWS concurrence or Minor Habitat Conservation Plan (HCP) if required shall be provided to the City of Cotati prior to commencement of grading or other construction activities on the site. The Applicant shall conform with all of the measures set forth in the ITP and/or HCP if required, including any off-site compensatory mitigation requirements (e.g., construction of CTS breeding pools in upland habitat, if required).	Project Applicant Project Biologist	Cotati Community Development Department Project Biologist USFWS CDFW	Prior to grading and construction activities	

Mitigation Measure	Implementing Responsibility	Monitoring Responsibility	Monitoring Schedule	Verification
BIO-5: **Wildlife Exclusion Fencing (WEF).** Prior to the start of construction, WEF will be installed at the edge of the project footprint in all areas where CTS could enter the construction area. The location of the fencing shall be determined by the onsite project manager and the CDFW-approved biologist in cooperation with CDFW prior to the start of staging or surface disturbing activities. A conceptual fencing plan shall be submitted to CDFW for review and approval prior to WEF installation. The WEF shall remain in place throughout the duration of the project and shall be inspected weekly and fully maintained. Repairs to the WEF shall be made within 24 hours of discovery. Upon project completion the WEF shall be completely removed and replaced with permanent barrier fencing.	Project Applicant Project Biologist	Cotati Community Development Department Project Biologist	Prior to grading and construction activities	
BIO-6. **Relocation Plan.** A Relocation Plan shall be prepared and be consistent with the Guidelines for the relocation of California tiger salamander (*Ambystoma californiense*) (Shaffer et. al. 2008). The Relocation Plan shall contain the name(s) of the Service-approved biologist(s) to relocate CTS, method of relocation (if different than number 3 below), a map, and description of the proposed release site(s) and burrow(s), and written permission from the landowner to use their land as a relocation site.	Project Applicant Project Biologist	Cotati Community Development Department Project Biologist USFWS CDFW	Prior to grading and construction activities	
BIO-7: **Protocol for Species Observation, Handling, and Relocation**. Only Service-approved biologists shall participate in activities associated with the capture, handling, relocation, and monitoring of CTS. If a CTS is encountered, work activities within 50 feet of the individual shall cease immediately and the Onsite Project Manager and Service-approved biologist shall be notified. Based on the professional judgment of the Service-approved biologist, if	Project Applicant Project Biologist	Cotati Community Development Department Project Biologist USFWS CDFW	Prior to issuance of a grading permit Ongoing throughout project construction	

Mitigation Measure	Implementing Responsibility	Monitoring Responsibility	Monitoring Schedule	Verification
project activities can be conducted without harming or injuring the individual(s), it may be left at the location of discovery and monitored by the Service-approved biologist.				
BIO-8: Biological Monitors. Qualified biological monitor(s) will be on site each day during all earth moving activities. The biological monitor(s) shall conduct clearance surveys at the beginning of each day and regularly throughout the workday when construction activities are occurring that may displace, injure, or kill CTS through contact with workers, vehicles, and equipment. Where feasible and only on a case-by-case basis, rodent burrows and other ground openings suspected to contain CTS that would be destroyed from project activities may be carefully excavated with hand tools. Pre-soaking the area prior to ground disturbance may also increase emergence of the species for translocation. Before the start of work each day, the biological monitor will check for animals under all equipment such as vehicles and stored pipes. The biological monitor will check all excavated steep-walled holes or trenches greater than one foot deep for any CTS. CTS will be removed by the biological monitor and relocated according to the Relocation Plan. To prevent inadvertent entrapment of animals during construction, all excavated, steep-walled holes or trenches more than 6 inches deep will be covered with plywood (or similar materials) that leave no entry gaps at the close of each working day or provided with one or more escape ramps constructed of earth fill or wooden planks. The	Project Applicant Project Biologist	Cotati Community Development Department Project Biologist	Ongoing throughout project construction	

Mitigation Measure	Implementing Responsibility	Monitoring Responsibility	Monitoring Schedule	Verification
Biological Monitor shall inspect all holes and trenches at the beginning of each workday and before such holes or trenches are filled. All replacement pipes, culverts, or similar structures stored in the project footprint overnight will be inspected before they are subsequently moved, capped, and/or buried				
BIO-9. **Biological Monitoring Records**. The biological monitor(s) shall maintain monitoring records in accordance with applicable permits. All monitoring records shall be provided to the applicable agency(ies) within 30 days of the completion of monitoring work.	Project Applicant Project Biologist	Cotati Community Development Department Project Biologist	Ongoing throughout project construction	
BIO-10. **Proper Use of Erosion Control Materials.** Plastic or synthetic monofilament netting will not be used in order to prevent CTS from becoming entangled, trapped, or injured. This includes products that use photodegradable or biodegradable synthetic netting, which can take several months to decompose. Acceptable materials include natural fibers such as jute, coconut, twine, or other similar fibers.	Project Applicant Project Biologist	Cotati Community Development Department Project Biologist	Ongoing throughout project construction	
BIO-11. **Vegetation Removal.** A Service-approved biologist will be present during all vegetation clearing and grubbing activities. Grasses and weedy vegetation should be mowed to a height no greater than 6 inches prior to ground-disturbing activities. All cleared vegetation will be removed from the project footprint to prevent attracting animals to the project site. Prior to vegetation removal, the Service-approved biologist shall thoroughly survey the area for CTS. Once the qualified biologist has thoroughly surveyed the area, clearing and grubbing may continue without further restrictions on equipment; however, the qualified biologist shall remain onsite to monitor for CTS until all clearing and grubbing activities are complete.	Project Applicant Project Biologist	Cotati Community Development Department Project Biologist	Ongoing throughout project construction	

Mitigation Measure	Implementing Responsibility	Monitoring Responsibility	Monitoring Schedule	Verification
BIO-12. **Nighttime Activities.** Construction and ground disturbance will occur only during daytime hours and will cease no less than 30 minutes before sunset and will not begin again prior to no less than 30 minutes after sunrise.	Project Applicant Project Biologist	Cotati Community Development Department Project Biologist	Ongoing throughout project construction	
BIO-13. **Trash.** All foods and food-related trash items will be enclosed in sealed trash containers at the end of each day and removed from the site every three days.	Project Applicant Project Biologist	Cotati Community Development Department Project Biologist	Ongoing throughout project construction	
BIO-14. **Wet Weather Restrictions.** If work is proposed to occur during the wet weather season between October 15 and April 15, no grading shall be permitted when a ¼-inch or more precipitation is forecasted within 72 hours to avoid impacts to CTS that may be leaving estivation habitat and moving to nearby breeding sites. Work shall be suspended until at least 24 hours following a major rain event.	Project Applicant Project Biologist	Cotati Community Development Department Project Biologist	Prior to any grading or construction Ongoing throughout project construction	
BIO-15. **Revegetation of Temporarily Disturbed Vegetation within the Wetland Setback**. The 0.08 acre of temporarily disturbed vegetation will be revegetated upon completion of the Project. After all construction related debris, including stormwater pollution and prevention materials, are removed, a 4-inch layer of imported topsoil will be spread over the disturbed area to ensure that there are sufficient nutrients to facilitate and maintain plant growth. After topsoil has been placed, a seed mix composed of plants typically found in/near wetlands in the project vicinity (Table 2) will be hand broadcasted over the topsoil. A thin layer of light mulch or organic compost will be broadcast over the seed to protect it from predators and wind and stormwater erosion. Revegetation will occur in late	Project Applicant Project Biologist	Cotati Community Development Department Project Biologist	At completion of project	

Mitigation Measure	Implementing Responsibility	Monitoring Responsibility	Monitoring Schedule	Verification
October so that the seeds do not become spoiled by late summer/early fall heat and benefit from the rainy season.				
CULTURAL RESOURCES				
CUL-1: A preconstruction cultural resource awareness training shall be held prior to commencement of ground-disturbing activities in order to familiarize the team with the potential to encounter prehistoric artifacts or historic-era archaeological deposits, the types of archaeological material that could be encountered within the project area, and procedures to follow in the event that archaeological deposits and/or artifacts are observed during construction. Historic-era resources potentially include all by-products of human land use greater than 50 years of age, including alignments of stone or brick, foundation elements from previous structures, minor earthworks, brick features, surface scatters of farming or domestic type material, and subsurface deposits of domestic type material (glass, ceramic, etc.). Artifacts that are typically found associated with prehistoric sites in the area include humanly modified stone, shell, bone or other materials such as charcoal, ash and burned rock that can be indicative of food procurement or processing activities. Prehistoric domestic features include hearths, fire pits, house floor depressions and mortuary features consisting of human skeletal remains.	Project Applicant/Contractor Qualified Archeologist	Cotati Community Development Department	Ongoing throughout project construction	
CUL-2: If during the course of ground disturbing activities, including, but not limited to excavation, grading and construction, a potentially significant prehistoric or historic resource is encountered, all work within a 100 foot radius of the find (or as otherwise directed by a qualified archeologist) shall be suspended for a	Project Applicant/Contractor Qualified Archeologist	Cotati Community Development Department	Ongoing throughout project construction	

Mitigation Measure	Implementing Responsibility	Monitoring Responsibility	Monitoring Schedule	Verification
time deemed sufficient for a qualified and city-approved archeologist to adequately evaluate and determine significance of the discovered resource, confer with tribal representative, as appropriate, and provide treatment recommendations. Should a significant cultural resource be identified, a qualified archaeologist shall prepare a resource mitigation plan and monitoring program to be carried out during all construction activities.				
CUL-3 In the event of the accidental discovery or recognition of any human remains, CEQA Guidelines Section 15064.5; Health and Safety Code Section 7050.5; Public Resources Code Section 5097.94 and Section 5097.98 shall be followed. If during the course of project development there is accidental discovery or recognition of any human remains, the following steps shall be taken: 1. There shall be no further excavation or disturbance within 100 feet of the remains until the Sonoma County Coroner is contacted to determine if the remains are Native American and if an investigation of the cause of death is required. If the coroner determines the remains to be Native American, the coroner shall contact the NAHC within 24 hours, and the NAHC shall identify the person or persons it believes to be the most likely descendant of the deceased Native American. The most likely descendant may make recommendations for the excavation work within 48 hours, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98. 2. Where the following conditions occur, the landowner	Project Applicant/Contractor Qualified Archeologist	Cotati Community Development Department	Ongoing throughout project construction	

Mitigation Measure	Implementing Responsibility	Monitoring Responsibility	Monitoring Schedule	Verification
or authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity either in accordance with the recommendations of the most likely descendant or on the project site in a location not subject to further subsurface disturbance: • The NAHC is unable to identify a most likely descendent or the most likely descendent failed to make a recommendation within 48 hours after being given access to the site. • The descendant identified fails to make a recommendation. • The landowner or authorized representative rejects the recommendation of the descendant, and mediation by the NAHC fails to provide measures acceptable to the landowner.				
<u>GEOLOGY AND SOILS</u> GEO-1: Prior to issuance of a grading permit, a site-specific geotechnical investigation with subsurface exploration and laboratory testing shall be conducted to provide design-level recommendations and criteria for the project (pursuant to the recommendations of the Geotechnical Feasibility Evaluation prepared by Reese and Associates on March 26, 2021). The geotechnical investigation report shall be prepared and submitted to the City Engineer for review. The site-specific geotechnical investigation shall include, but not be limited to, the following: conduct subsurface exploration to confirm the absence of loose, saturated granular layers; and evaluate and provide recommendations for expansive soil mitigation measures. All recommendations of the site-specific geotechnical investigation report shall be incorporated into the project design, construction	Project Applicant Geotechnical Engineer	Cotati Community Development Department Cotati City Engineer	Prior to issuance of grading permit Ongoing throughout project construction	

Mitigation Measure	Implementing Responsibility	Monitoring Responsibility	Monitoring Schedule	Verification
documents and improvement plans, or as otherwise determined by the City Engineer and/or Chief Building Official. The project's geotechnical engineer shall inspect the construction work and shall certify to the City, prior to issuance of a certificate of occupancy, that the improvements have been constructed in accordance with the geotechnical investigation report.				
GEO-2: In the event that paleontological resources, including individual fossils or assemblages of fossils, are encountered during construction activities all ground disturbing activities shall halt and a qualified paleontologist shall be procured to evaluate the discovery and make treatment recommendations.	Project Applicant Paleontologist	Cotati Community Development Department	Ongoing throughout project construction	
GEO-3: The applicant shall comply with erosion and sediment control standards as stipulated in Chapter 14.36 of the Cotati Municipal Code which requires, amongst other things, an Erosion and Sediment Control Plan prepared by a Civil Engineer or other qualified professional that outlines appropriate measures to minimize soil erosion and sedimentation and that complies with design and construction standards contained in the City's Municipal Code.	Project Applicant	Cotati Community Development Department Cotati City Engineer	Ongoing throughout project construction	
<u>Hazards and Hazardous Materials</u>				
HAZ-1: Any buried holding tanks including septic systems shall be properly decommissioned in accordance with applicable regulations established by the County of Sonoma (Permit & Resource Management Department). Removal of underground tanks shall be immediately followed by backfill in accordance with Engineering recommendations. Materials shall be properly disposed of at permitted facilities.	Project Applicant/Contractor	Cotati Community Development Department	Prior to issuance of a grading permit	
HAZ-2: In the event that the project involves onsite storage of potentially hazardous materials in sufficient	Project Applicant/Contractor	Cotati Community Development	Prior to issuance of a grading permit	

Mitigation Measure	Implementing Responsibility	Monitoring Responsibility	Monitoring Schedule	Verification
quantities, a Hazardous Materials Business Plan (HMBP) shall be prepared and submitted to the Sonoma County CUPA agency for review and approval. The applicant shall fully comply with all provisions of a HMBP should one be required.		Department CUPA	Ongoing throughout project construction	
HYDROLOGY AND WATER QUALITY HYDRO-1: In accordance with the National Pollution Discharge Elimination System regulation, the applicant shall prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) prior to construction. The SWPPP shall address erosion and sediment controls, proper storage of fuels, temporary erosion control including fiber rolls, staked straw bales, geofabric, and sandbag, and identification for use and cleanup of hazardous materials. Sediment shall be retained onsite by a system of sediment basins, traps, or other appropriate measures. A Notice of Intent, fees, and other required documentation shall be filed with the Regional Water Quality Control Board. During construction, a monitoring report shall be conducted weekly during dry conditions and three times a day during storms that produce more than 1/2" of precipitation.	Project Applicant	Cotati Community Development Department RWQCB	Prior to construction activities Ongoing throughout project construction	
NOISE NOI-1: All construction activities shall be required to comply with the following and be noted accordingly on construction plans: 1. Noise-generating construction activities, including truck traffic coming to and from the construction site for any purpose, shall be limited to between the hours of 7:00 am and 7:00 pm on weekdays and 9:00 am and 5:00 pm on Saturdays (if allowed through specific project conditions of approval). No	Project Applicant/Contractor	Cotati Community Development Department	Ongoing throughout project construction	

Mitigation Measure	Implementing Responsibility	Monitoring Responsibility	Monitoring Schedule	Verification
construction shall occur on Sundays or holidays. 2. All equipment driven by internal combustion engines shall be equipped with mufflers, which are in good condition and appropriate for the equipment. 3. The construction contractor shall utilize "quiet" models of air compressors and other stationary noise sources where technology exists. 4. At all times during project grading and construction, stationary noise-generating equipment shall be located as far as practicable from sensitive receptors and placed so that emitted noise is directed away from residences. 5. Unnecessary idling of internal combustion engines shall be prohibited. 6. Construction staging areas shall be established at locations that will create the greatest distance between the construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction. 7. The required construction-related noise mitigation plan shall also specify that haul truck deliveries are subject to the same hours specified for construction equipment.				
<u>**TRIBAL CULTURAL RESOURCES**</u> TCR-1: See Cul-1 through Cul-3				

RESPONSIBLE PARTY INFORMATION

OWNER	SANDELL HOLDINGS LLC 3348 PARADISE DRIVE TIBURON, CA 94920 (650) 224-3274
ARCHITECT	O'MALLEY WILSON WESTPHAL - A/E ALLIANCE 555 5TH STREET, SUITE 200 SANTA ROSA, CA 95401 (707) 636-0828
CIVIL ENGINEER	CALICHI DESIGN GROUP 3240 PERALTA STREET #3 OAKLAND, CA 94608 (510) 250-7877
LANDSCAPE ARCHITECT	PAUL HARRIS ASSOCIATES ADDRESS BERKELEY, CA 94710 (510) 926-2600
BIOLOGICAL	SOL ECOLOGY PO BOX 2514 PETALUMA, CA 94955 (707) 241-7718
ACOUSTICAL	WILSON, IHRIG 6001 SHELLMOUND STREET, SUITE 400 EMERYVILLE, CA 94608 (510) 658-6719
GEOTECHNICAL ENGINEER	REESE & ASSOCIATES 134-C LYSTRA COURT SANTA ROSA, CA 95403 (707) 528-3078
TRAFFIC CONSULTANT	W-TRANS 490 MENDOCINO AVENUE, SUITE 201 SANTA ROSA, CA 95401 (707) 542-9500
METAL BUILDING	SOULE BUILDING SYSTEM METAL CONSTRUCTION 320 TESCONI CIRCLE, SUITE F SANTA ROSA, CA 95401 (707) 793-9277

PROJECT INFORMATION BLOCK

ZONING

ASSESSOR'S PARCEL NUMBER:	046-073-006
ADDRESS:	380 Blodgett Street (formerly 597 Helman Lane) Cotati, CA 94931
ZONING:	C1 - COMMERCIAL INDUSTRIAL
SITE AREA:	378,149 SF (8.68 ACRES)

BUILDING CODE

CODE SUMMARY:	CALIFORNIA BUILDING CODE (2019 CBC) CALIFORNIA MECHANICAL CODE (2019 CMC) CALIFORNIA PLUMBING CODE (2019 CPC) CALIFORNIA ELECTRICAL CODE (2019 CEC) CALIFORNIA ENERGY EFFICIENCY STANDARDS CODE (2019 CEESC) CALIFORNIA GREEN BUILDING STANDARDS CODE (2019 CALGREEN) CALIFORNIA FIRE CODE (2019 CFC)
OCCUPANCY GROUP:	S1 - STORAGE (WITH HIGH-PILE STORAGE) B - BUSINESS (ACCESSSORY)
CONSTRUCTION TYPE:	TYPE II-B (SPRINKLERED)

STORIES:	1 STORY
TOTAL ALLOWABLE AREA:	70,000 SF (S1 PER CBC TABLE 506.2)
ALLOWABLE HEIGHT	3 STORIES ABOVE GRADE PLANE (CBC TABLE 504.4)
WILDLAND URBAN INTERFACE:	NO

UTILITY

SEWER:	MUNICIPAL
WATER:	MUNICIPAL
GAS:	NATURAL GAS
ZONING HEIGHT LIMIT	40'
ZONING MAXIMUM LOT COVERAGE	80%

PROJECT INFORMATION

PROJECT INFORMATION	AREA (SF)	COVERAGE (%)
TOTAL LOT	369,338	100 %
LOT (DISTURBED AREA):	263,035	71.2%
BUILDING #1	50,072	13.6 %
BUILDING #2	35,500	9.6%

PARKING (NO.)	NUMBER
VEHICLE PARKING	
BUILDING #1 REQUIRED (1,000 SF OFFICE @ 1:250 SF + 49,000 SF WAREHOUSE @ 1:1,000 SF)	53 SPACES
PROVIDED	45 SPACES (15% REDUCTION REQUESTED)
BUILDING #2 REQUIRED (35,500 SF WAREHOUSE @ 1:1,000 SF)	36 SPACES
PROVIDED	37 SPACES
BICYCLE PARKING	
REQUIRED	5
PROVIDED	6

GENERAL SHEET NOTES

1. THE TOPOGRAPHIC INFORMATION IS BASED ON SURVEY DATED JANUARY 27, 2021 BY SOUSA LAND SURVEYS
2. THE SEASONAL WETLAND AREAS INDICATED ARE BASED ON A CAD MAP DATED JANUARY 28, 2021 BY SOL ECOLOGY

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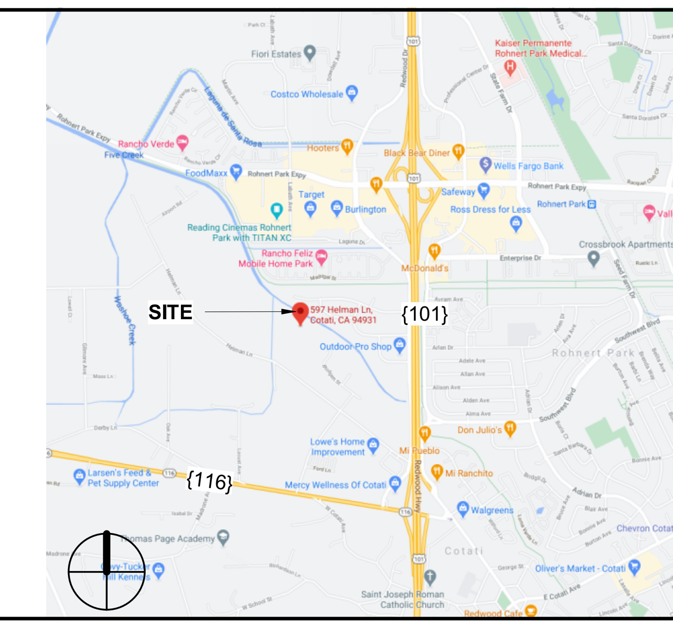
SITE LOOKING FROM END OF BLODGETT STREET

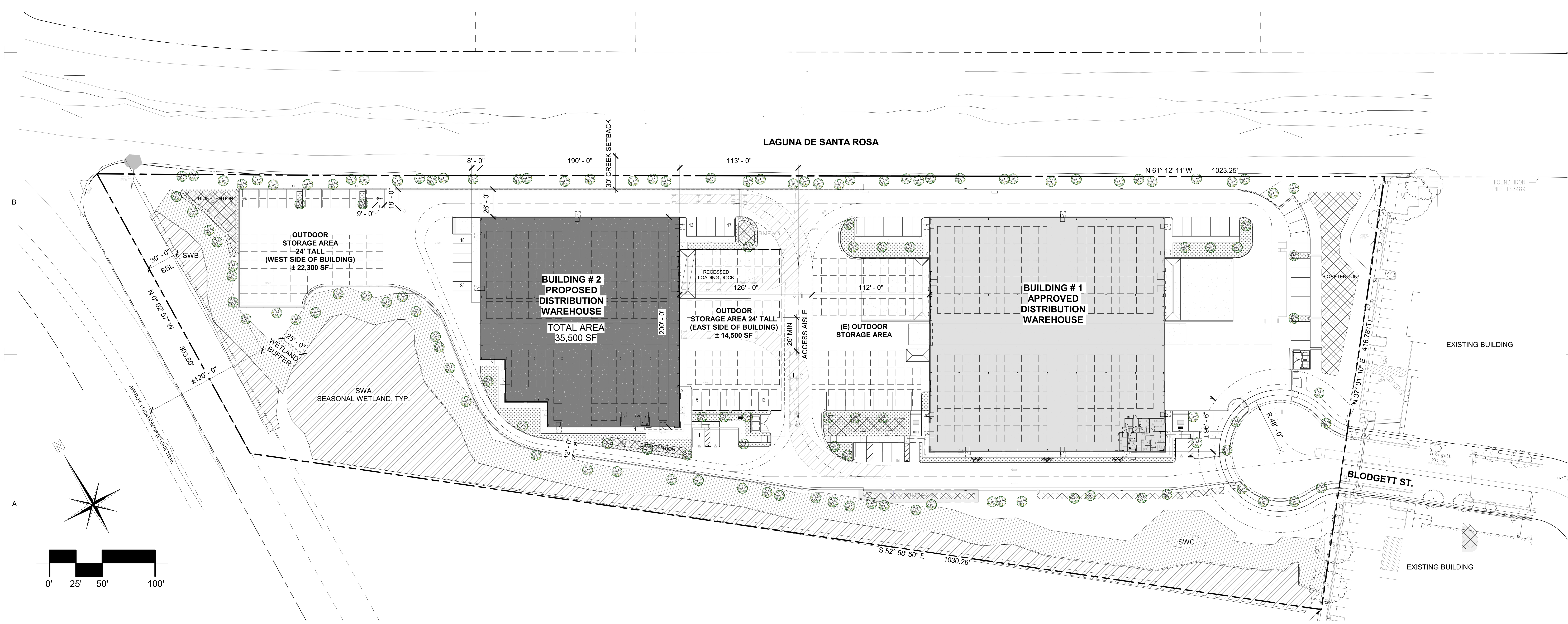
VICINITY MAP

NO SCALE



SEAL

PRELIMINARY
NOT FOR CONSTRUCTION



A1 ARCHITECTURAL SITE PLAN - BUILDING #2 - PLANNING
1" = 50'-0"

Sandell

DISTRIBUTION WAREHOUSE

380 Blodgett Street (formerly 597 Helman Lane)
Cotati, CA 94931

No.	Description	Date

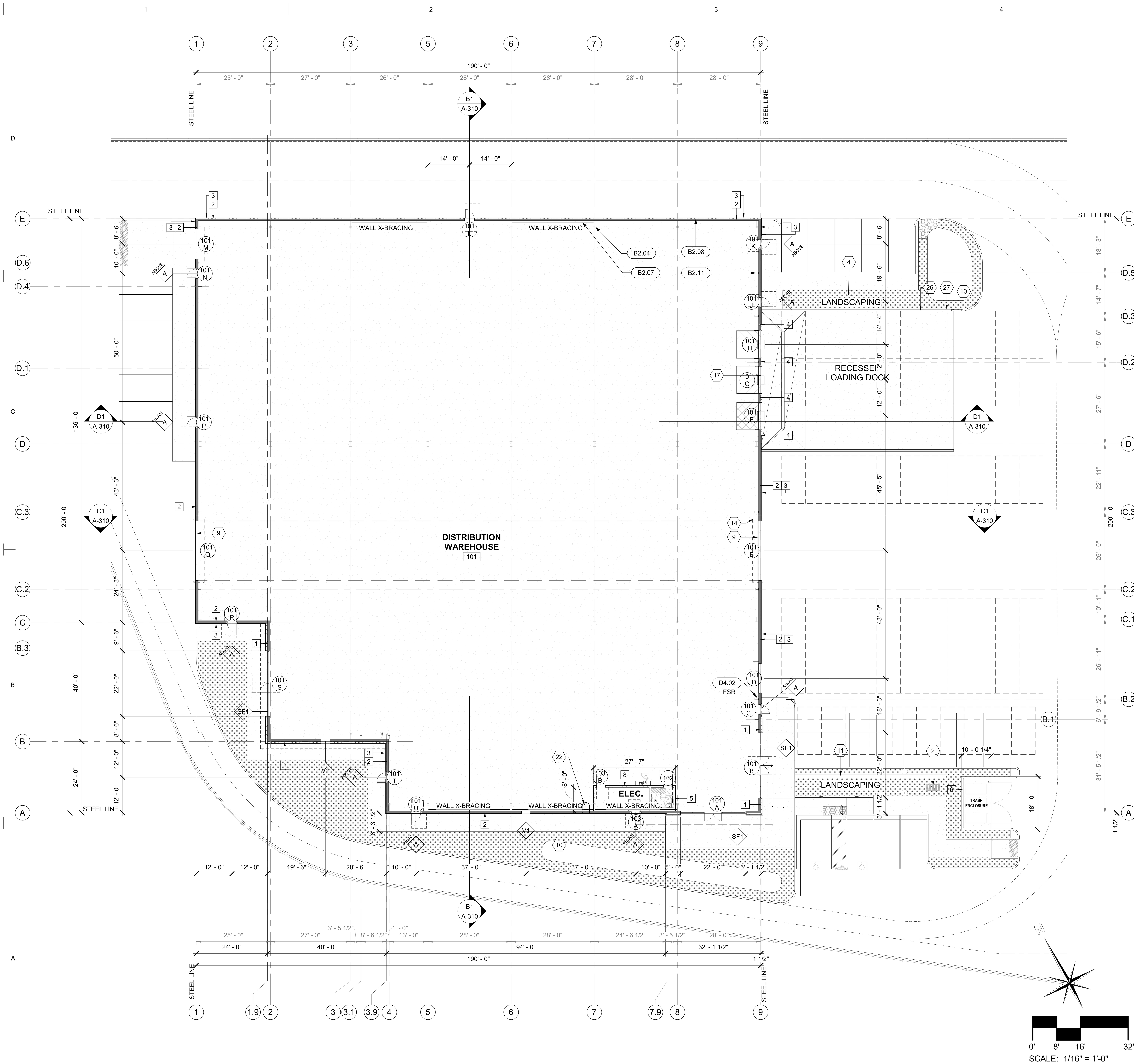
DATE:	07/15/2022
PROJECT NUMBER:	21-094
PROJECT PHASE:	CD
DRAWN BY:	ZS
CHECKED BY:	KO

SHEET TITLE

ARCHITECTURAL SITE PLAN

SHEET NUMBER

A-101 II



A1 FLOOR PLAN - BLDG 2 - PLANNING
1/16" = 1'-0"

BIM 360://21-094-Sandell-Building 2/21-094-Sandell-Building 2.rvt

7/18/2022 5:32:26 AM

GENERAL NOTES

1. SEE REFLECTED CEILING PLAN SHEET A-170 FOR UPPER WINDOWS

GRAPHICAL NOTATION

2	BIKE RACK
4	14' TALL PARKING LIGHT, TYP. OF 5
9	20' x 20' ROLL-UP DOOR
10	LANDSCAPING, TYP.
11	CONCRETE SEAT WALL
14	BOLLARD, TYP.
17	SECTIONAL OVERHEAD VERTICAL LIFT
22	LADDER
26	GUARDRAIL
27	CONCRETE WALL

KEY NOTES

B2.04	METAL BUILDING FRAME
B2.07	METAL BUILDING BRACE
B2.08	METAL BUILDING GIRT
B2.11	METAL BUILDING COLUMN
D4.02	FIRE RISER

CODE NOTES

SEE SHEET G-003, G-004: Code Notes Reference "Paragraph.Item #"

CALIFORNIA BUILDING CODE

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PRELIMINARY
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380 Blodgett Street (formerly 597 Helman Lane)
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DRAWN BY:	ZS
CHECKED BY:	KO

SHEET TITLE

FLOOR PLAN - BUILDING #2

SHEET NUMBER

A-110 II

GENERAL NOTES

1. General Notes

GRAPHICAL NOTATION

23	ROOF HATCH

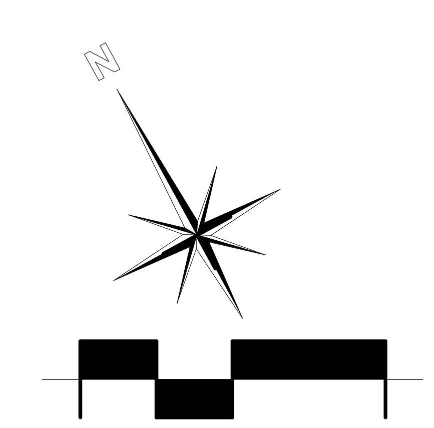
KEY NOTES

B2.02	PRE-FINISHED STANDING SEAM METAL ROOFING PANELS, TYP.
B2.05	METAL BUILDING DOWNSPOUTS
B2.12	DIRECTION OF ROOF SLOPE
B2.14	TRELLIS, TYP. SEE METAL BUILDING
B2.15	MECHANICAL SCREEN
D4.01	FIRE SETBACK
D5.01	SKYLIGHT ABOVE FOR DAYLIGHTING, TYP.
D5.02	SOLAR PANELS, TYP. (LAYOUT T.B.D.)

CODE NOTES

SEE SHEET G-003, G-004: Code Notes Reference "Paragraph.Item #"

CALIFORNIA BUILDING CODE



SCALE: 1/16" = 1'-0"

A1 ROOF PLAN - BLDG 2
1/16" = 1'-0"

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PROJECT PHASE:	CD
DRAWN BY:	ZS
CHECKED BY:	KO

SHEET TITLE

ROOF PLAN - BUILDING #2

SHEET NUMBER

A-190

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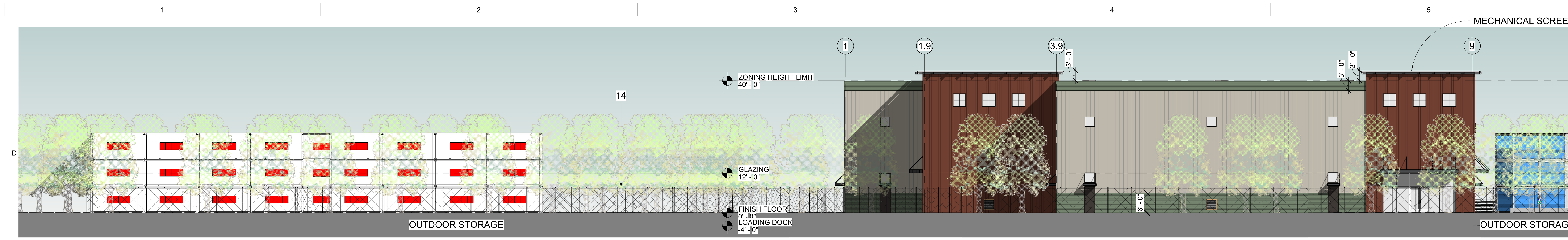
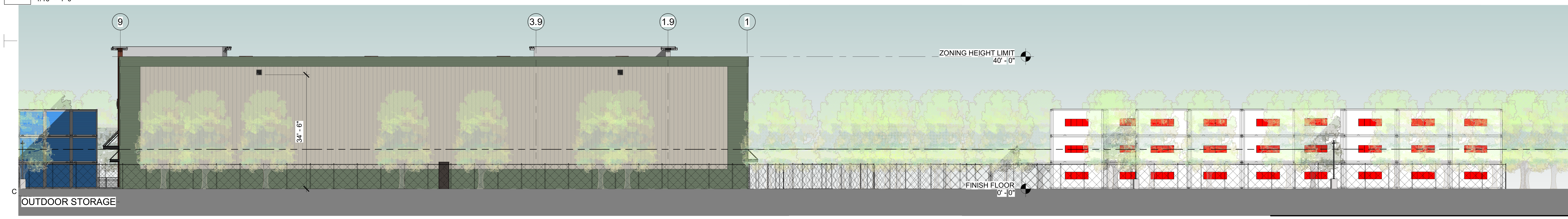
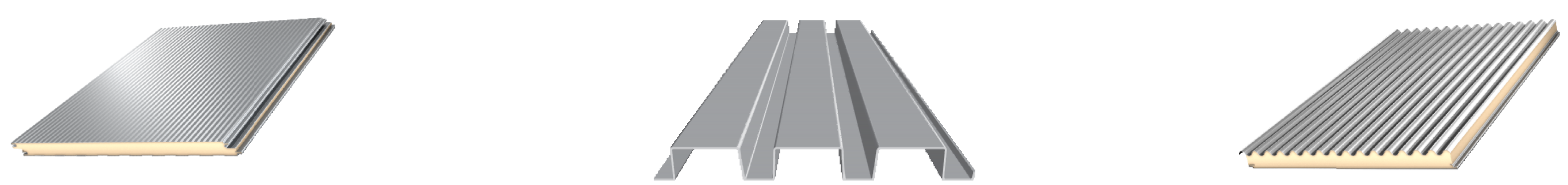


D1 SOUTH - EXTERIOR ELEVATION - BLDG 2
1/16" = 1'-0"



C1 NORTH - EXTERIOR ELEVATION - BLDG 2
1/16" = 1'-0"

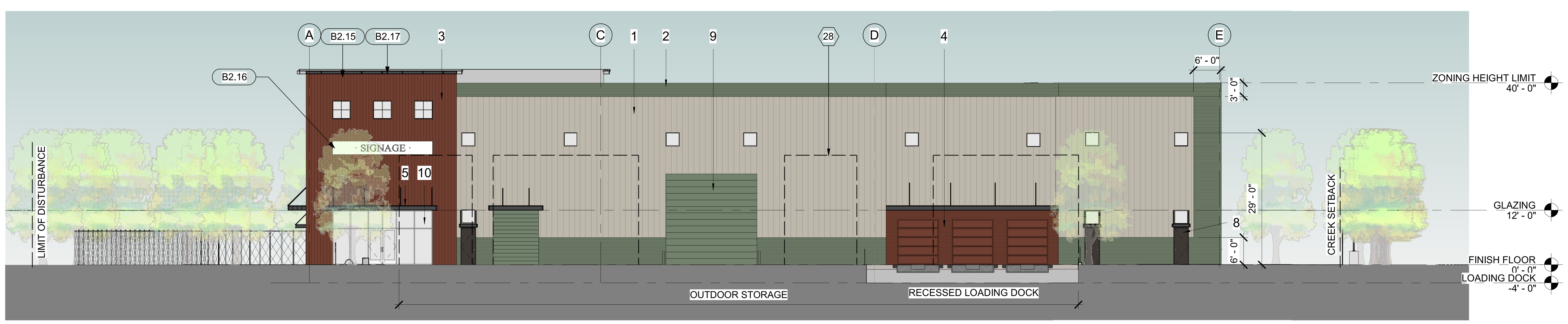
PANEL PROFILES



STRIATED (ST40)

(T13)

CORRUGATED (SCW36)



B1 EAST - EXTERIOR ELEVATION - BLDG 2
1/16" = 1'-0"

A1 WEST - EXTERIOR ELEVATION - BLDG 2
1/16" = 1'-0"

0' 8' 16' 32'
SCALE: 1/16" = 1'-0"

GENERAL NOTES

1. General Notes

GRAPHICAL NOTATION

28	DASHED LINE INDICATES OUTDOOR STORAGE

KEY NOTES

B2.15	MECHANICAL SCREEN
B2.16	EXTERIOR SIGNAGE UNDER SEPARATE PERMIT
B2.17	CORNICE, TYP.

CODE NOTES

SEE SHEET G-003, G-004: Code Notes Reference "Paragraph.Item #"

CALIFORNIA BUILDING CODE

COLORS AND MATERIALS

1.	WALL FINISH A	METAL SIDING INSULATED AWIP STRIATED (ST40)	PEARL GRAY
2.	WALL FINISH B	METAL SIDING INSULATED AWIP CORRUGATED (CW36)	NATURAL GREEN
3.	WALL FINISH C	METAL SIDING INSULATED METAL SALES (T13)	COLONIAL RED
4.	WALL FINISH D	METAL SIDING INSULATED AWIP CORRUGATED (CW36)	COLONIAL RED
5.	AWNING	STEEL	PAINT CHARCOAL DESERT SHADOW KM 4911-5
6.	ROOF	METAL (NOT VISIBLE) NON-INSULATED MBCI ULTRA-DEK	POLAR WHITE
8.	MAN-DOORS	HOLLOW METAL	PAINT CHARCOAL DESERT SHADOW KM 4911-5
9.	ROLL-UP DOORS	METAL	PAINT WALL PANEL COLOR
10.	STOREFRONT	ALUMINUM DUAL PANE, LOW E SOLARBAN 60	BRUSHED ALUMINUM FINISH LIGHT GREY TINT
11.	TRASH ENCLOSURE	CONCRETE BLOCK STEEL ROOF, STEEL DOORS	PAINT GRAY PAINT CHARCOAL
12.	LIGHT FIXTURES	UNDER CANOPIES LIGHT BOLLARDS @ PARKING	PRE-FINISHED
13.	DOOR HARDWARE	METAL	BRONZE FINISH
14.	CHAIN LINK FENCE	8' TALL VISUAL SCREEN	DARK VINYL PRIVACY SLATS

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Cotati, CA 94931

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DATE:	07/15/2022
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PROJECT PHASE:	CD
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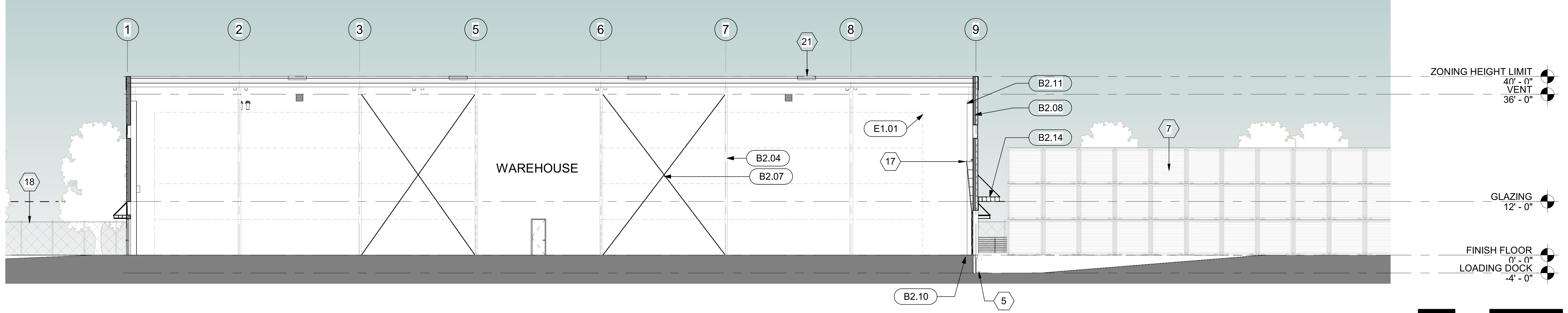
CHECKED BY:	KO

SHEET TITLE

EXTERIOR ELEVATIONS - BUILDING #2

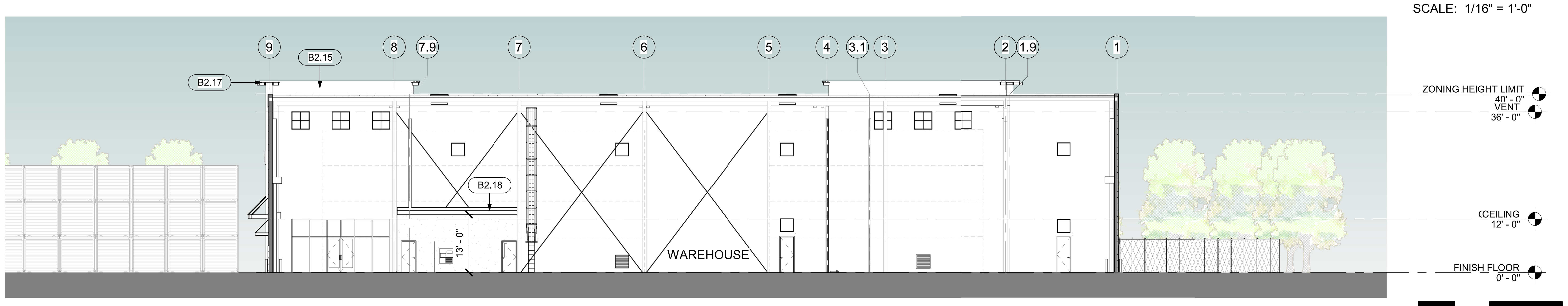
SHEET NUMBER

A-210



SCALE: 1/16" = 1'-0"

D1 CROSS SECTION 1 - BUILDING #2
1/16" = 1'-0"



SCALE: 1/16" = 1'-0"

C1 CROSS SECTION 2 - BUILDING #2
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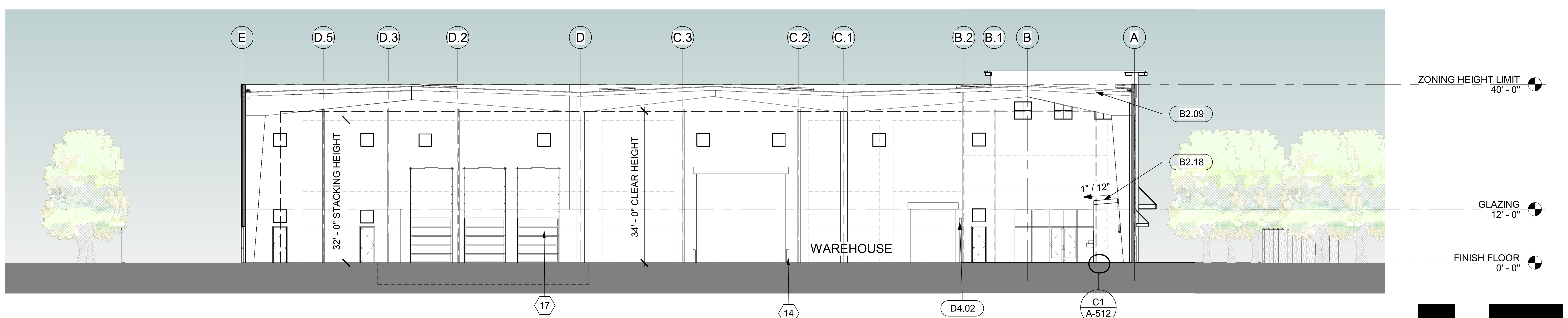

SCALE: 1/16" = 1'-0"

B1 SECTION 3 - BUILDING #2
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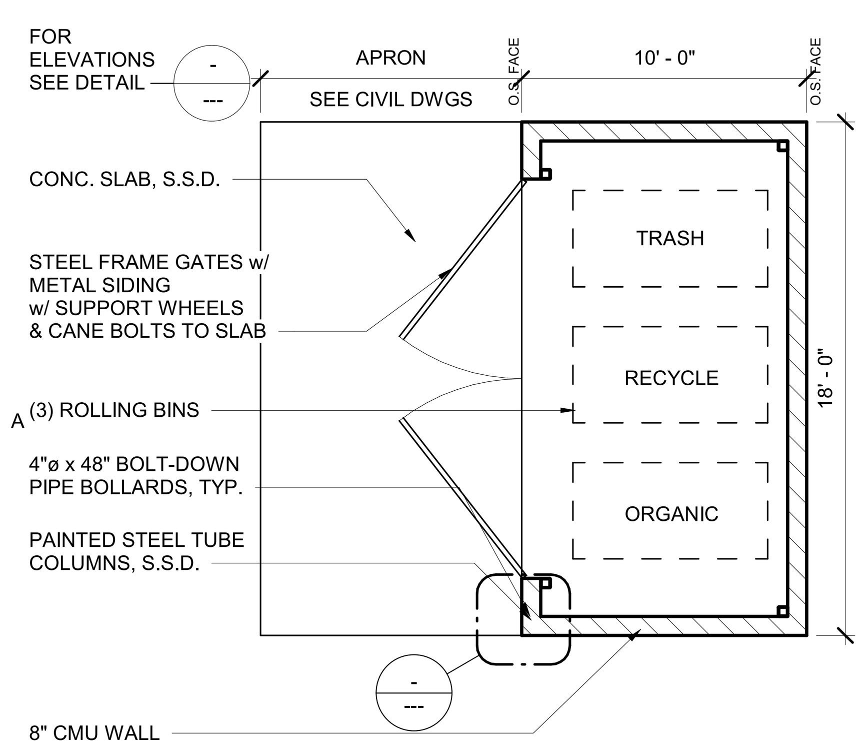
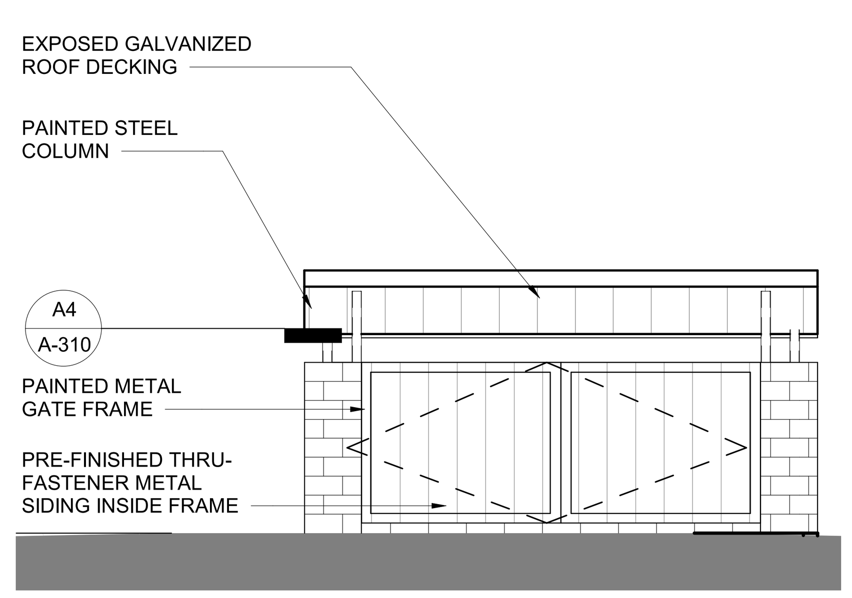
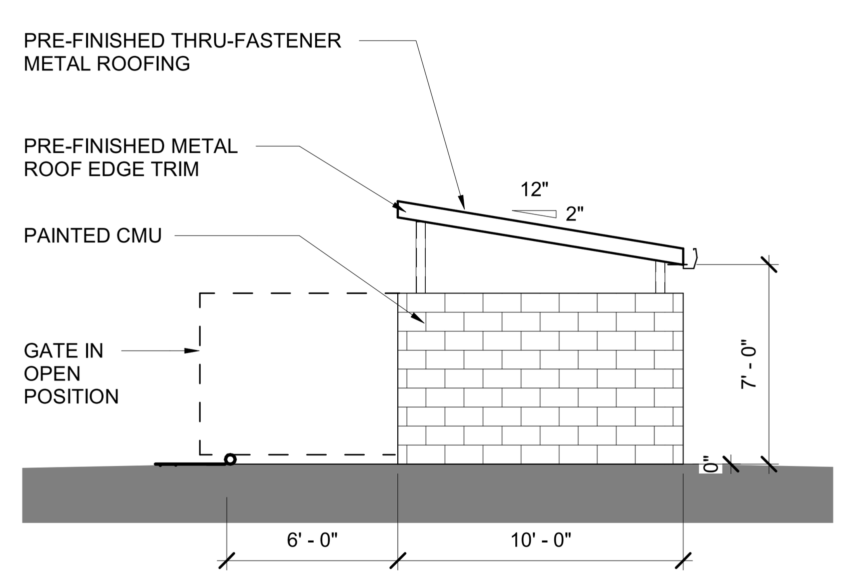
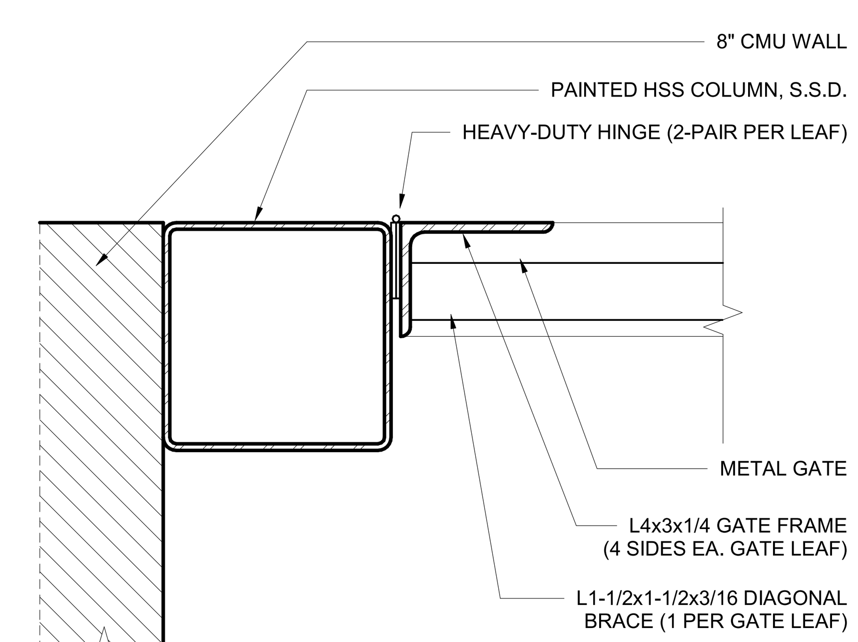




PROVIDE EACH GATE LEAF WITH 2-PR HEAVE DUTY HINGES, CANE BOLTS AND CARRIAGE WHEELS





A1 TRASH ENCLOSURE PLAN.	3/16" = 1'-0"	A2 TRASH ENCLOSURE- FRONT	3/16" = 1'-0"	A3 TRASH ENCLOSURE -SIDE	3/16" = 1'-0"	A4 TRASH ENCLOSURE GATE JAMB	3" = 1'-0"

BIM 360://21-094-Sandell-Building 2/21-094-Sandell-Building 2.rvt

7/18/2022 5:32:59 AM

GENERAL NOTES

1. General Notes

GRAPHICAL NOTATION

5	RECESSED LOADING DOCK
7	OUTLINE OF OUTDOOR STORAGE AREA 24' TALL (EAST & WEST SIDE OF BUILDING)
14	BOLLARD, TYP.
17	SECTIONAL OVERHEAD VERTICAL LIFT
18	FENCE
21	SKYLIGHT, TYP.

KEY NOTES

B2.04	METAL BUILDING FRAME
B2.07	METAL BUILDING BRACE
B2.08	METAL BUILDING GIRT
B2.09	METAL BUILDING FRAMING
B2.10	SLAB, FOUNDATION TYP. ,S.S.D.
B2.11	METAL BUILDING COLUMN
B2.14	TRELLIS, TYP. SEE METAL BUILDING
B2.15	MECHANICAL SCREEN
B2.17	CORNICE, TYP.
B2.18	LIGHT GAUGE METAL FRAMING INTERIOR ROOF w/ 1/2" PLYWD AND 1:12 SLOPE
D4.02	FIRE RISER
E1.01	OUTLINE OF 8' TALL STORAGE CONTAINERS STACKED FOUR HIGH FOR A TOTAL OF 32' ABOVE FINISH FLOOR

CODE NOTES

SEE SHEET G-003, G-004: Code Notes Reference "Paragraph.Item #"

CALIFORNIA BUILDING CODE

A/E ALLIANCE
o'malleywilsonwestphal
DANIEL A. WESTPHAL
Box 2484
Santa Rosa
California 95405
tel 707 636 0828
fax 707 636 0829

CONSULTANTS

SEAL

PRELIMINARY
NOT FOR CONSTRUCTION

Sandell

DISTRIBUTION WAREHOUSE

380 Blodgett Street (formerly 597 Helman Lane)
Cotati, CA 94931

No.	Description	Date

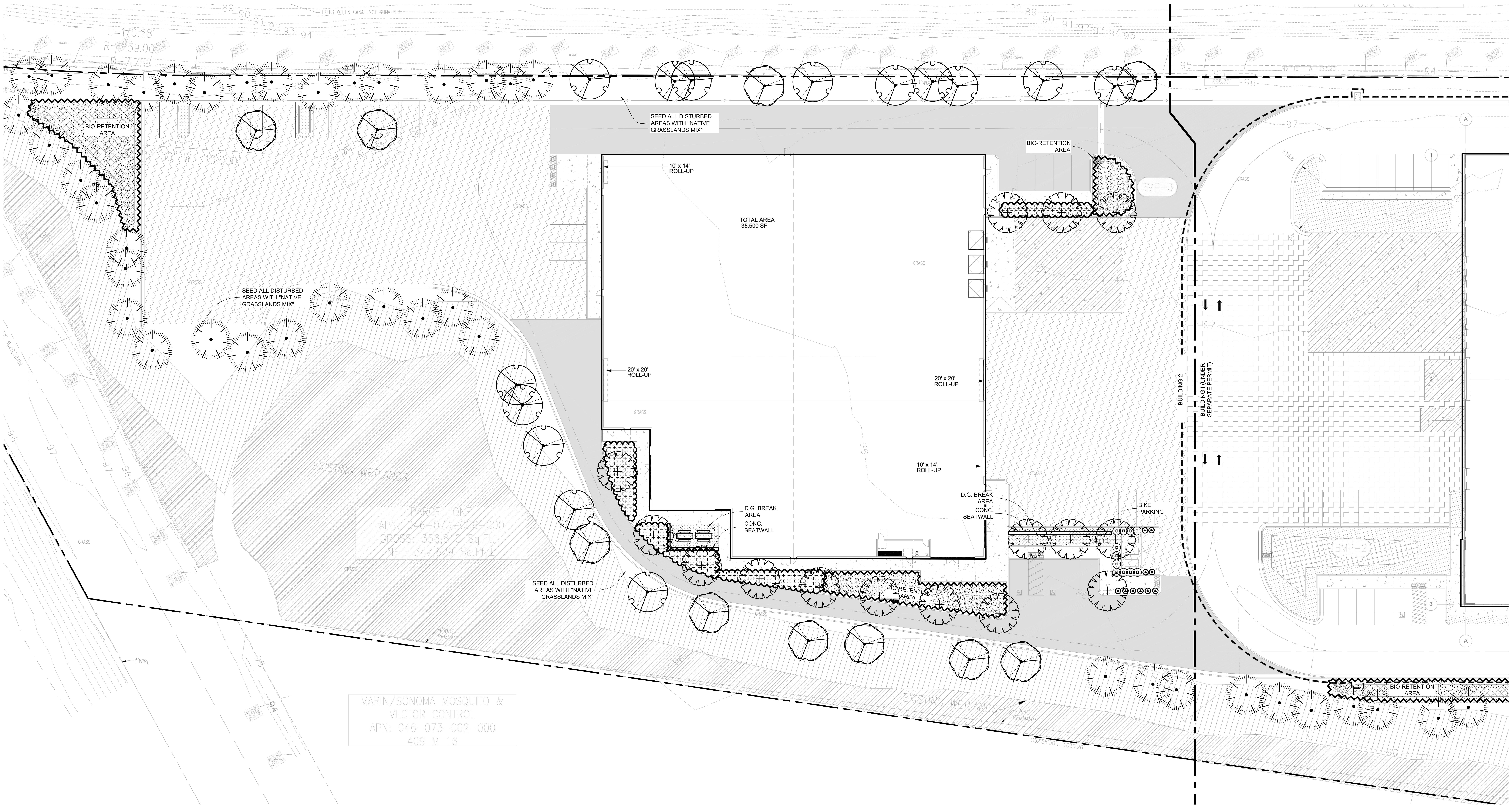
DATE:	07/15/2022
PROJECT NUMBER:	21-094
PROJECT PHASE:	CD
DRAWN BY:	ZS
CHECKED BY:	KO

SHEET TITLE

BUILDING SECTIONS - BUILDING #2

SHEET NUMBER

A-310



PAUL HARRIS
Landscape Architect

DISTRIBUTION WAREHOUSE
597 HELMAN LANE
COTATI, CA 94931

SCALE	1"=24'-0"
DRAWN	PH
CHECKED	PH
DATE	2022.08.03
REV	BY NO.

LAYOUT PLAN

L1.1
ENTITLEMENT SUBMITTAL

REFERENCE NOTES SCHEDULE BLDG 2

SYMBOL	SITE FURNISHINGS DESCRIPTION	QTY	DETAIL
--	BIKE RACK: DUMOR 83-00/S-4, SUB-FLOOR MOUNT (POUR 12" DIA. x 24" DEEP FOOTING 2" BELOW FIN GRADE, MOUNT RACK AND COVER FOOTING WITH 2" DECOMPOSED GRANITE), COLOR: "JUNIPER GREEN"	4	
	PICNIC TABLE: TBS (MUST BE ADA-COMPATIBLE), COLOR: "JUNIPER GREEN" TO MATCH BIKE RACK	2	

SYMBOL	PAVING DESCRIPTION	QTY	DETAIL
	DECOMPOSED GRANITE: GOLD	669 sf	2/L1.2

0 24 48 72 feet
1" = 24'-0"
NORTH

PLANT SCHEDULE BLDG 2

TREES	BOTANICAL / COMMON NAME	CONT	QTY	REMARKS
	Cedrus deodara / Deodar Cedar	24" box	41	
	Quercus agrifolia / Coast Live Oak	24" box	14	STD
	Quercus ilex / Holly Oak	24" box	10	STD
	Quercus suber / Cork Oak	24" box	15	STD

SHRUBS	BOTANICAL / COMMON NAME	CONT	QTY	REMARKS
	Arctostaphylos d. 'Howard McMinn' / Howard McMinn Manzanita	15 gal	11	
	Lomandra longifolia `Platinum Beauty` / Mat Rush	1 gal	10	

SHRUB AREAS	BOTANICAL / COMMON NAME	CONT	SPACING	QTY	REMARKS
	Festuca californica / California Fescue	1 gal	36" o.c.	148	
	Juncus patens `Elk Blue` / Spreading Rush	1 gal	48" o.c.	295	

WATER-USE (MAWA) COMPLIANCE

ALL PLANTS ARE SELECTED FROM THE LOW WATER USE CATEGORY (WUCOLS 4) AND SHALL BE ON A DEDICATED IRRIGATION VALVE USING DRIP IRRIGATION. THIS LANDSCAPE PLAN COMPLIES WITH THE MAXIMUM APPLIED WATER ALLOWANCE (MAWA) FOR THE CITY OF COTATI 17.34.040.

PLANTING NOTES

1. ALL SOIL PREPARATION AND PLANTING OPERATIONS SHALL BE IN ACCORDANCE WITH SOIL HORTICULTURAL SUITABILITY REPORT (TO BE PROVIDED BY LANDSCAPE ARCHITECT AFTER ROUGH GRADING IS COMPLETE).
2. ALL TREES WITHIN 5' OF PAVEMENT, SEWER AND WATER LINES SHALL HAVE ROOT BARRIERS 24" DEEP. VERIFY COMPLIANCE AND NOTIFY OWNER'S REPRESENTATIVE OF ANY CONFLICTS.
3. ROOT BARRIERS SHALL BE LINEAR TYPE ONLY - NO ENCIRCLING BARRIERS ARE PERMITTED.
4. ALL TREES REQUIRE A DRAIN CHIMNEYS.
5. UNLESS OTHERWISE NOTED, WHEN PLANTED, THE TOP OF TREE ROOT BALL SHALL BE 4" ABOVE ADJACENT GRADE AND DIRT SHALL BE MOUNDED ACCORDINGLY. TREES IN PLANTER POTS EXCEPTED.
6. ALL PLANTING AREAS AND UNPLANTED (DIRT) AREAS SHALL HAVE A 3" LAYER OF COMPOSTED MULCH (SUCH AS "FOREST FLOOR BARK" FROM AMERICAN SOIL). SUBMIT SAMPLE TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO DELIVERY. KEEP MULCH 4" MIN. AWAY FROM PLANT STEMS.
7. ALL PLANTER AREAS SHALL PROVIDE POSITIVE DRAINAGE AWAY FROM PAVED AREAS OR STRUCTURES.
8. CONTRACTOR SHALL MAINTAIN & FERTILIZE PLANTING PER SOIL HORTICULTURAL SUITABILITY REPORT.
9. AT THE END OF THE 90-DAY MAINTENANCE PERIOD, LANDSCAPE CONTRACTOR SHALL PROVIDE SOIL ANALYSIS FOR HORTICULTURAL SUITABILITY WITH FERTILIZER RECOMMENDATIONS FOR TWO SEPARATE REPRESENTATIVE SOIL SAMPLES AND SUBMIT RESULTS TO THE LANDSCAPE ARCHITECT PRIOR TO FINAL APPROVAL.
10. SUBMIT PHOTOS AND SPECIFICATIONS OF ALL TREES 36" BOX OR LARGER FOR APPROVAL BY LANDSCAPE ARCHITECT PRIOR TO PURCHASE

SOIL PREP NOTES

1. ALL SOIL PREPARATION AND PLANTING OPERATIONS SHALL BE IN ACCORDANCE WITH SOIL HORTICULTURAL SUITABILITY REPORT (TO BE PROVIDED BY LANDSCAPE ARCHITECT AFTER ROUGH GRADING IS COMPLETE).
2. CLEAR (E) VEGETATION EXCEPT WHERE PLANTS ARE TO REMAIN. WHERE CLEARING IS NOT FEASIBLE (OR ON RE-SPROUTED VEGETATION), APPLY ROUNDUP TO (E) VEGETATION PER MANUFACTURER DIRECTIONS.
3. SOIL SHALL BE RIPPED IN TWO DIRECTIONS TO A DEPTH OF 12". IN AREAS NOT ACCESSIBLE BY LARGE EQUIPMENT, RIPPING SHALL BE ACCOMPLISHED BY SMALL BACKHOE OR MANUALLY.
4. THE FOLLOWING AMENDMENT PROCEDURES ARE A MINIMUM REQUIREMENT. AT LANDSCAPE ARCHITECT'S DISCRETION, IF SOIL IS SIGNIFICANTLY CONTAMINATED WITH CONSTRUCTION DEBRIS (GRAVEL, CONC. ETC), SOIL SHALL BE REPLACED TO A DEPTH OF 12" WITH IMPORTED TOPSOIL. APPLY AMENDMENTS TO ALL PLANTING AREAS AT THE FOLLOWING RATES PER 1,000 SQ. FT.:
6 CUBIC YARDS NITROGEN/IRON STABILIZED ORGANIC AMENDMENT
3 CUBIC YARDS $\frac{1}{4}$" MINUS CRUSHED LAVA ROCK
25 POUNDS 6-20-20 COMMERCIAL FERTILIZER
5 POUNDS IRON SULFATE(31%FE)
5. INCORPORATE THOROUGHLY WITH TOP 8 IN. SOIL LAYER AND REMOVE STONES OVER 1 IN. IN DIAMETER, ROOTS, CLODS, WEEDS, AND OTHER EXTRANEOUS MATERIAL. BRING AMENDED SOIL TO FINISH GRADES AND ELEVATIONS. DO NOT WORK SOILS UNDER FROZEN OR MUDDY CONDITIONS.
6. APPLY RONSTAR OR EQUAL PRE-EMERGENT WEED CONTROL PER MANUFACTURER DIRECTIONS.
7. FINISH GRADE IN PLANTING AREAS SHALL BE 2 INCHES BELOW SURROUNDING CONCRETE OR ASPHALT.

IRRIGATION NOTES

THE IRRIGATION PLAN SHALL BE SUBMITTED TO THE BUILDING DEPARTMENT FOR PERMIT AND SHALL MEET MAWA/CODE REQUIREMENTS 17.34.070 INCLUDING:
1. WEATHER-BASED CONTROLLER WITH RAIN-SENSOR SHUTOFF
2. ALL IRRIGATION FOR NEW PLANTING SHALL BE DRIP

CIVIL PLANNING SUBMITTAL
DISTRIBUTION WAREHOUSE BUILDING 2
597 HELMAN LANE | COTATI, CALIFORNIA 94931

LEGEND

PROPOSED	LEGEND	EXISTING
	PROPERTY LINE	
	EASEMENT LINE	
9	1-FOOT CONTOUR	9
10	5-FOOT CONTOUR	10
WTR	WATER LINE	WTR
FP	FIRE PROTECTION WATER LINE	WTR
IRR	IRRIGATION WATER LINE	WTR
SS	SANITARY SEWER LINE	SAN
SD	STORM DRAIN LINE	SD
UE	UNDERGROUND ELECTRIC	UE
G	GAS LINE	G
	OVERHEAD ELECTRIC	OE
x	FENCE	x
	APPROXIMATE LIMIT OF DISTURBANCE	
	TREE	
	SHRUB	
	WATER VALVE	WV
	FIRE HYDRANT/CONNECTION	FDC
WM WV	WATER METER OR BOX	WM
	SEWER MANHOLE	
	SANITARY SEWER CLEANOUT	SSCO
	STORM DRAIN MANHOLE/CLEANOUT	
	CATCH BASIN	
	LIGHT POLE, UTILITY POLE, OR PULLBOX	SLPB
	GAS VALVE	GV
	ELECTRIC VAULTS	CVL SLV
	ELECTRIC BOX	EVL EM TSV
	SIGN	
	TRENCH DRAIN	
	3'X3' RIP RAP	
	TRANSFORMER	
	STANDARD/HEAVY DUTY PCC PAVEMENT. SEE DETAIL 3 ON SHEET C7.0.	
	HEAVY DUTY AC PAVEMENT. SEE DETAIL 2 ON SHEET C7.0.	
	STANDARD BIOTREATMENT PLANTER. SEE DETAIL 3 & 4 ON SHEET C7.2	
	STANDARD LANDSCAPE	
	WETLANDS 25' SETBACK	

SITE INFORMATION:

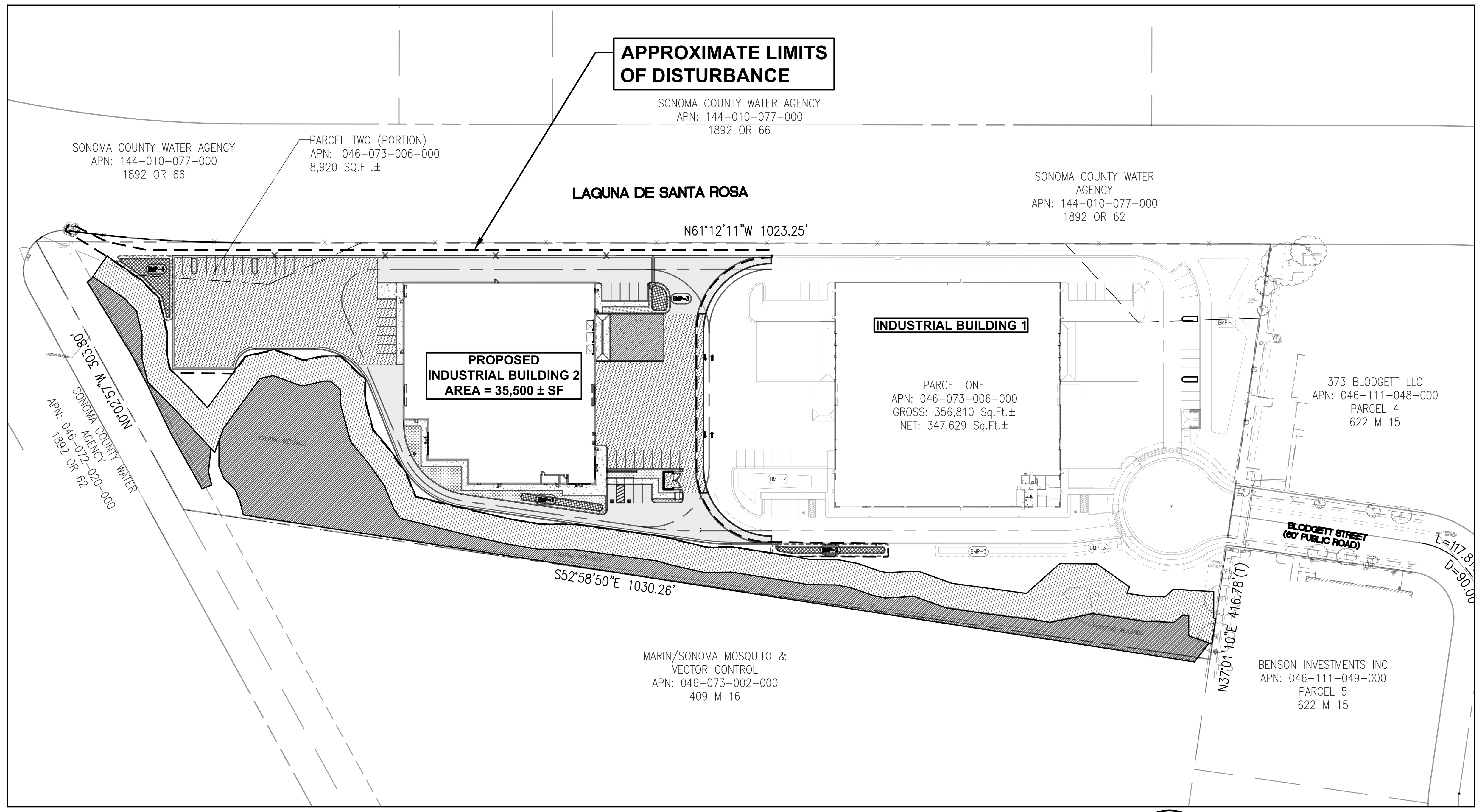
PARCEL APN: 046-073-006-000
ZONING: COMMERCIAL INDUSTRIAL (CI)
FLOOD ZONE: THE PROPERTY LIES WITHIN FLOOD ZONE 'X' PER FIRM PANEL NO: 06097C0878E, DATED DECEMBER 02, 2008. ZONE X IS DEFINED AS "AREA OF MINIMAL FLOOD HAZARD".

AREA SUMMARY:

TOTAL PARCEL AREA	= ±365,730 SF (±8.396 ACRES)
TOTAL DISTURBED AREA	= ±108,111 SF (±2.481 ACRES)
EXISTING IMPERVIOUS AREA	= ±000,000 SF
EXISTING PERVIOUS AREA	= ±108,111 SF
TOTAL PROPOSED IMPERVIOUS AREA	= ±100,925 SF
PROPOSED PERVIOUS AREA	= ±007,186 SF
CHANGING IN IMPERVIOUS AREA	= ±100,925 SF

IMPORTANT NOTICE TO DEVELOPERS AND ALL CONTRACTORS:

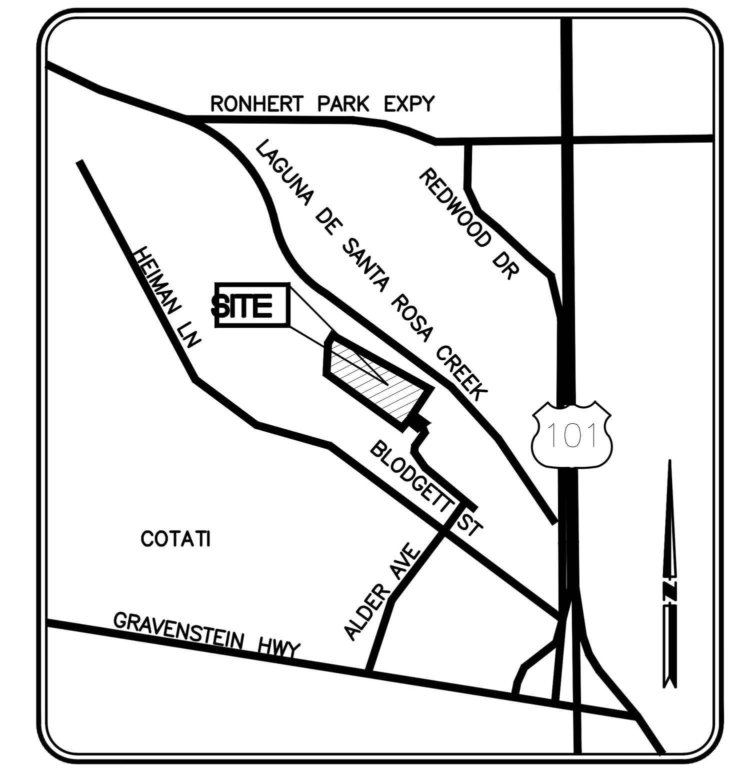
UTILITY JOINT TRENCH LOCATION SHALL BE FIELD STAKED AND APPROVED BY THE CITY PRIOR TO INITIATION OF ANY TRENCHING. THIS REQUIRED APPROVAL BY THE CITY IS INDEPENDENT OF ANY AUTHORIZATION GRANTED BY THE UTILITY COMPANY, THE DEVELOPER AND/OR CONTRACTOR. TRENCH LOCATIONS WITHIN THE TREE PROTECTION ZONES OF ANY PROTECTED TREES MAY NOT BE APPROVED BY THE CITY. THE CITY'S INSPECTOR MAY REQUIRE CONSULTATION BY THE CITY'S ARBORIST PRIOR TO APPROVAL OF TRENCH LOCATION. FAILURE TO COMPLY WITH THESE REQUIREMENTS MAY RESULT IN AN IMMEDIATE ORDER TO STOP WORK, AS WELL AS INCURRENCE OF CIVIL PENALTIES AS PROVIDED BY CITY ORDINANCE. NOTE: SOIL SHALL NOT BE TREATED WITH LIME OR OTHER CEMENTATION MATERIAL WITHOUT PRIOR EXPRESS PERMISSION BY THE CITY ENGINEER.



CIVIL ONSITE IMPROVEMENT PLAN / LIMITS OF CONSTRUCTION

SCALE: 1"=90'

NORTH



VICINITY MAP
NOT TO SCALE

CIVIL SHEET INDEX

SOILS REPORT NOTE:

REFER TO THE SOIL INVESTIGATION REPORT BY REESE & ASSOCIATES, DATED APRIL 27, 2022.

SURVEY NOTE:

TOPOGRAPHIC SURVEY PROVIDED BY SOUSA LAND SURVEYS INC., DATED 01/29/2021. ALL EXISTING INFORMATION PRESENTED IN THESE PLANS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR AND ANY DISCREPANCIES IN THE PLANS SHALL BE MADE AWARE TO THE ENGINEER PRIOR TO THE START OF CONSTRUCTION.

BASIS OF BEARING

THE BEARINGS SHOWN ON THIS SURVEY ARE BASED UPON THE MONUMENTS FOUND MARKING THE MONUMENT LINE OF BLODGETT STREET, AS SHOWN ON THE MAP OF KANDY BUSINESS PARK, RECORDED IN BOOK 622 OF MAPS AT PAGE 15. THAT BEARING WAS TAKEN AS N37°01'22"E

DATUM / BENCHMARK

THE ELEVATIONS SHOWN ON GIVEN SURVEY ARE NAVD88, BASED UPON FOUND COUNTY OF SONOMA BENCHMARK MONUMENT JT9619, LOCATED IN THE NORTHWEST CORNER OF THE CALTRANS PARK AND RIDE LOT IN THE SOUTHWEST QUADRANT OF THE U.S. HIGHWAY 101 AND ROHNERT PARK EXPRESSWAY INTERCHANGE. THAT ELEVATION WAS TAKEN AS 100.70'

LEGAL DESCRIPTION AND EASEMENT NOTE:

THE LEGAL DESCRIPTION FOR THE PROPERTY SURVEYED HEREON IS TAKEN FROM THE PRELIMINARY TITLE REPORT DATED JANUARY 14, 2021, PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY AT 2755 CAMPUS DRIVE, SUITE 125, SAN MATEO, CALIFORNIA 94403 UNDER ORDER NUMBER NCS-1045063-SM

LEGAL DESCRIPTION

PARCEL ONE APN: 046-073-006-000*

LOT 172 AS NUMBERED AND DESIGNATED UPON THE MAP OF SUBDIVISION NO. 7, RANCHO COTATI, FILED JUNE 7, 1893, IN BOOK 10 OF MAPS, PAGE 9, SONOMA COUNTY RECORDS.

EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE SONOMA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT BY DEED DATED SEPTEMBER 29, 1961 AND RECORDED MAY 25, 1962, IN BOOK 1892 OF OFFICIAL RECORDS, PAGE 66, UNDER RECORDER'S SERIAL NO. G-93896, SONOMA COUNTY RECORDS.

ALSO EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE SONOMA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT BY DEED DATED SEPTEMBER 29, 1961 AND RECORDED MAY 25, 1962, IN BOOK 1892 OF OFFICIAL RECORDS, PAGE 72, UNDER RECORDER'S SERIAL NO. G-93898, SONOMA COUNTY RECORDS.

PARCEL TWO APN: 046-073-006-000*

ALL THAT PORTION OF LAND THAT LIES BETWEEN THE NORTHEASTERLY EXTENSION OF THE EASTERLY LINE AND THE NORTHEASTERLY EXTENSION OF THE WESTERLY LINE OF PARCEL 4 REFERRED TO IN THE GRANT DEED FROM SONOMA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT TO CLYDE A. BLODGETT AND DORIS BLODGETT, HIS WIFE, DATED FEBRUARY 9, 1962 AND RECORDED MAY 25, 1962, IN BOOK 1892 OF OFFICIAL RECORDS, PAGE 85, UNDER RECORDER'S SERIAL NO. G-93901, SONOMA COUNTY RECORDS.

* PER SURVEY, BOTH PARCELS HAVE THE SAME APN.

ABBREVIATIONS

AC	ASPHALT CONCRETE	EX	EXISTING	MIN	MINIMUM	SSCO	SANITARY SEWER CLEAN OUT
ADA	AMERICANS WITH DISABILITIES ACT	FDC	FIRE DEPARTMENT CONNECTION	MON	MONUMENT	SSMH	SANITARY SEWER MANHOLE
APN	ASSESSORS PARCEL NUMBER	FEMA	FLOOD EMERGENCY MANAGEMENT AGENCY	MTR	METER	ST	STREET
APWA	AMERICAN PUBLIC WORKS ASSOCIATION			N	NORTH	STD	STANDARD
AVE	AVENUE	FF	FINISHED FLOOR	NG	NATURAL GROUND	STLT	STREET LIGHT
BAAQMD DISTRICT	BAY AREA AIR QUALITY MANAGEMENT	FG	FINISHED GRADE	N.I.C.	NOT IN CONTRACT	SW	SIDEWALK
		FH	FIRE HYDRANT	NO	NUMBER	T	TELEPHONE
BLDG	BUILDING	FL	FLOW LINE	N.T.S.	NOT TO SCALE	TBM	TEMPORARY BENCHMARK
BLVD	BOULEVARD	FND	FOUND	O.C.	ON CENTER	TC	TOP OF CURB
BFP	BACKFLOW PREVENTOR	FOC	FACE OF CURB	OH	OVERHANG	TCD	TRAFFIC CONTROL DEVICE
BM	BENCHMARK	FP	FIRE PROTECTION	P	PAVEMENT	TEV	TELEPHONE VAULT
BOP	BOTTOM OF PIPE	FS	FINISHED SURFACE	PB	PULL BOX	TL	TRAFFIC LIGHT
BSM	BIOTREATMENT SOIL MIX	FT	FEET	PCC	PORTLAND CEMENT CONCRETE	TOE	TOE OF SLOPE
C	CONCRETE	FW	FRONT OF WALK	PGE	PACIFIC GAS AND ELECTRIC	TOP	TOP OF SLOPE / TOP OF PIPE
CA	CALIFORNIA	FWC	FACE OF WALL CONCRETE	PIV	POST INDICATOR VALVE	TS	TRAFFIC SIGNAL
CASQA ASSOCIATION	CALIFORNIA STORMWATER QUALITY	G	GAS	POC	POINT OF CONNECTION	TSPB	TRAFFIC SIGNAL PULL BOX
		GB	GRADE BREAK	PP	POWER POLE	TVLT	TELEPHONE VAULT
CB	CATCH BASIN	GV	GAS VALVE	PVC	POLYVINYL CHLORIDE	TOW	TOP OF WALL
CCTV	CLOSED-CIRCUIT TELEVISION	HDPE	HIGH-DENSITY POLYETHYLENE	RD	ROAD	TYP	TYPICAL
CL	CENTERLINE	HWY	HIGHWAY	RET	RETENTION	UE	UNDERGROUND ELECTRIC
CLR	CLEAR	HYD	HYDRANT	RPPA	REDUCED PRESSURE PRINCIPLE ASSEMBLY	UT	UNDERGROUND TELEPHONE
COMM	COMMUNICATION	IE	INVERT ELEVATION			UTIL	UTILITY
CONC	CONCRETE	INV	INVERT	S	SLOPE / SANITARY / SOUTH	VAR	VARIABLE
CVLT	COMMUNICATION VAULT	IV	IRRIGATION VALVE	SAN	SANITARY SEWER PVC	VAT	VACUUM AIR TUBE
DCV	DETECTOR CHECK VALVE	JP	JOINT POLE	SDCB	STORM DRAIN CATCH BASIN	VLT	VAULT
DCDA	DOUBLE CHECK DETECTOR ASSEMBLY	L	LENGTH	SDMH	STORM DRAIN MANHOLE	W	WEST
DI	DROP INLET	L/S	LANDSCAPE	SDR35	STANDARD DIMENSIONAL RATIO 35	W/	WITH
DIA	DIAMETER	LF	LINEAL FEET	SF	SQUARE FEET	WM	WATER METER
DWG	DRAWING	LT	LIGHT	SL	STREET LIGHT	WTR	WATER LINE
E	ELECTRIC / EAST	LUM	LUMINAIRE	SLPB	STREET LIGHT PULL BOX	WV	WATER VALVE
ECAB	ELECTRIC CABINET	MAX	MAXIMUM	SP	SPECIFIC PLAN	WVLT	WATER VAULT
EVLT	ELECTRIC VAULT	MH	MANHOLE	SPEC	SPECIFICATION		

CALL 811 OR 1-800-227-2600
CALL BEFORE YOU DIG
USA
UNDERGROUND SERVICE ALERT
WWW.USANORTH.ORG
CALL TWO WORKING DAYS BEFORE YOU DIG

ENGINEERS NOTE TO THE CONTRACTOR:

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES, PIPES AND/OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THESE PLANS. THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION AND SIZE OF ANY UNDERGROUND UTILITIES AND SHALL BE RESPONSIBLE FOR DAMAGE TO PUBLIC OR PRIVATE UTILITIES SHOWN OR NOT SHOWN HEREON.

CONSULTANTS

CALICHI
CALICHI DESIGN GROUP
CIVIL ENGINEERS
3240 PERALTA STREET, #3
OAKLAND, CA 94608
(510) 250-7877
WWW.CALICHI.COM

SEAL

REGISTERED PROFESSIONAL ENGINEER
RECO VICENTE PRIANTO
C 69670
EXP. 6-30-2024
CIVIL
STATE OF CALIFORNIA
2022/07/13

DISTRIBUTION WAREHOUSE BUILDING TWO
380 BLODGETT STREET
COTATI, CA 94931

#	DESCRIPTION	DATE
1	INITIAL PLANNING SUBMITTAL	1/10/22
2	PLANNING RESUBMITTAL	4/8/22
3	GRADING PERMIT SUBMITTAL	7/8/22
4	PLANNING RESUBMITTAL	7/13/22

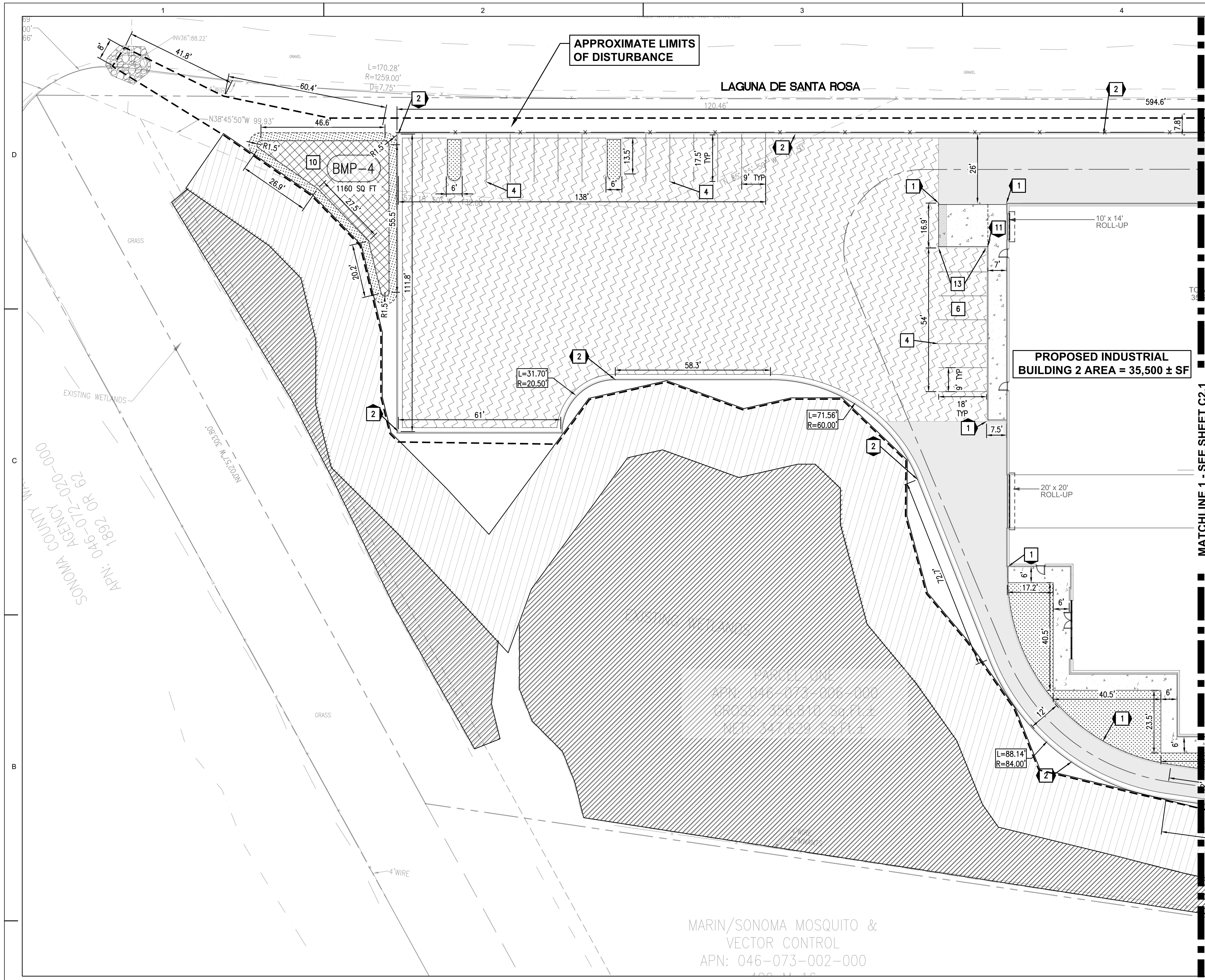
DATE:	07/13/2022
PROJECT NUMBER:	2021.338.001
PROJECT PHASE:	PLANNING
DRAWN BY:	KS, AM, & TC
CHECKED BY:	RP

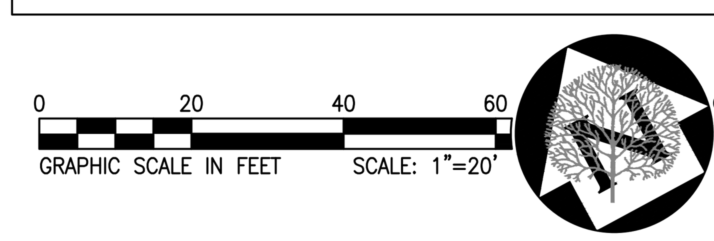
SHEET TITLE

CIVIL TITLE SHEET

SHEET NUMBER

C0.1





CALICHI DESIGN GROUP

GENERAL NOTES:

1. ALL CURBS ARE PCC VERTICAL BARRIER CURB 6" UNLESS OTHERWISE NOTED.
2. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST SONOMA COUNTY AND CITY OF COTATI STANDARDS.
3. ANY EXISTING INFRASTRUCTURE OR SITE ITEMS (ABOVE OR BELOW GRADE, READILY VISIBLE OR NOT) OR PROPERTY DAMAGED AS A RESULT OF CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE APPROPRIATE AGENCY.
4. ALL CONSTRUCTION SHALL CONFORM TO APPLICABLE STATE AND LOCAL CODES. WHEN CODES ARE IN CONFLICT, THE MORE STRINGENT SHALL APPLY. THE CONTRACTOR SHALL CAUSE A CURRENT COPY OF SAID CODES TO BE MAINTAINED ON SITE AT ALL TIMES.
5. ALL SIGNAGE AND PAINT MARKINGS SHALL COMPLY WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), OR AS OTHERWISE SPECIFIED. INSTALLATION OF SIGNS SHALL BE GOVERNED BY LOCAL CODES.
6. THE CONTRACTOR IS RESPONSIBLE TO LOCATE AND PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE UTILITY PROTECTION CENTER AT LEAST THREE DAYS PRIOR TO ANY SITE WORK FOR PROPER IDENTIFICATION OF EXISTING UTILITIES.
7. THE CONTRACTOR SHALL VERIFY ALL EXISTING ITEMS AND DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO BEGINNING CONSTRUCTION.

ENGINEER'S ADA NOTES:

ALL SITE WORK SHALL BE IN CONFORMANCE WITH THE CURRENT AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG), THE AMERICANS WITH DISABILITIES ACT (ADA), AND MUNICIPAL AND STATE ADA REGULATIONS.

1. RAMPS SHALL NOT EXCEED A RUNNING SLOPE OF 1:12 (8.33%).
2. RAMPS ARE DEFINED AS ANY WALKWAY BETWEEN SLOPES 1:20 (5%) AND 1:12 (8.33%) AND SHALL HAVE A MINIMUM WIDTH OF 3 FEET (EXCEPT AT DOORWAYS) AND A MAXIMUM CROSS-SLOPE OF 2%. RAMPS EXCEEDING 30 INCHES VERTICAL CHANGE SHALL HAVE INTERMEDIATE (2% MAX SLOPE) LANDINGS HAVING A MINIMUM LENGTH IN THE DIRECTION OF TRAVEL OF 60 INCHES.
3. MAXIMUM CROSS-SLOPE ON ANY WALK OR RAMPS SHALL BE 2%. ALL ACCESSIBLE PARKING SPACES AND LOADING ZONES SHALL HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
4. TRUNCATED DOMES AS DETECTABLE WARNINGS ARE REQUIRED ON ALL WALKS THAT CROSS OR ADJOIN A VEHICULAR WAY WITHOUT A VERTICAL SEPARATION BETWEEN WALKWAY AND VEHICULAR WAY.
5. ANY REQUEST BY A MUNICIPALITY OR INSPECTOR TO MODIFY THE ACCESSIBILITY DETAILS OR DESIGN SHOWN ON THESE PLANS AND SPECIFICATIONS MUST BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. ANY CHANGES MADE BY A PRIMARY OR SUB-CONTRACTOR WITHOUT APPROVAL FROM THE ENGINEER AND LATER FOUND TO BE NON-COMPLIANT WITH THE DETAILS AS SHOWN IN THE THESE PLANS AND SPECIFICATIONS AND FEDERAL, STATE AND LOCAL LAW WILL BE REMOVED AND REPLACED AND MADE FULLY COMPLIANT REGARDLESS OF MAGNITUDE AT THE EXPENSE OF THE CONTRACTOR. THE CONTRACTOR SHALL FOLLOW THE RFI PROCESS IN ESTABLISHING THE APPROVAL OR DENIAL OF CHANGES TO ADA RELATED DETAILS OR MOUNTING DIMENSIONS.
6. 1/8" MAXIMUM DEPTH TO TOP OF SEALANT AND 1/8" MAXIMUM PROTRUSION TO TOP OF SEALANT ALONG ADA ACCESS ROUTES.

LEGEND

PROPOSED / EXISTING

- PROPERTY LINE
- EASEMENT LINE
- 1-FOOT CONTOUR
- 5-FOOT CONTOUR
- WATER LINE
- FIRE PROTECTION WATER LINE
- IRRIGATION WATER LINE
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- UNDERGROUND ELECTRIC
- GAS LINE
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- STANDARD BIOTREATMENT PLANTER. SEE DETAIL 3 & 4 ON SHEET C7.2
- STANDARD LANDSCAPE
- WETLANDS 25' SETBACK

SITE PLAN KEY NOTES

1. PROPOSED 6" CONCRETE CURB.
2. PROPOSED 6" CURB AND GUTTER.
3. PROPOSED ACCESSIBLE CURB RAMP WITH DETECTABLE WARNING SURFACE.
4. PROPOSED PAVEMENT STRIPING. 2 COATS OF WHITE LATEX TRAFFIC PAINT PER MUTCD SPECIFICATIONS.
5. PROPOSED ACCESSIBLE PARKING SIGN.
6. PROPOSED 48" DEEP TRUCK DOCK AND WALLS – SEE ARCHITECTURAL PLANS FOR DETAILS.
7. PROPOSED TRASH ENCLOSURE – SEE ARCHITECTURAL PLANS FOR DETAILS
8. PROPOSED VAN ACCESSIBLE PARKING STALL WITH BLUE PAINTED CURB ALONG EDGE OF LOADING ZONE AND PARKING STALL.
9. PROPOSED CONCRETE VALLEY GUTTER.
10. PROPOSED BIOSWALE WITH UNDERGROUND RETENTION CHAMBER.
11. PROPOSED RETAINING WALL FOR TRUCK DOCK – SEE ARCHITECTURAL PLAN FOR DETAILS.
12. PROPOSED TRENCH DRAIN. SEE UTILITY PLAN FOR DETAILS.
13. PROPOSED HANDRAIL WHEN DROP IS GREATER THAN 12". PROPOSED HANDRAIL WITH GUARDRAIL WHERE DROP IS GREATER THAN 30". SEE ARCHITECTURAL PLANS FOR DETAILS.

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C 69670
EXP. 6-30-2024
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STATE OF CALIFORNIA
2022/07/13

DISTRIBUTION WAREHOUSE BUILDING TWO

380 BLODGETT STREET
COTATI, CA 94931

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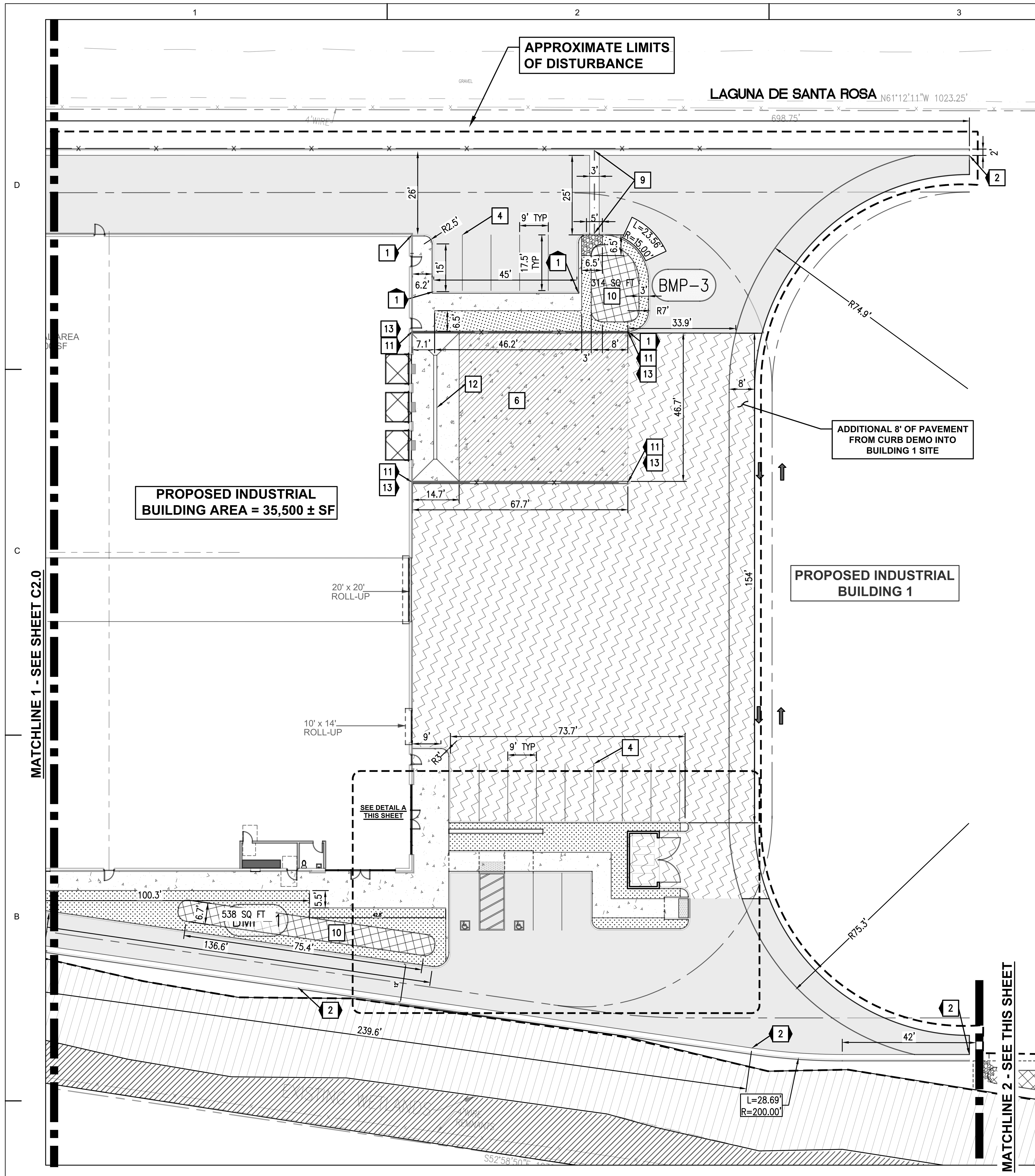
PROJECT NUMBER:	2021.338.001
PROJECT PHASE:	PLANNING
DRAWN BY:	KS, AM, & TC
CHECKED BY:	RP

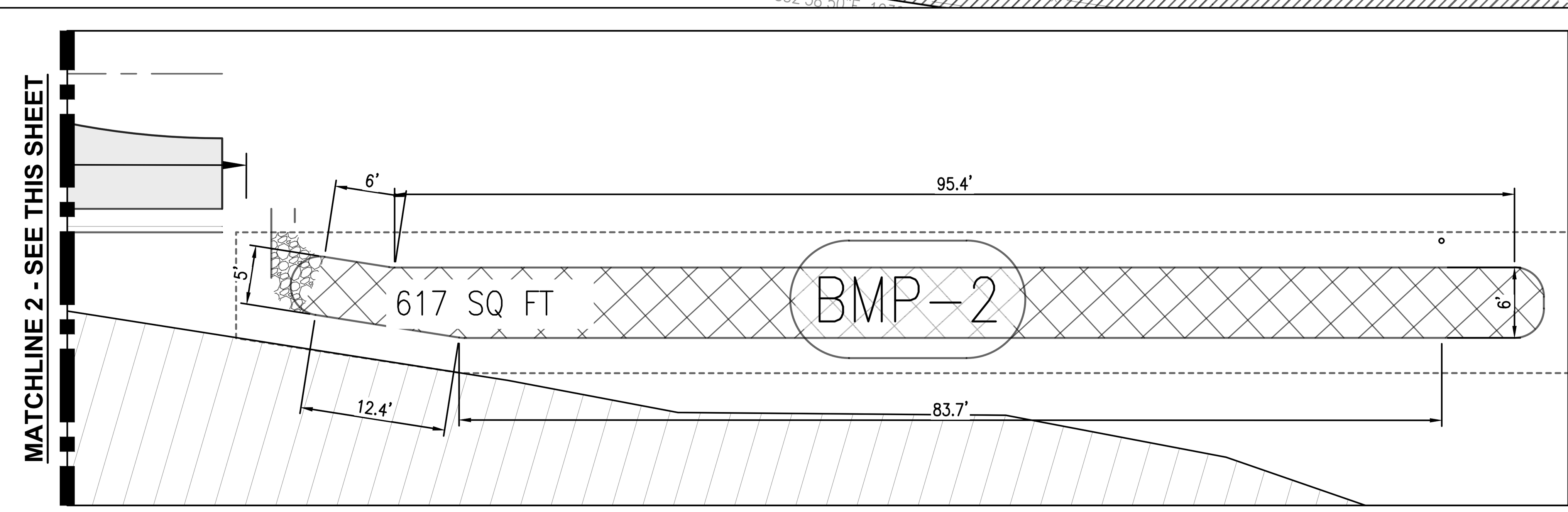
SHEET TITLE

SITE & PAVING PLAN

SHEET NUMBER

C1.0





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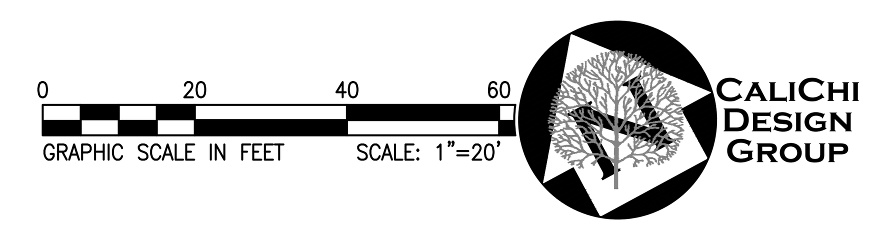

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LEGEND

PROPOSED	LEGEND	EXISTING
	PROPERTY LINE	
	EASEMENT LINE	
9	1-FOOT CONTOUR	9
10	5-FOOT CONTOUR	10
WTR	WATER LINE	WTR
FP	FIRE PROTECTION WATER LINE	WTR
IRR	IRRIGATION WATER LINE	WTR
SS	SANITARY SEWER LINE	SAN
SD	STORM DRAIN LINE	SD
UE	UNDERGROUND ELECTRIC	UE
G	GAS LINE	G
	OVERHEAD ELECTRIC	OE
x	FENCE	x
	APPROXIMATE LIMIT OF DISTURBANCE	
	TREE	
	SHRUB	
	WATER VALVE	
	FIRE HYDRANT/CONNECTION	FDC
WM WV	WATER METER OR BOX	
	SEWER MANHOLE	
	SANITARY SEWER CLEANOUT	SSCO
	STORM DRAIN MANHOLE/CLEANOUT	
	CATCH BASIN	
	LIGHT POLE, UTILITY POLE, OR PULLBOX	slpb
	GAS VALVE	GV
	ELECTRIC VAULTS	CVL SLV
	ELECTRIC BOX	EVL EM TSV
	SIGN	
	TRENCH DRAIN	
	3'X3' RIP RAP	
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	STANDARD LANDSCAPE	
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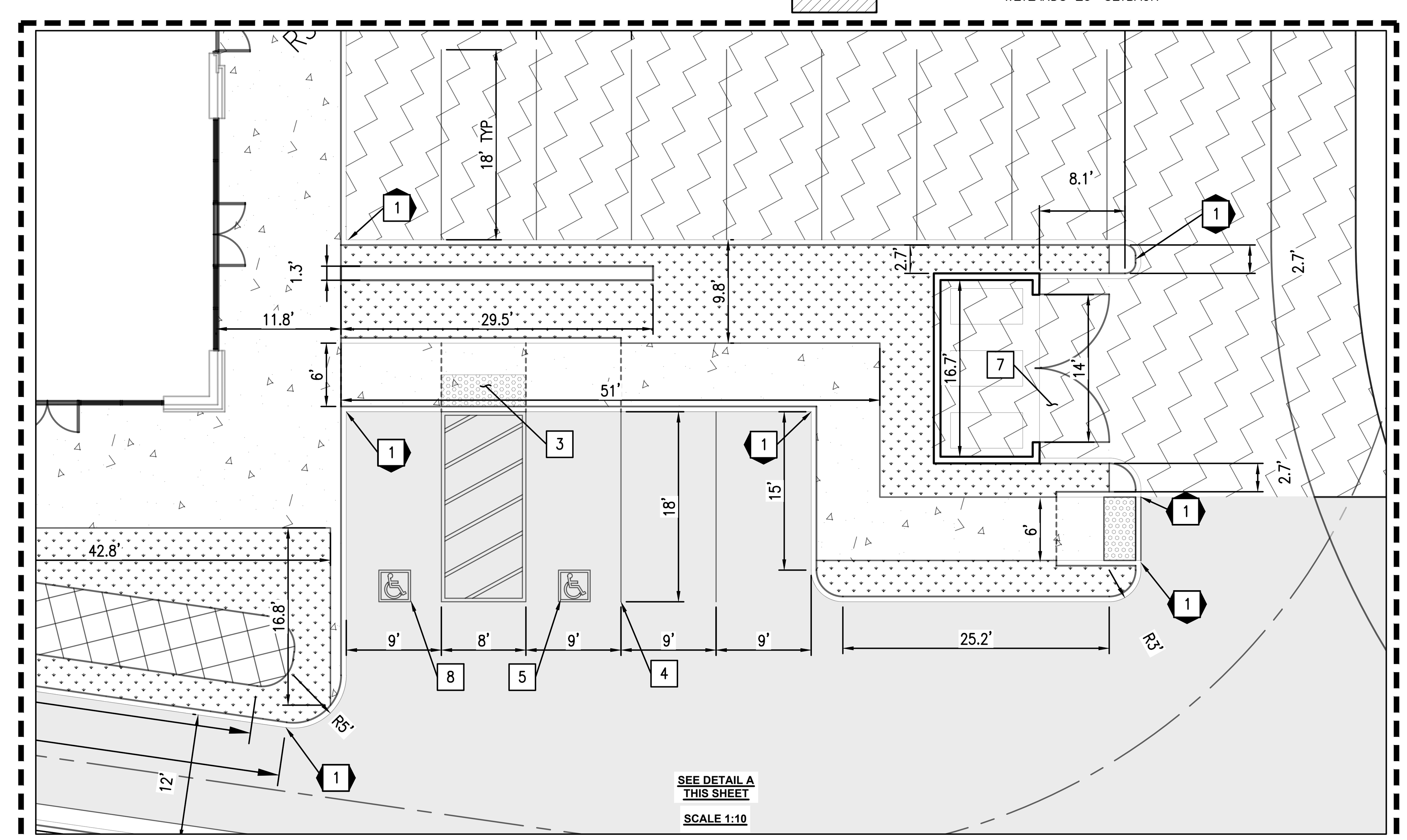

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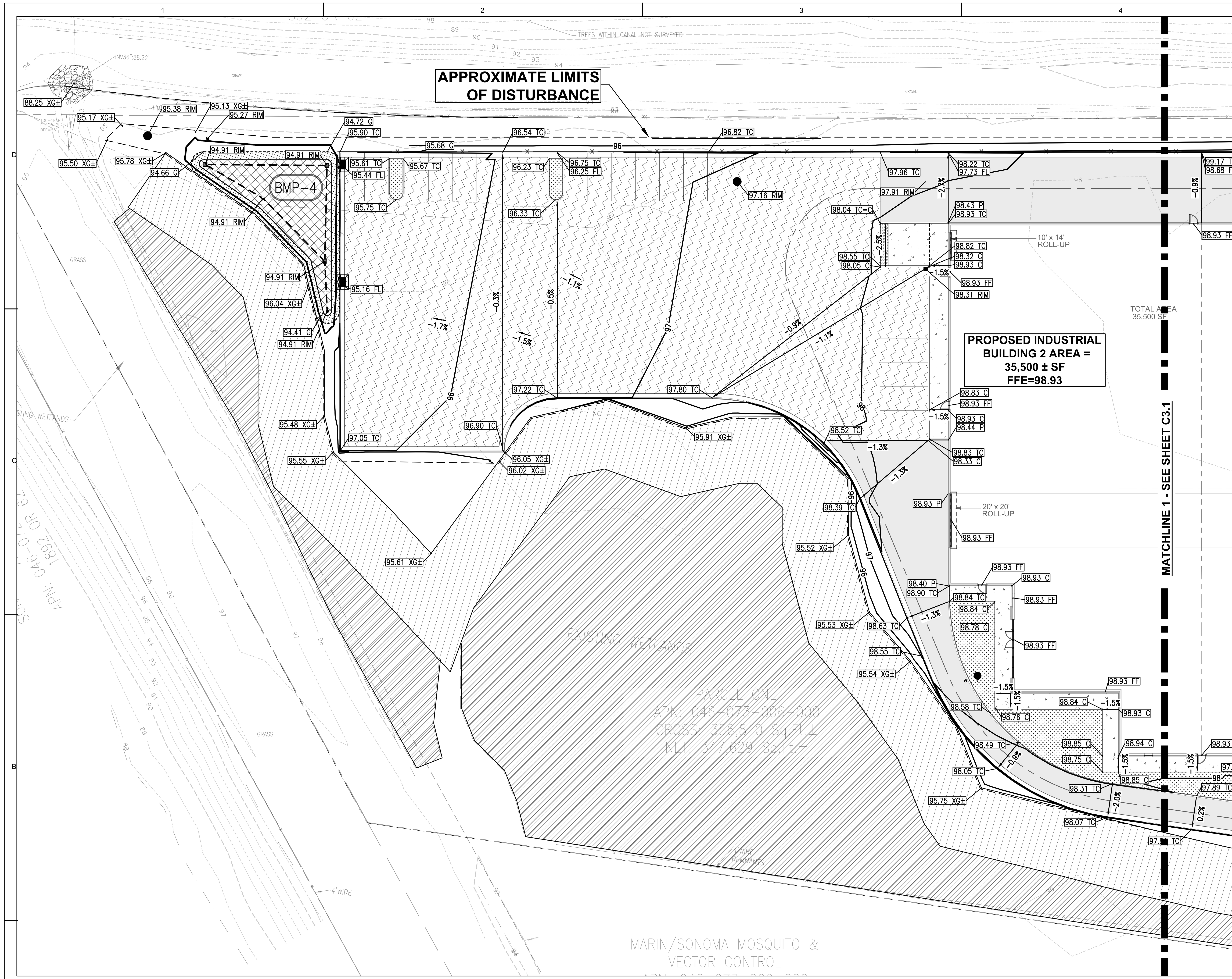
PROJECT PHASE:	PLANNING
DRAWN BY:	KS, AM, & TC
CHECKED BY:	RP

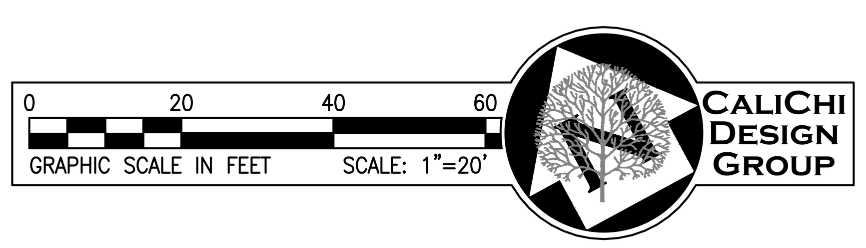
SHEET TITLE

SITE & PAVING PLAN

SHEET NUMBER

C1.1





LEGEND

PROPOSED / EXISTING

- PROPERTY LINE
- EASEMENT LINE
- 1-FOOT CONTOUR
- 5-FOOT CONTOUR
- WATER LINE
- FIRE PROTECTION WATER LINE
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SPOT GRADING LEGEND

- 00.00 X-- INDICATES ELEVATION TO MATCH EXISTING ITEM
- 00.00 TC INDICATES ELEVATION AT TOP OF CURB
- 00.00 G INDICATES ELEVATION AT FINISHED GROUND
- 00.00 C INDICATES ELEVATION AT TOP OF CONCRETE
- 00.00 FL INDICATES FLOWLINE ELEVATION OF PIPE, SWALE, OR GUTTER
- 00.00 RIM INDICATES RIM ELEVATION OF UTILITY
- 00.00 P INDICATES ELEVATION AT TOP OF ASPHALT PAVEMENT
- 00.00 TC=C INDICATES TOP OF CURB EQUAL TO CONCRETE ELEVATION
- 00.00 TC=P INDICATES TOP OF CURB EQUAL TO ASPHALT PAVEMENT ELEVATION
- 00.00 WB INDICATES ELEVATION AT BOTTOM OF WALL
- 00.00 TW INDICATES ELEVATION AT TOP OF WALL
- 00.00 FF INDICATES ELEVATION AT FLOOR FINISH
- 1.5% DRAINAGE ARROW AND PROPOSED SLOPE

PAVEMENT ELEVATION NOTE:

UNLESS OTHERWISE NOTED, PAVEMENT ELEVATION (P) AND CONCRETE ELEVATION (C) IS 6" BELOW THE TOP OF CURB (TC) ELEVATION.

EARTHWORK QUANTITIES:

GROSS EARTHWORK CUT TO FG = 258 CY
GROSS EARTHWORK FILL TO FG = 7,486 CY
NET (CUT/FILL) = 7,228 CY (FILL)
THESE VALUES ASSUME 1.0' OF IMPORTED CONSTRUCTION MATERIALS

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8. 12" BUILDING PAD PER GEOTECH REPORT.

GRADING NOTES:

1. ALL GRADE BREAKS SHALL BE CONSTRUCTED AS A VERTICAL CURVE TO AVOID ANY DEFINED CRESTS OR SUMPS.
2. BUILDING FINISHED FLOOR MUST BE A MINIMUM OF 1-FOOT ABOVE THE 100-YEAR FLOOD ELEVATION.

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PRECISE GRADING PLAN

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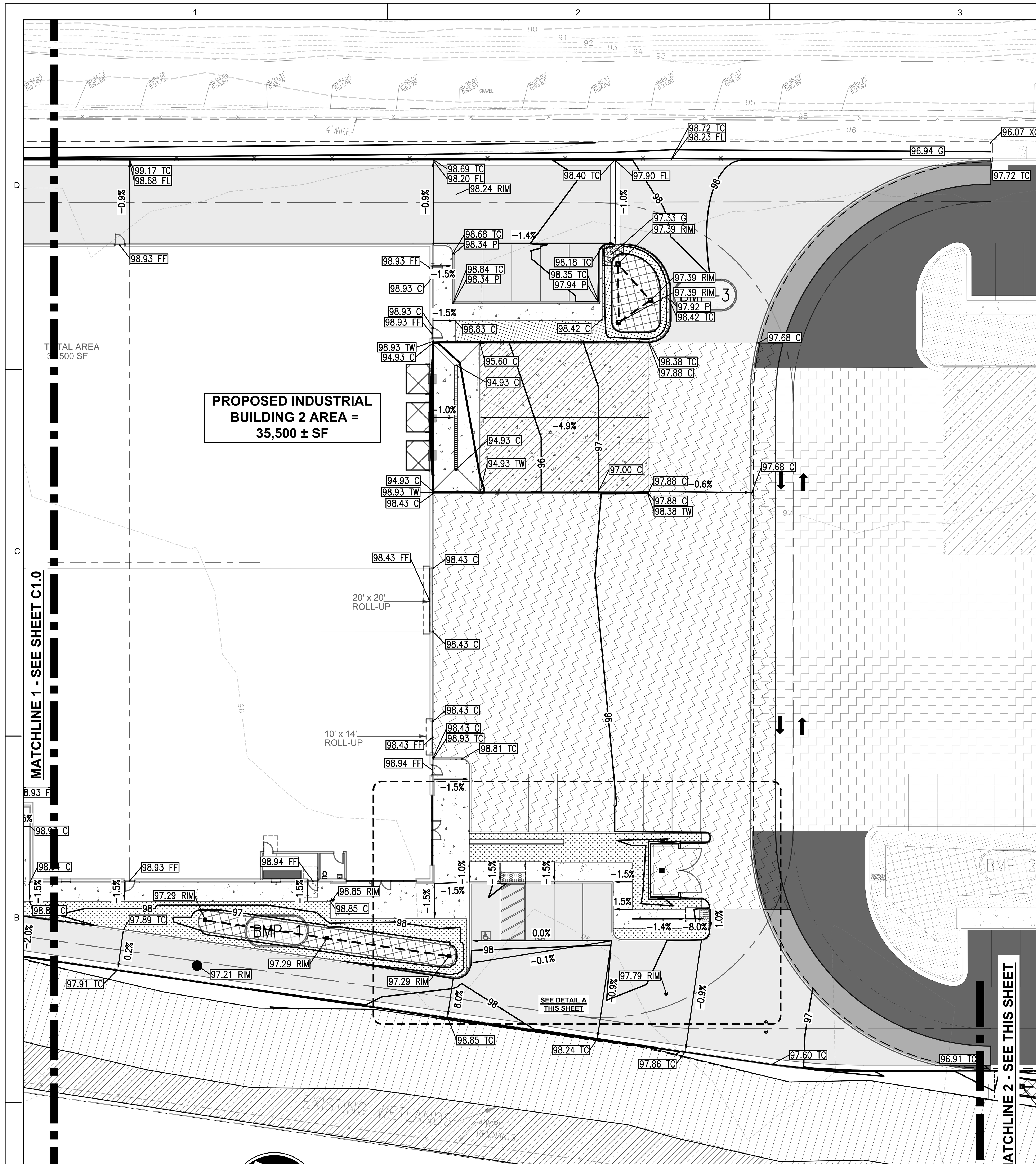
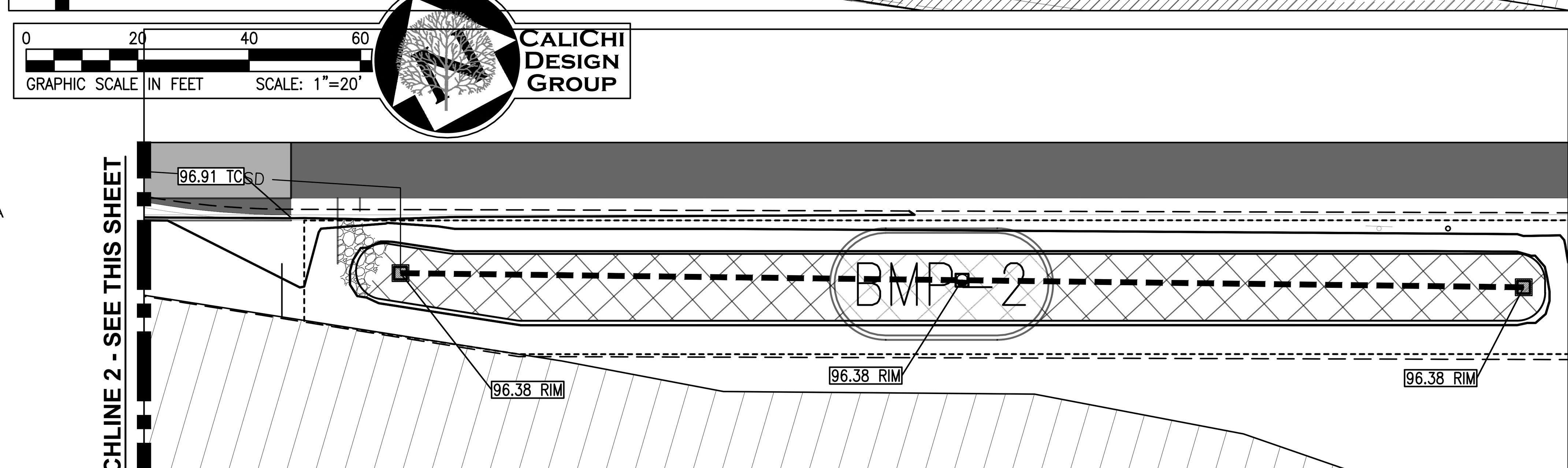
C2.0





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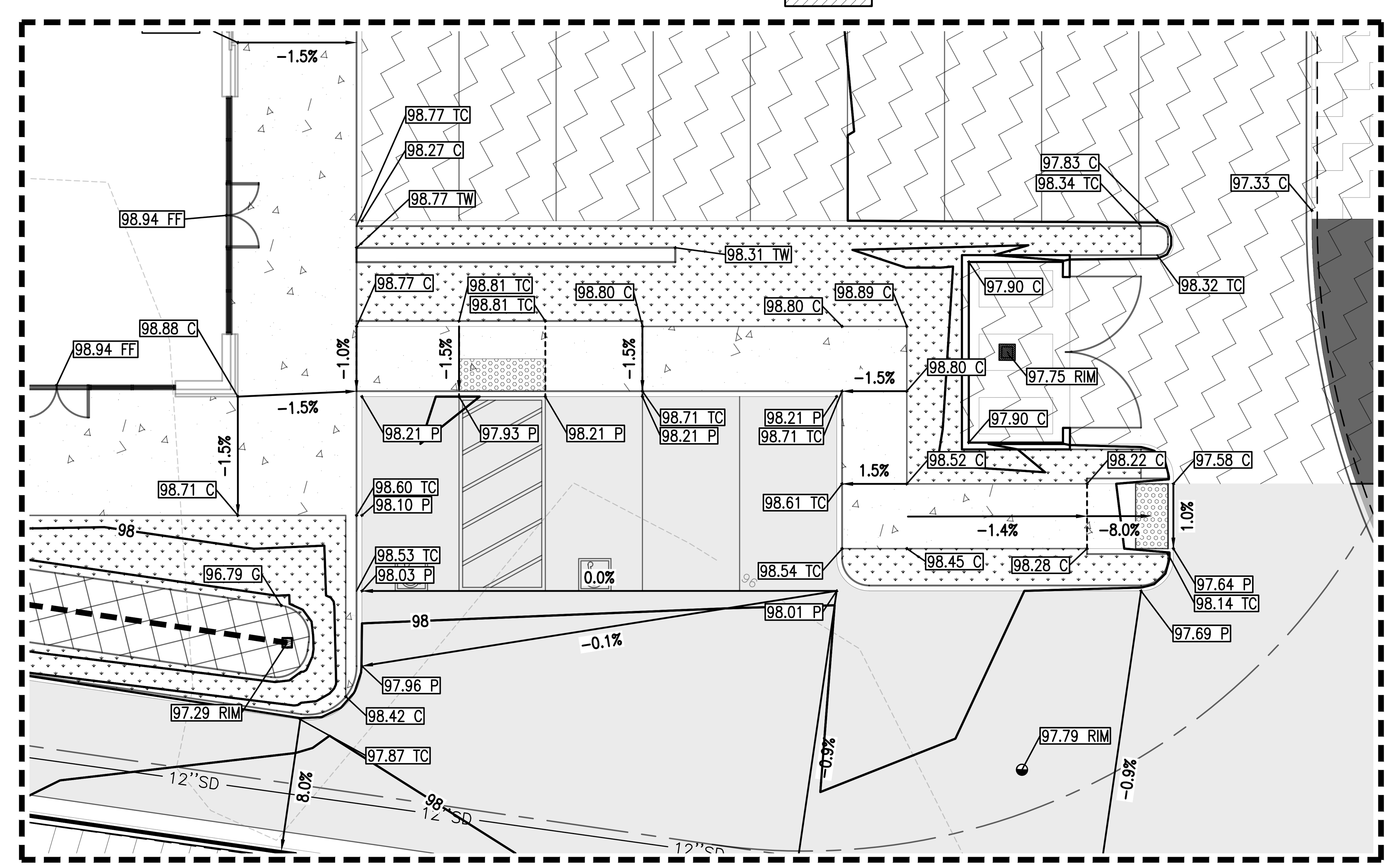
	STANDARD LANDSCAPE	
	WETLANDS 25' SETBACK	



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STATE OF CALIFORNIA
2022/07/13

DISTRIBUTION WAREHOUSE BUILDING TWO

380 BLODGETT STREET
COTATI, CA 94931

#	DESCRIPTION	DATE
1	INITIAL PLANNING SUBMITTAL	1/10/22
2	PLANNING RESUBMITTAL	4/8/22
3	GRADING PERMIT SUBMITTAL	7/8/22
4	PLANNING RESUBMITTAL	7/13/22

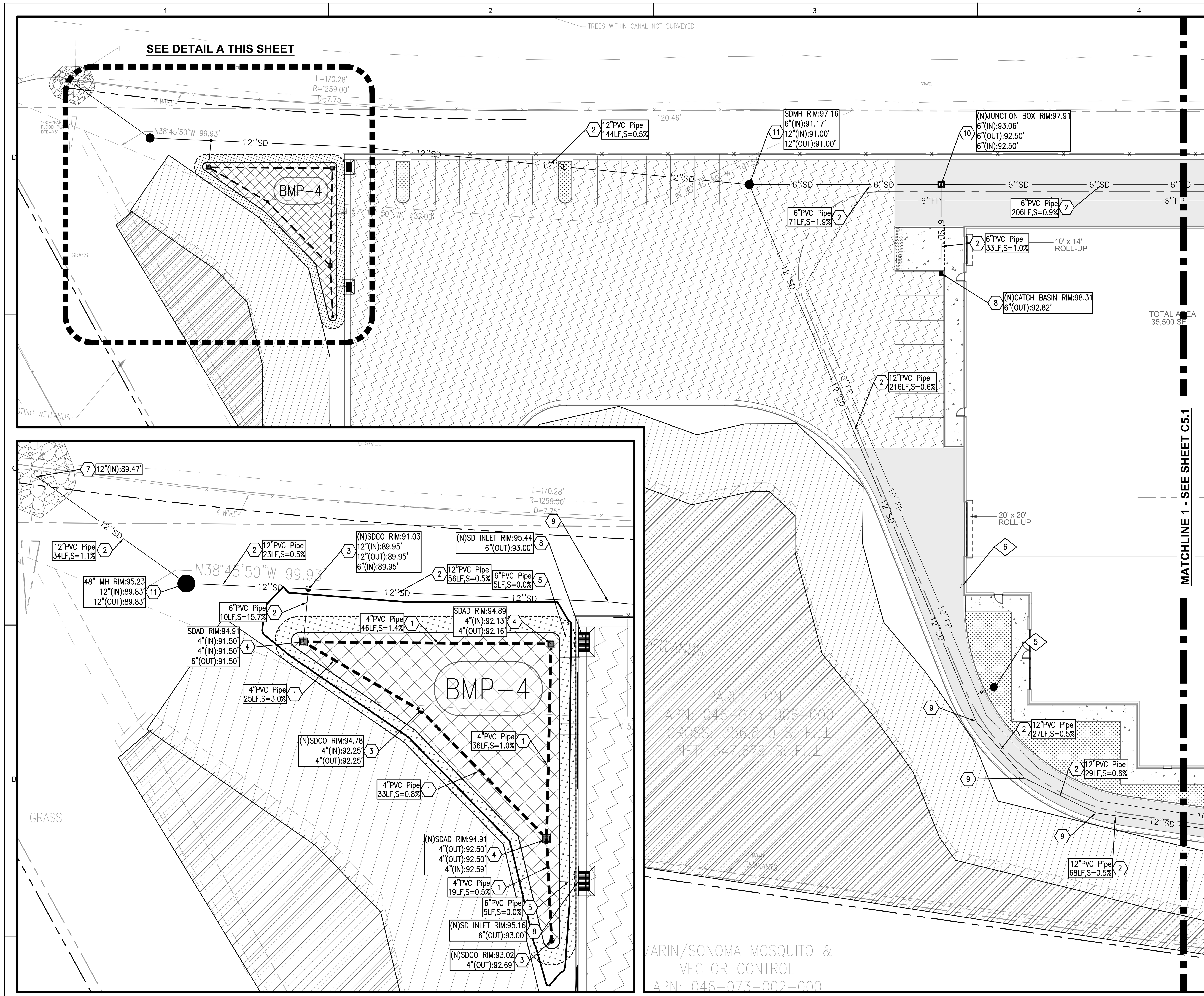
DATE:	07/13/2022
PROJECT NUMBER:	2021.338.001
PROJECT PHASE:	PLANNING
DRAWN BY:	KS, AM, & TC
CHECKED BY:	RP

SHEET TITLE

PRECISE GRADING PLAN

SHEET NUMBER

C2.1



DETAIL A

GRAPHIC SCALE IN FEET SCALE: 1"=10'

GRAPHIC SCALE IN FEET SCALE: 1"=20'

CALICHI DESIGN GROUP

STORM DRAIN KEY NOTES

1. PROPOSED PERFORATED PIPE IN FLOW THROUGH PLANTER. RIM AND INVERT PER PLAN.
2. PROPOSED STORM DRAIN PIPE. SIZE, LENGTH, MATERIAL AND SLOPE PER PLAN.
3. PROPOSED TWO-WAY CLEANOUT. SIZE, RIM, AND INVERT PER PLAN.
4. PROPOSED OVERFLOW STRUCTURE IN BIO-SWALE PLANTER. RIM AND INVERT PER PLAN.
5. OUTFALL PROPOSED STORM DRAIN LINE TO ROADSIDE BIO-RETENTION PLANTER. GROUND AND INVERT PER PLAN.
6. PROPOSED SLOPED TRENCH DRAIN WITH TRASH CAPTURE INLET.
7. CONNECT PROPOSED STORM DRAIN LINE TO EXISTING CHANNEL. INVERT PER PLAN.
8. PROPOSED CATCH BASIN CURB INLET. RIM AND INVERT PER PLAN.
9. BEND PROPOSED STORM DRAIN LINE. ANGLE PER PLAN – TO BE A DEGREE OF 15. RIM AND INVERT PER PLAN.
10. PROPOSED JUNCTION BOX. RIM AND INVERT PER PLAN.
11. PROPOSED 48" PRECAST CONCRETE MANHOLE. RIM AND INVERT PER PLAN.

LEGEND

PROPOSED		EXISTING
	PROPERTY LINE	
	EASEMENT LINE	
9	1-FOOT CONTOUR	9
10	5-FOOT CONTOUR	10
WTR	WATER LINE	WTR
FP	FIRE PROTECTION WATER LINE	WTR
IRR	IRRIGATION WATER LINE	WTR
SS	SANITARY SEWER LINE	SAN
SD	STORM DRAIN LINE	SD
UE	UNDERGROUND ELECTRIC	UE
G	GAS LINE	G
	OVERHEAD ELECTRIC	OE
x	FENCE	x
	APPROXIMATE LIMIT OF DISTURBANCE	
	TREE	
	SHRUB	
	WATER VALVE	
	FIRE HYDRANT/CONNECTION	FDC
WM WV	WATER METER OR BOX	WM
	SEWER MANHOLE	
	SANITARY SEWER CLEANOUT	SSCO
	STORM DRAIN MANHOLE/CLEANOUT	
	CATCH BASIN	
	LIGHT POLE, UTILITY POLE, OR PULLBOX	
	GAS VALVE	GV
	ELECTRIC VAULTS	CVL SLV
	ELECTRIC BOX	EVL EM TBV
	SIGN	
	TRENCH DRAIN	
	3'X3' RIP RAP	
	TRANSFORMER	
	STANDARD/HEAVY DUTY PCC PAVEMENT. SEE DETAIL 3 ON SHEET C7.0.	
	HEAVY DUTY AC PAVEMENT. SEE DETAIL 2 ON SHEET C7.0.	
	STANDARD BIOTREATMENT PLANTER. SEE DETAIL 3 & 4 ON SHEET C7.2	
	STANDARD LANDSCAPE	
	WETLANDS 25' SETBACK	

DRY UTILITY KEY NOTES

1. CONNECT PROPOSED UNDERGROUND ELECTRICAL AND COMMUNCATIONS CONDUITS TO BUILDING. SEE ELECTRICAL PLANS FOR CONTINUATION.
2. CONNECT PROPOSED JOINT TRENCH CONDUITS TO EXISTING LINES FROM BUILDING 1. SEE PG&E PLANS FOR DETAILS.

NOTE: TRANSFORMER AND COMMUNICATIONS PEDASTAL TO BE LOCATED IN BUILDING 1 SITE.

SANITARY SEWER KEY NOTES

1. END SANITARY SEWER LINE 5' FROM BUILDING. SEE ARCH. PLANS FOR CONTINUATION.
2. PROPOSED PVC (SDR-26 MIN.) SANITARY SEWER SERVICE PIPE. SIZE, LENGTH AND SLOPE PER PLAN.
3. PROPOSED SANITARY SEWER CLEANOUT. SIZE, RIM, AND INVERT PER PLAN.
4. CONNECT PROPOSED SANITARY SEWER LINE TO EXISTING MANHOLE FROM BUILDING 1.
5. PROPOSED SANITARY SEWER DRAINAGE INLET FOR TRASH ENCLOSURE. RIM AND INVERT PER PLAN.

WATER KEY NOTES

1. POINT OF CONNECTION FOR PROPOSED 2" DOMESTIC WATER SERVICE. SEE ONSITE PLUMBING PLANS FOR CONTINUATION.
2. POINT OF CONNECTION FOR PROPOSED 6" FIRE WATER SERVICE. SEE ONSITE PLUMBING PLANS FOR CONTINUATION.
3. CONNECT PROPOSED 2" DOMESTIC WATER SERVICE TO EXISTING STUB FROM BUILDING 1.
4. CONNECT PROPOSED 6" FIRE WATER SERVICE TO EXISTING STUB FROM BUILDING 1.
5. PROPOSED PRIVATE FIRE HYDRANT ASSEMBLY.
6. PROPOSED FIRE DEPARTMENT CONNECTION (FDC) AND POST INDICATOR VALVE (PIV)

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DRAWN BY:	KS, AM, & TC
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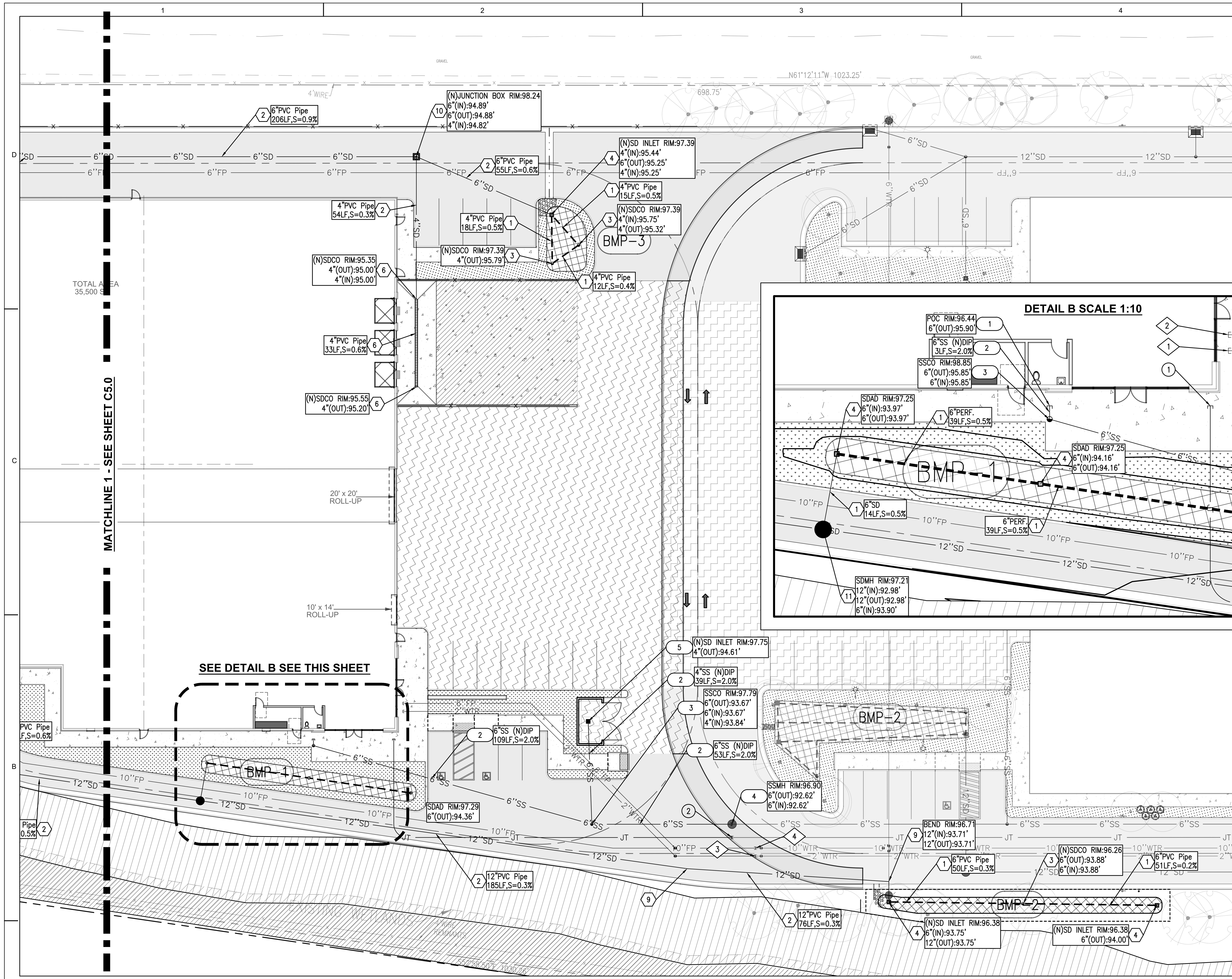
SHEET TITLE

PRIVATE UTILITY PLAN

SHEET NUMBER

C3.0



LEGEND

PROPOSED	LEGEND	EXISTING
	PROPERTY LINE	
	EASEMENT LINE	
9	1-FOOT CONTOUR	9
10	5-FOOT CONTOUR	10
WTR	WATER LINE	WTR
FP	FIRE PROTECTION WATER LINE	WTR
IRR	IRRIGATION WATER LINE	WTR
SS	SANITARY SEWER LINE	SAN
SD	STORM DRAIN LINE	SD
UE	UNDERGROUND ELECTRIC	UE
G	GAS LINE	G
	OVERHEAD ELECTRIC	OE
x	FENCE	x
	APPROXIMATE LIMIT OF DISTURBANCE	
	TREE	
	SHRUB	
	WATER VALVE	WV
	FIRE HYDRANT/CONNECTION	FDC
WM WV	WATER METER OR BOX	WM
	SEWER MANHOLE	
	SANITARY SEWER CLEANOUT	SSCO
	STORM DRAIN MANHOLE/CLEANOUT	
	CATCH BASIN	
	LIGHT POLE, UTILITY POLE, OR PULLBOX	
	GAS VALVE	GV
	ELECTRIC VAULTS	CVL SLV
	ELECTRIC BOX	EVL EM TRV
	SIGN	
	TRENCH DRAIN	
	3'X3' RIP RAP	
	TRANSFORMER	
	STANDARD/HEAVY DUTY PCC PAVEMENT. SEE DETAIL 3 ON SHEET C7.0.	
	HEAVY DUTY AC PAVEMENT. SEE DETAIL 2 ON SHEET C7.0.	
	STANDARD BIOTREATMENT PLANTER. SEE DETAIL 3 & 4 ON SHEET C7.2	
	STANDARD LANDSCAPE	
	WETLANDS 25' SETBACK	

DRY UTILITY KEY NOTES

1. CONNECT PROPOSED UNDERGROUND ELECTRICAL AND COMMUNCATIONS CONDUITS TO BUILDING. SEE ELECTRICAL PLANS FOR CONTINUATION.
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NOTE: TRANSFORMER AND COMMUNICATIONS PEDASTAL TO BE LOCATED IN BUILDING 1 SITE.

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1. END SANITARY SEWER LINE 5' FROM BUILDING. SEE ARCH. PLANS FOR CONTINUATION.
2. PROPOSED PVC (SDR-26 MIN.) SANITARY SEWER SERVICE PIPE. SIZE, LENGTH AND SLOPE PER PLAN.
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5. PROPOSED PRIVATE FIRE HYDRANT ASSEMBLY.
6. PROPOSED FIRE DEPARTMENT CONNECTION (FDC) AND POST INDICATOR VALVE (PIV)

0 20 40 60
GRAPHIC SCALE IN FEET SCALE: 1"=20'

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ROADSIDE BIO-RETENTION PLANER DATA TABLE

1. BMP-1, DEPTH=2.9', RIM ELEVATION =97.25'
DRAIN ROCK TOP INV ELEV.= 96.75'
DRAIN ROCK BOTTOM INV ELEV.= 94.35
2. BMP-2, DEPTH=2.9', RIM ELEVATION =96.38'
DRAIN ROCK TOP INV ELEV.= 95.88'
DRAIN ROCK BOTTOM INV ELEV.= 93.48'
3. BMP-3, DEPTH=2.9', RIM ELEVATION =97.39'
DRAIN ROCK TOP INV ELEV.= 96.89'
DRAIN ROCK BOTTOM INV ELEV.= 94.49'
4. BMP-3, DEPTH=2.9', RIM ELEVATION =94.91'
DRAIN ROCK TOP INV ELEV.= 94.41'
DRAIN ROCK BOTTOM INV ELEV.= 92.01'

STORM DRAIN KEY NOTES

1. PROPOSED PERFORATED PIPE IN FLOW THROUGH PLANTER. RIM AND INVERT PER PLAN.
2. PROPOSED STORM DRAIN PIPE. SIZE, LENGTH, MATERIAL AND SLOPE PER PLAN.
3. PROPOSED TWO-WAY CLEANOUT. SIZE, RIM, AND INVERT PER PLAN.
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PROJECT PHASE:	PLANNING
DRAWN BY:	KS, AM, & TC
CHECKED BY:	RP

SHEET TITLE

PRIVATE UTILITY PLAN

SHEET NUMBER

C3.1

PROPOSED FLOW - RATIONAL METHOD								
	C10	I10	A(ac)	Q10 (cfs)	C100	I100	A(ac)	Q100 (cfs)
PR-1A	0.90	1.50	0.16	0.22	0.90	2.21	0.16	0.32
PR-1B	0.90	1.52	0.22	0.30	0.90	2.27	0.22	0.45
PG-1C	0.58	1.66	0.07	0.06	0.58	2.73	0.07	0.11
PG-2B	0.86	1.37	0.53	0.63	0.86	1.83	0.53	0.83
PG-2C	0.90	1.50	0.07	0.10	0.90	2.23	0.07	0.14
PG-3B	0.83	1.64	0.16	0.21	0.83	2.64	0.16	0.34
PR-4A	0.90	1.96	0.22	0.39	0.90	3.65	0.22	0.72
PG-4B	0.90	2.26	0.64	1.30	0.90	4.56	0.64	2.62
PG-5A	0.90	2.33	0.10	0.21	0.90	5.12	0.10	0.46
Total	NA	NA	2.17	3.41	NA	NA	2.17	5.99
PG-5A TO BE TREATED BY BUILDING 1 BMP-1.								

ROADSIDE BIORETENTION VOLUME				
Retention Basin	Drainage Basins Flowing to Retention	Area (ac)	REQUIRED VOLUME (CF)	ACHIEVED VOLUME (CF)
BMP-1	PR-1A, PR-1B & PG-1C	0.45	821.87	1032.08
BMP-2	PG-2B & PG-2C	0.60	972.67	1204.34
BMP-3	PR-3A & PG-3B	0.16	551.88	601.64
BMP-4	PR-4A & PG-4B	0.86	2662.93	2811.50
PHASE 1 BMP 1	PG-5A	0.10	2628.04	2836.50
TOTAL		2.07	7637.39	8486.06

BMP NOTE

- ALL TREATMENT REQUIREMENTS ARE MET USING FLOW THROUGH PLANTERS.
- ALL VOLUME CAPTURE REQUIREMENTS ARE MET USING UNDERGROUND BIO-SWALES.

INSPECTION AND MAINTENANCE

RESPONSIBLE PARTY FOR BMP MAINTENANCE: PROPERTY OWNER

SOIL CLASSIFICATION

EXISTING SOIL TO BE INFILTRATED INTO (3.5' BELOW EG SURFACE) DETERMINED TO BE TYPE B – SANDY LOAM

- INFILTRATION RATE FOR THIS SOIL TYPE IS DETERMINED TO BE 0.8 IN/HR

STORMWATER CONTROL LEGEND

APPROXIMATE BOUNDARY OF DRAINAGE MANAGEMENT AREA

PROPOSED OVERFLOW DRAIN

PROPOSED STORMWATER CLEANOUT

GRND 1 BMP-4 PROPOSED DRAINAGE MANAGEMENT AREA, AND BMP DESIGNATION

PATH OF WATER

TRASH CAPTURE INLETS TO BE INSTALLED AT TRUCK DOCK TRENCH DRAINS

RL RAINWATER LEADER WILL EXIT THROUGH PIPE WITHIN BUILDING SLAB ONTO PAVEMENT

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CHECKED BY:	RP

SHEET TITLE

STORM WATER CONTROL PLAN

SHEET NUMBER

C4.0

TIME OF CONCENTRATION - PROPOSED CONDITIONS 10-YEAR

	Pervious Area (sf)	Impervious Area (sf)	Total Area (sf)	Impervious %	Weighted C	Area (ac)	Roof Travel Time, tr (min)*	Overland Slope (ft/ft)	Overland Flow, L (ft)	Overland time, to (min)	Concentrated Slope (ft/ft)	Shallow Concentrated Length, Ls (ft)	Concentrated Velocity, Vc (ft/s)	Concentrated Travel Time, ts (min)	Treatment Time, ttr (min)**	Hydraulic Radius, Rh (ft)***	Velocity in Pipe, Vp (ft/s)	Pipe Length, Lp (ft)	Pipe Travel Time, tp (min)	Total Travel Time, tc (min)****	i (in/yr)
PR-1A	0	7,105	7,105	100	0.90	0.16	5.00				0.003	20	1.11	0.30	5.00	1.22	1.14	665	9.72	20.02	1.50
PR-1B	0	9,617	9,617	100	0.90	0.22	5.00				0.015	15	2.49	0.10	5.00	1.22	1.14	665	9.72	19.82	1.52
PG-1C	2,475	1,508	3,983	38	0.58	0.09		0.010	30	2.80	0.003	50	1.11	0.75	5.00	1.22	1.14	665	9.72	18.27	1.66
PR-2A	0	9,541	9,541	100	0.90	0.22	5.00				0.020	212	2.87	1.23	5.00	1.22	1.14	800	11.70	22.93	1.23
PG-2B	860	18,975	19,835	96	0.88	0.46		0.020	100	3.96	0.020	112	2.87	0.65	5.00	1.22	1.14	800	11.70	21.30	1.38
PG-2C	0	3,061	3,061	100	0.90	0.07		0.012	52	3.09	0.060	57	4.98	0.19	5.00	1.22	1.14	800	11.70	19.97	1.50
PG-3A	844	5,952	6,796	88	0.84	0.16		0.012	25	2.05	0.022	215	3.01	1.19	5.00	1.22	1.14	705	10.31	18.54	1.64
PR-4A	0	9,517	9,517	100	0.90	0.22	5.00				0.018	491	2.73	3.00	5.00	1.22	1.14	142	2.08	15.08	1.96
PG-4B	704	29,422	30,126	98	0.89	0.69		0.012	25	2.00	0.018	466	2.73	2.85	5.00	1.22	1.14	142	2.08	11.92	2.26
PG-5A	0	4,355	4,355	100	0.90	0.10		0.012	85	4.14	0.018	0	0.00	0.00	5.00	1.22	1.14	142	2.08	11.22	2.33

TIME OF CONCENTRATION - PROPOSED CONDITIONS 100-YEAR

	Pervious Area (sf)	Impervious Area (sf)	Total Area (sf)	Impervious %	Weighted C	Area (ac)	Roof Travel Time, tr (min)*	Overland Slope (ft/ft)	Overland Flow, L (ft)	Overland Time, to (min)	Concentrated Slope (ft/ft)	Shallow Concentrated Length, Ls (ft)	Concentrated Velocity, Vc (ft/s)	Concentrated Travel Time, ts (min)	Treatment Time, ttr (min)**	Hydraulic Radius, Rh (ft)***	Velocity in Pipe, Vp (ft/s)	Pipe Length, Lp (ft)	Pipe Travel Time, tp (min)	Total Travel Time, tc (min)****	i (in/yr)
PR-1A	0	7,105	7,105	100	0.90	0.16	5.00				0.00	20	1.11	0.30		1.22	1.14	665	9.72	15.02	2.21
PR-1B	0	9,617	9,617	100	0.90	0.22	5.00				0.02	15	2.49	0.10		1.22	1.14	665	9.72	14.82	2.27
PG-1C	2,475	1,508	3,983	38	0.58	0.09		0.01	30	2.80	0.00	50	1.11	0.75		1.22	1.14	665	9.72	13.27	2.72
PR-2A	0	9,541	9,541	100	0.90	0.22	5.00				0.02	212	2.87	1.23		1.22	1.14	800	11.70	17.93	1.37
PG-2B	860	18,975	19,835	96	0.88	0.46		0.02		3.96	0.02	112	2.87	0.65		1.22	1.14	800	11.70	16.30	1.84
PG-2C	0	3,061	3,061	100	0.90	0.07				3.09	0.06	57	4.98	0.19		1.22	1.14	800	11.70	14.97	2.23
PG-3A	844	5,952	6,796	88	0.84	0.16		0.01	25	2.05	0.02	215	3.01	1.19		1.22	1.14	705	10.31	13.54	2.64
PR-4A	0	9,517	9,517	100	0.90	0.22	5.00				0.02	491	2.73	3.00		1.22	1.14	142	2.08	10.08	3.65
PG-4B	704	29,422	30,126	98	0.89	0.69		0.01	25	2.00	0.02	466	2.73	2.85		1.22	1.14	142	2.08	6.92	4.56
PG-5A	0	4,366	4,366	0	0.90	0.10		0.01	85	4.14	0.00	0	0.00	0.00		1.22	1.14	0	0.00	5.00	5.12

*Assumes 5-minutes of travel time for roof runoff

**Assumes 5-minutes of treatment time through flow-thru planters. No treatment for Basins PR8 & PR9. 100-year storm by-passes treatment and flows directly to sub-surface retention chambers

***Hydraulic Radius shown is for an 8" pipe from planters to retention chambers and assumes 80% full pipe flow and uses Figure D.2-2 from the Flood Management Design Manual

****Per Flood Management Design Manual, the minimum Time of Concentration = 5 minutes

TIME OF CONCENTRATION - PRE-CONSTRUCTION 10-YEAR

	Impervious %	C	Area (ac)	Overland Slope (ft/ft)	Overland Flow, L (ft)	Overland Time, to (min)	Concentrated Slope (ft/ft)	Shallow Concentrated Length, Ls (ft)	Concentrated Velocity, Vc (ft/s)	Concentrated Travel Time, ts (min)	Total Travel Time, tc (min)	i (in/yr)
EX1	0	0.33	4.69	0.006	300	16.24	0.005	727	1.14	10.62	26.86	0.85

TIME OF CONCENTRATION - PRE-CONSTRUCTION 100-YEAR

	Impervious %	C	Area (ac)	Overland Slope (%)	Overland Flow, L (ft)	Overland Time, to (min)	Concentrated Slope (ft/ft)	Shallow Concentrated Length, Ls (ft)	Concentrated Velocity, Vc (ft/s)	Concentrated Travel Time, ts (min)	Total Travel Time, tc (min)	i (in/yr)
EX1	0	0.33	4.69	0.006	300	16.24	0.005	727	1.14	10.62	26.86	1.28

NOAA Storm Frequency

Duration (min)	10	100
5	3.41	5.12
10	2.44	3.67
15	1.97	2.96
30	1.38	2.07
60	0.975	1.47

PROPOSED FLOW - RATIONAL METHOD

	C10	I10	A(ac)	Q10 (cfs)	C100	I100	A(ac)	Q100 (cfs)
PR-1A	0.90	1.50	0.16	0.22	0.90	2.21	0.16	0.32
PR-1B	0.90	1.52	0.22	0.30	0.90	2.27	0.22	0.45
PG-1C	0.58	1.66	0.07	0.06	0.58	2.73	0.07	0.11
PG-2B	0.86	1.37	0.53	0.63	0.86	1.83	0.53	0.83
PG-2C	0.90	1.50	0.07	0.10	0.90	2.23	0.07	0.14
PG-3B	0.83	1.64	0.16	0.21	0.83	2.64	0.16	0.34
PR-4A	0.90	1.96	0.22	0.39	0.90	3.65	0.22	0.72
PG-4B	0.90	2.26	0.64	1.30	0.90	4.56	0.64	2.62
PG-5A	0.90	2.33	0.10	0.21	0.90	5.12	0.10	0.46
Total	NA	NA	2.17	3.41	NA	NA	2.17	5.99

PG-5A TO BE TREATED BY BUILDING 1 BMP-1.

PRE-CONSTRUCTION FLOW - RATIONAL METHOD

	C10	I10	A(ac)	Q10 (cfs)	C100	I100	A(ac)	Q100 (cfs)
EX1	0.33	0.85	4.69	1.32	0.33	1.28	4.69	1.97

The entire site ultimately enters the Laguna De Santa Rosa

ROADSIDE BIORETENTION DESIGN - 10-YEAR

Retention Basin	Drainage Basins Flowing to Retention	C	i (in/hr)	Tributary Area (ac)	Longest Total Travel Time, Tc (min)	Q10 (cfs)
BMP-1	PR-1A, PR-1B & PG-1C	0.85	1.50	0.45	20.02	0.58
BMP-2	PG-2B & PG-2C	0.86	1.23	0.60	22.93	0.64
BMP-3	PR-3A & PG-3B	0.83	1.64	0.16	18.55	0.21
BMP-4	PR-4A & PG-4B	0.90	1.96	0.86	15.08	1.51

Total release from these retention ponds not to exceed existing Q10 that enters Laguna De Santa Rosa

ROADSIDE BIORETENTION DESIGN - 100-YEAR

Retention Basin	Drainage Basins Flowing to Retention	C	i (in/hr)	Area (ac)	Longest Total Travel Time, Tc (min)	Q100 (cfs)
BMP-1	PR-1A, PR-1B & PG-1C	0.85	2.21	0.45	15.02	0.85
BMP-2	PG-2B & PG-2C	0.86	1.37	0.60	17.93	0.71
BMP-3	PR-3A & PG-3B	0.83	2.64	0.16	13.55	0.34
BMP-4	PR-4A & PG-4B	0.90	3.65	0.86	10.08	2.81

The Q100 is used in determining the overflow elevations within the retention ponds

ROADSIDE BIORETENTION VOLUME

Retention Basin	Drainage Basins Flowing to Retention	Area (ac)	REQUIRED VOLUME (CF)	ACHIEVED VOLUME (CF)
BMP-1	PR-1A, PR-1B & PG-1C	0.45	821.87	1032.08
BMP-2	PG-2B & PG-2C	0.60	972.67	1204.34
BMP-3	PR-3A & PG-3B	0.16	551.88	601.64
BMP-4	PR-4A & PG-4B	0.86	2662.93	2811.50
PHASE 1 BMP 1	PG-5A	0.10	2628.04	2836.50
TOTAL		2.07	7637.39	8486.06

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RECO VICENTE PRIANTO
C 69670
EXP. 6-30-2024
CIVIL
STATE OF CALIFORNIA

2022/07/13

DISTRIBUTION WAREHOUSE BUILDING TWO

380 BLODGETT STREET
COTATI, CA 94931

#	DESCRIPTION	DATE
1	INITIAL PLANNING SUBMITTAL	1/10/22
2	PLANNING RESUBMITTAL	4/8/22
3	GRADING PERMIT SUBMITTAL	7/8/22
4	PLANNING RESUBMITTAL	7/13/22

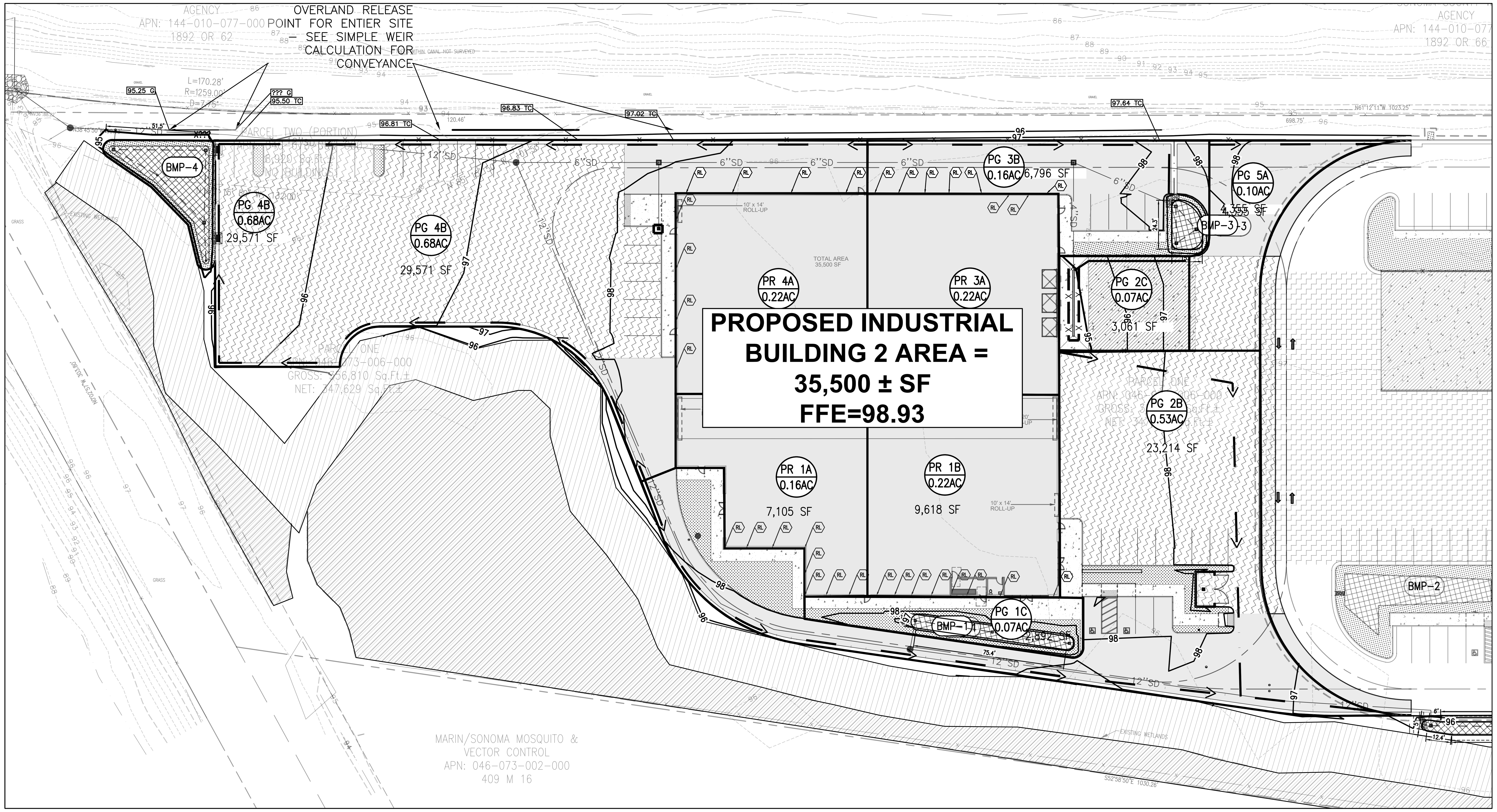
DATE:	07/13/2022
PROJECT NUMBER:	2021.338.001
PROJECT PHASE:	PLANNING
DRAWN BY:	KS, AM, & TC
CHECKED BY:	RP

SHEET TITLE

HYDROLOGY CALCULATIONS

SHEET NUMBER

C4.1



Manning Formula Uniform Trapezoidal Channel Flow at Given Slope and Depth

Inputs

Bottom width	171	ft
Side slope 1 (horiz./vert.)	200	
Side slope 2 (horiz./vert.)	200	
Manning roughness, n ? ○Strickler ○B/B (See notes)	0.03	
Channel slope	1	% rise/run
Flow depth	.16	ft
Bend Angle ? (for riprap sizing)	0	
Rock specific gravity (2.65)	2.65	
Design rock size ○Isbash ○Maynord ○Searcy * 1.25 (See notes)	0.1	m

Results

Flow area	32.4811	ft^2
Wetted perimeter	235.0008	ft
Hydraulic radius	0.1382	ft
Velocity, v	1.3240	ft/sec
Flow, Q (See notes)	43.0046	cfs
Velocity head, h_v	0.0272	ft
Top width, T	235.0000	ft
Froude number, F	0.63	
Average shear stress (tractive force), tau	0.0863	psf
n for design rock size per Strickler	0.0323	
n for design rock size per Blodgett	0.6568	
n for design rock size per Bathurst	0.1414	
Blodgett vs. Bathurst	Bathurst	
Required bottom angular rock size, D50 (Isbash & MC) ?	0.0062	m
Required side slope 1 angular rock size, D50 (Isbash & MC) ?	0.0062	m
Required side slope 2 angular rock size, D50 (Isbash & MC) ?	0.0062	m
Required angular rock size, D50 (Maynord, Ruff, and Abt 1989)	0.0060	m
Required angular rock size, D50 (Searcy 1967)	0.0036	m

CAPACITY OF OVERLAND RELEASE POINT:

100-YEAR FLOW FOR ENTIER SITE:

TOTAL SITE PROPOSED FLOW: 7.1 CFS

ELEVATION DIFFERENTIALS:

FINISHED FLOOR ELEVATION = 98.93
OVERLAND RELEASE POINT = 95.00

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SEAL

DISTRIBUTION WAREHOUSE BUILDING TWO
380 BLODGETT STREET
COTATI, CA 94931

#	DESCRIPTION	DATE
1	INITIAL PLANNING SUBMITTAL	1/10/22
2	PLANNING RESUBMITTAL	4/8/22
3	GRADING PERMIT SUBMITTAL	7/8/22
4	PLANNING RESUBMITTAL	7/13/22

DATE:	07/13/2022
PROJECT NUMBER:	2021.338.001
PROJECT PHASE:	PLANNING
DRAWN BY:	KS, AM, & TC
CHECKED BY:	RP

SHEET TITLE

OVERLAND RELEASE

SHEET NUMBER

C4.3

UPDATED 380 BLODGETT/597 HELMAN LANE WAREHOUSE PROJECT AIR QUALITY & GREENHOUSE GAS ASSESSMENT

Cotati, California

June 21, 2021
Updated February 2, 2022

Prepared for:

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I&R Project#: 21-086

Introduction

The purpose of this report is to address the potential air quality and greenhouse gas (GHG) issues associated with the construction and operation of a warehouse building in the western portion of Cotati, California. Potential air quality impacts would be associated with emissions from equipment and trucks used for construction and then from truck traffic and other mobile equipment operation during the lifetime of the project. Air quality and GHG emissions were assessed in accordance with the California Environmental Quality Act (CEQA) Air Quality Guidelines updated by the Bay Area Air Quality Management District (BAAQMD).[1]

This analysis is an update to the June 21, 2021 analysis that evaluated a project consisting of the construction and operation of a 50,064-square foot (sf) warehouse. That project is currently under construction. This updated analysis includes that project plus the addition of 35,500-sf warehouse at 380 Blodgett Street. The air quality and GHG impacts associated with this warehouse addition are combined with the analysis for the warehouse at 597 Helman Lane in the following way.

Project Description

Previously Proposed Project (597 Helman)

The original project proposed to build a 50,064-sf warehouse that included 40,000 sf of paved parking areas and also internal roadways consistent with typical warehouse land uses. This development is currently under construction on an 3.4-acre portion of an 8.5-acre site accessed at 597 Helman Lane. Additional information regarding the project is as follows:

- Construction began in fall 2021 and is expected to last into mid-2022.
- A traffic study prepared by W-Trans indicated 87 daily traffic trips would be generated.[2]
- The project would generate 40-56 delivery-type truck trips and 4 to 6 large truck trips per day. All trips would be by diesel trucks.
- The project would include a forklift capable of lifting 15,000 pounds that is assumed to be diesel powered.

Current Proposed Project (380 Blodgett)

The currently proposed project at 380 Blodgett Street would expand the site to include an additional 35,500-sf warehouse as well as paved parking and internal roadways on 2.7 acres of the site. Specific information for this portion of the project is as follows:

- Construction is expected to begin in August 2022 and last into 2023

[1] Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2017.
[2] W-Trans. 2021. Letter to Mr. Kevin O'Malley, *Subject: Draft Traffic Study for the 597 Helman Lane Project*. April 22.

- A traffic study prepared by W-Trans indicated 61additional daily traffic trips would be generated.[3]
- The project would generate 28 additional delivery-type truck trips (76 truck trips total) and 4 large truck trips per day (10 trips total). All trips would be by diesel trucks.
- The project would include a forklift capable of lifting 15,000 pounds that is assumed to be diesel powered. This forklift will be newly purchased for this project.

Air Quality Setting

The project is located in the portion of Sonoma County that is part of the San Francisco Bay Area Air Basin. Ambient air quality standards have been established at both the State and federal level. The Bay Area meets all ambient air quality standards with the exception of ground-level ozone, respirable particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$). In Sonoma County, measured levels of air pollutants are below air quality standards, including ozone, PM_{10} and $PM_{2.5}$.

High ozone levels are caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides (NOx). These precursor pollutants react under certain meteorological conditions to form high ozone levels. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ozone levels. The highest ozone levels in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High ozone levels aggravate respiratory and cardiovascular diseases, reduced lung function, and increase coughing and chest discomfort.

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less (PM_{10}) and fine particulate matter where particles have a diameter of 2.5 micrometers or less ($PM_{2.5}$). Elevated concentrations of PM_{10} and $PM_{2.5}$ are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

Toxic air contaminants (TAC) are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants listed above. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and Federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the CARB, diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes the

[3] W-Trans. 2022. Letter to Mr. Calvin Sandell, *Subject: Draft Traffic Study for the 380 Blodgett Street Project*. January 28.

evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the state's Proposition 65 or under the Federal Hazardous Air Pollutants programs. The most recent Office of Environmental Health Hazard Assessment (OEHHA) risk assessment guidelines were published in February of 2015.[4] See *Attachment 1* for a detailed description of the community risk modeling methodology used in this assessment.

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy duty diesel trucks that represent the bulk of DPM emissions from California highways. These regulations include the solid waste collection vehicle (SWCV) rule, in-use public and utility fleets, and the heavy-duty diesel truck and bus regulations. In 2008, CARB approved a new regulation to reduce emissions of DPM and nitrogen oxides from existing on-road heavy-duty diesel fueled vehicles.[5] The regulation requires affected vehicles to meet specific performance requirements between 2014 and 2023, with all affected diesel vehicles required to have 2010 model-year engines or equivalent by 2023. These requirements are phased in over the compliance period and depend on the model year of the vehicle.

The Bay Area Air Quality Management District (BAAQMD) is the regional agency tasked with managing air quality in the region. At the State level, the California Air Resources Board (a part of the California Environmental Protection Agency) oversees regional air district activities and regulates air quality at the State level. The BAAQMD has published CEQA Air Quality Guidelines that are used in this assessment to evaluate air quality impacts of projects.[6]

Greenhouse Gas Emissions Setting

Global temperatures are affected by naturally occurring and anthropogenic-generated (generated by humankind) atmospheric gases, such as water vapor, carbon dioxide, methane, and nitrous oxide. Gases that trap heat in the atmosphere are called GHGs. Solar radiation enters the earth's atmosphere from space, and a portion of the radiation is absorbed at the surface. The earth emits this radiation back toward space as infrared radiation. GHGs, which are mostly transparent to incoming solar radiation, are effective in absorbing infrared radiation and redirecting some of this back to the earth's surface. As a result, this radiation that otherwise would have escaped back into space is now retained, resulting in a warming of the atmosphere. This is known as the greenhouse effect. The greenhouse effect helps maintain a habitable climate. Emissions of GHGs from human activities, such as electricity production, motor vehicle use, and agriculture, are elevating the concentration of GHGs in the atmosphere, and are reported to have led to a trend of unnatural warming of the earth's natural climate, known as global warming or global climate change. The term "global climate change" is often used interchangeably with the term "global warming," but "global climate change" is preferred because it implies that there are other consequences to the

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[4] OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.
[5] Available online: http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm. Accessed: April 30, 2014.
[6] Bay Area Air Quality Management District. 2011. BAAQMD CEQA Air Quality Guidelines. May. These guidelines were updated in May 2017.

global climate in addition to rising temperatures. Other than water vapor, the primary GHGs contributing to global climate change include the following gases:

- Carbon dioxide (CO_2), primarily a byproduct of fuel combustion;
- Nitrous oxide (N_2O), a byproduct of fuel combustion; also associated with agricultural operations such as the fertilization of crops;
- Methane (CH_4), commonly created by off-gassing from agricultural practices (e.g. livestock), wastewater treatment and landfill operations;
- Chlorofluorocarbons (CFCs) were used as refrigerants, propellants and cleaning solvents, but their production has been mostly prohibited by international treaty;
- Hydrofluorocarbons (HFCs) are now widely used as a substitute for chlorofluorocarbons in refrigeration and cooling; and
- Perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6) emissions are commonly created by industries such as aluminum production and semiconductor manufacturing.

These gases vary considerably in terms of Global Warming Potential (GWP), a term developed to compare the propensity of each GHG to trap heat in the atmosphere relative to another GHG. GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and the length of time of gas remains in the atmosphere. The GWP of each GHG is measured relative to CO_2. Accordingly, GHG emissions are typically measured and reported in terms of CO_2 equivalent (CO_2e). For instance, SF_6 is 22,800 times more intense in terms of global climate change contribution than CO_2.

The State of California is addressing the issue of GHG through legislation, policy guidance, and outreach programs. CO_2 is the primary GHG emitted from land use and industrial projects. In 2006 California enacted AB 32 – the Global Warming Solutions Act, which requires that statewide GHG emissions be reduced to 1990 levels by 2020. In 2008, the California Air Resources Board (CARB) adopted the Climate Change Scoping Plan in response to AB 32. This plan describes the strategies that the State will implement to reduce future emissions by 28% to meet the 1990 target goal in 2020. BAAQMD's California Environmental Quality Act (CEQA) Air Quality Guidelines are used to assess GHG emissions from land use projects. BAAQMD's analysis of future land use development in the Bay Area and applicable AB 32 GHG reduction strategies lead to the development of emission-based significance thresholds for the projects in the Bay Area, which include Sonoma County.

Cotati General Plan

The 2013 Cotati General Plan Conservation Element includes an extensive list of policies and action measures that are aimed at improving air quality. Additionally, the General Plan Land Use Element and Land Use Map promotes a compact urban development pattern that emphasizes infill development and ensures that land use patterns do to not expose sensitive receptors to unhealthy pollutant concentrations. Additionally, the Circulation Element includes a range of policies and action items that would effectively reduce vehicle travel, through the use of complete streets and multi-modal transportation systems. Applicable General Plan policies include:

- **Policy CON 2.1**: Improve air quality through continuing to require a compact development pattern that focuses growth in and around existing urbanized areas, locating new housing near places of employment, encouraging alternative modes of transportation, and requiring projects to mitigate significant air quality impacts.

- **Policy CON 2.2**: Minimize exposure of sensitive receptors to concentrations of air pollutant emissions and toxic air contaminants.
- **Policy CON 2.4**: Require new development or significant remodels to install fireplaces, stoves, and/or heaters which meet current BAAQMD standards.
- **Policy CON 2.5**: Continue to require all construction projects and ground disturbing activities to implement BAAQMD dust control and abatement measures.
- **Policy CON 2.7**: Continue to aggressively implement the greenhouse gas (GHG) reduction measures contained in the 2008 Cotati Greenhouse Gas Emissions Reduction Action Plan.
- **Policy CON 3.1**: Continue to require all new public and privately constructed buildings to meet and comply with CALGreen Tier 1 standards.
- **Policy CON 3.2**: Support innovative and green building best management practices, including LEED certification, for all new development, and encourage project applicants to exceed CALGreen Tier 1 standards, if feasible.
- **Policy CON 3.3**: Promote the use of alternative energy sources in new development.
- **Policy CON 3.7**: Encourage tree planting, including widespread use of trees as windbreaks to maximize the effects of cooling westerly winds and planting of deciduous trees to help reduce summer temperatures, either in conjunction with new development or through private sector participation.
- **Policy CON 3.8**: Promote water conservation among water users.
- **Policy CON 3.9**: Require the use of drought-tolerant and regionally native plants in landscaping.
- **Policy CON 3.10**: Ensure that the layout and design of new development and significant remodels encourages the use of transportation modes other than automobiles and trucks.
- **Policy CON 3.16**: Improve and maintain landscaping around commercial areas in order to minimize the "heat island" effect, provide shade, soften the harshness of such commercial areas, and create a more leisurely ambience.

Cotati Greenhouse Gas Reduction Plan

The City of Cotati developed a *Greenhouse Gas Emissions Reduction Action Plan Analysis* as a way to reduce City GHG emissions. These apply to City actions and not those of private developments. In 2018, the City adopted section 5.2 of the Sonoma County Regional Climate Action Plan. This section includes those relatively short-term measures that apply specifically to Cotati.

Green Building Standards

CALGreen is a set of mandatory green building standards for new construction that went into effect throughout California on January 1, 2011. The 2013 California Green Building Standards Code went into effect on January 1, 2014. New, more stringent standards went into effect in January 2017. These building standards apply to all new public and privately-constructed commercial and residential buildings. CALGreen is referred to officially as the California Green Building Standards Code and includes a matrix of mandatory requirements tailored to residential and non-residential building classifications, as well as two sets of voluntary measures (CALGreen Tier 1 and Tier 2) that provide a host of more stringent sustainable building practices and features. Cotati's City Council rescinded Cotati's *Sustainable Building Program* and replaced it with the CALGreen Mandatory plus Tier 1, which includes a detailed list of green building features that address energy efficiency, water efficiency, waste reduction, material conservation and indoor air quality. The requirements apply to new construction of residential and non-residential facilities. Among the key mandatory provisions are requirements that new buildings:

- Reduce indoor potable water use by at least 20% below current standards;
- Recycle or salvage at least 50% of construction waste;
- Utilize low VOC-emitting finish materials and flooring systems;
- Install separate water meters tracking non-residential indoor and outdoor water use;
- Utilize moisture-sensing irrigation systems for larger landscape areas;
- Mandatory inspections by local officials of building energy systems, such as HVAC and mechanical equipment, to verify performance for non-residential buildings exceeding 10,000 square feet; and
- Include parking for fuel-efficient and carpool vehicles.

Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA. These Thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA and were posted on BAAQMD’s website and included in the Air District's updated CEQA Guidelines (updated May 2011). In response to legal challenges, BAAQMD updated the significance thresholds in 2017. These are summarized in Table 1. Note that the California Supreme Court ruled that CEQA generally does not require an analysis of the effects of existing environmental conditions (e.g., air quality) on a project unless the project would exacerbate those conditions somehow through its construction and/or operation. The City’s General Plan, however, includes policies to improve air quality in Cotati. This includes Policy CON 2.23 that new development should protect citizens from unnecessary exposure to air pollutants. Therefore, the significance thresholds (including those that address impacts to the project from the existing environment) contained in the 2017 CEQA Air Quality Guidelines are applied to this project

Table 1. BAAQMD CEQA Air Quality Significance Thresholds

Criteria Air Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	**Average Daily Emissions (lbs./day)**	**Annual Average Emissions (tons/year)**
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82 (Exhaust)	82	15
$PM_{2.5}$	54 (Exhaust)	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Health Risks and Hazards	**Single Sources Within 1,000-foot Zone of Influence**	**Combined Sources (Cumulative from all sources within 1000-foot zone of influence)**	
Excess Cancer Risk	>10 per one million	>100 per one million	
Hazard Index	>1.0	>10.0	
Incremental annual $PM_{2.5}$	>0.3 µg/m^3	>0.8 µg/m^3	
Greenhouse Gas Emissions			
Land Use Projects – direct and indirect emissions	Compliance with a Qualified GHG Reduction Strategy OR 1,100 metric tons annually (660 metric tons in 2030) or 4.6 metric tons per service population (2.8 metric tons per service population in 2030) *		

Note: ROG = reactive organic gases, NOx = nitrogen oxides, PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less. GHG = greenhouse gases.

*BAAQMD does not have a recommended post-2020 GHG threshold. This analysis adjusted the 2020 threshold downward by 40 percent to meet 2030 State goals

AIR QUALITY IMPACTS AND MITIGATION MEASURES

This section describes the air quality and GHG emission and any issues this project may have that would warrant mitigation measures.

Impact AIR-1: Conflict with or obstruct implementation of the applicable air quality plan?
Less-Than-Significant Impact.

The project would be required to comply with City requirements including applicable General Plan policies and implementing actions. Assuming there are no conflicts and the project does not have any other significant air quality or greenhouse gas emission impacts, a less-than-significant impact finding would be determined.

Impact AIR-2: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?
Less-Than-Significant Impact with Mitigation.

The Bay Area is considered a non-attainment area for ground-level ozone and $PM_{2.5}$ under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for PM_{10} under the California Clean Air Act, but not the federal act. The area has attained both State and federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for ozone and PM_{10}, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for ozone precursor pollutants (ROG and NO_X), PM_{10}, and $PM_{2.5}$ and apply to both construction period and operational period impacts.

Construction Period Emissions

The California Emissions Estimator Model (CalEEMod) Version 2020.4.0 was used to estimate emissions from on-site construction activity, construction vehicle trips, and evaporative emissions. The project land use types and size, and anticipated construction schedule were input to CalEEMod. Traffic generated by construction (i.e., off-site construction activities), which included worker trips, vendor deliveries and material hauling trip were computed in CalEEMod. The model output from CalEEMod along with construction inputs are included as *Attachment 2*.

<u>CalEEMod Inputs</u>

Land Uses

The proposed project land uses were entered into CalEEMod as described in Table 2.

Table 2. Summary of Project Land Use Inputs

Project Land Uses	Size	Units	Square Feet	Acreage
Construction - 597 Helman Lane Project				
Unrefrigerated Warehouse-No Rail	50.06	1,000 sf	50,600	3.40
Parking Lot	45.00	Space	40,000	
Construction - 380 Blodgett Lane Project				
Unrefrigerated Warehouse-No Rail	35.50	1,000 sf	35,500	2.70
Parking Lot	32.00	Space	12,800	
Other Asphalt Surfaces	31.60	1,000 sf	31,600	
Other Non-Asphalt Surfaces	18.60	1,000 sf	18,600	

Construction Inputs – 597 Helman

CalEEMod computes annual emissions for construction that are based on the project type, size, and acreage. The model provides emission estimates for both on-site and off-site construction activities. On-site activities are primarily made up of construction equipment emissions, while off-site activity includes worker, hauling, and vendor traffic.

The CalEEMod model develops default construction values for typical construction site scenarios that this project would meet.[7] For this project, the construction schedule and soil hauling volumes were based on data provided by the project applicant. Since the site is undeveloped, there would not be a demolition phase. Equipment usage, worker traffic and vendor traffic were based on the CalEEMod default assumptions. The construction schedule assumed that the earliest possible start date would be October 2021 with the project completed before July 2022. During that period, there would be at least 228 construction workdays. The earliest full year of operation was assumed to be 2023.

Construction would produce traffic in the form of worker trips and truck traffic. The traffic-related emissions are based on worker and vendor trip estimates produced by CalEEMod and haul trips that were computed based on the soil material imported and/or exported to the site, and the estimate of cement and asphalt truck trips. CalEEMod provides daily estimates of worker and vendor trips for each applicable phase. The total trips for those were computed by multiplying the daily rate by the number of days in that phase. Haul trips for demolition and grading were estimated from the provided demolition and grading volumes by assuming each truck could carry 10 tons per load. The number of asphalt total round haul trips was provided for the project and converted to total one-way trips, assuming two trips per delivery.

The latest version of the CalEEMod model is based on the older version of the CARB EMFAC 2017 motor vehicle emission factor model. This model has been superseded by the EMFAC2021 model; however, CalEEMod has not been updated to include EMFAC2021. Therefore, construction traffic information was combined with EMFAC2021 motor vehicle emissions factors to estimate construction site trip emissions. EMFAC2021 provides aggregate emission rates in grams per mile for each vehicle type. The vehicle mix for this study was based on CalEEMod default assumptions, where worker trips are assumed to be comprised of light-duty autos (EMFAC

[7] SCAQMD. 2005. S*ample Construction Scenarios for Projects Less than Five Acres in Size* February. Note that this is the supporting report used to develop CalEEMod default construction inputs (see Appendix E – Technical Source Documentation of the CalEEMod User's Guide).

category LDA) and light duty trucks (EMFAC category LDT1and LDT2). Vendor trips are comprised of delivery and large trucks (EMFAC category MHDT and HHDT) and haul trucks, including cement trucks, are comprised of large trucks (EMFAC category HHDT). Travel distances are based on CalEEMod default lengths, which are 10.8 miles for worker travel, 7.3 miles for vendor trips and 20 miles for hauling (demolition material export and soil import/export). Since CalEEMod does not address cement or asphalt trucks, these were treated as vendor travel distances (7.3 miles). Each trip was assumed to include an idle time of 5 minutes. Emissions associated with vehicle starts were also included. On road emissions in Sonoma County for the years 2021-2022 were used in these calculations. Table 3 provides the traffic inputs that were combined with the EMFAC2021 emission database to compute vehicle emissions.

Table 3. Construction Traffic Data Used for EMFAC2021 Model Runs – 597 Helman

CalEEMod Run/Land Uses and Construction Phase	Trips by Trip Type			Notes
	Worker Trips[1]	Vendor Trips[1]	Haul Trips[2]	
Vehicle mix[1]	67% LDA 6.4% LDT1 26.6% LDT2	7.1% MHDT 92.9% HHDT	100% HDDT	
Trip Length (miles)	10.8	7.3	20.0 (Demo/Soil) 7.3 (Cement/Asphalt)	CalEEMod default distance with 5-min truck idle time.
Site Preparation	162	-	-	CalEEMod default worker trips.
Grading	495	-	375	3,000-cy soil export. CalEEMod default worker trips.
Trenching	300	-	-	CalEEMod default worker trips.
Building Construction	3,420	1,350	370	CalEEMod default worker and vendor trips with cement truck delivery trips.
Architectural Coating	144	-	-	CalEEMod default worker trips.
Paving	360	-	186	928 cy (93 deliveries) asphalt truck round trips CalEEMod default worker trips.

Notes: [1] Based on 2021-2022 EMFAC20 light-duty vehicle fleet mix for Sonoma County.
[2] Includes grading trips estimated by CalEEMod based on estimated amount of material to be removed. Cement and asphalt trips estimated based on plans provided by the applicant.

Construction Inputs – 380 Blodgett

Construction emissions were modeled in the same manner as was done for the 597 Helman Lane portion of the project. A construction worksheet included the construction schedule and soil hauling volumes were based on data provided by the project applicant. Since the site is undeveloped, there would not be a demolition phase. Equipment usage, worker traffic and vendor traffic were based on the CalEEMod default assumptions. The construction schedule assumed that the earliest possible start date would be August 2022 with the project completed around early 2024. During that period, there would be at least 250 construction workdays. The earliest full year of operation was assumed to be 2024. In addition to CalEEMod default worker and vendor trips, there would be hauling truck trips for 3,000 cy of soil material, 185 cement deliveries and 600 cy of asphalt import.

Summary of Computed Construction Period Emissions

Average daily emissions were annualized for each year of construction by dividing the annual construction emissions and dividing those emissions by the number of active workdays during that year. Table 4 shows the annualized average daily construction emissions of ROG, NO_X, PM_{10} exhaust, and $PM_{2.5}$ exhaust during construction of the project. As indicated in Table 4, predicted annualized project construction emissions would not exceed the BAAQMD significance thresholds during any year of construction.

Table 5. Construction Period Emissions

Year	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Construction Emissions Per Year (Tons)				
2021 – 597 Helman	0.06	0.66	0.03	0.03
2022 - 597 Helman	0.37	0.93	0.05	0.04
2022 - 380 Blodgett	0.12	0.96	0.04	0.04
2023 - 380 Blodgett	0.32	0.92	0.04	0.04
Average Daily Construction Emissions Per Year (pounds/day)				
2021 – 597 Helman (88 construction days)	1.99	20.92	1.01	0.91
2022 - 597 Helman (179 construction days)	5.79	14.45	0.74	0.67
2022 - 380 Blodgett (100 construction days)	2.34	19.21	0.84	0.80
2023 - 380 Blodgett (150 construction days)	4.21	12.32	0.53	0.50
BAAQMD Thresholds (pounds per day)	*54* lbs./day	*54* lbs./day	*82* lbs./day	*54* lbs./day
Exceed Threshold?	No	No	No	No

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM_{10} and $PM_{2.5}$. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less-than-significant if best management practices are implemented to reduce these emissions. *Mitigation Measure AQ-1 would implement BAAQMD-recommended best management practices*.

***Mitigation Measure AQ-1:* Include measures to control dust and exhaust during construction.**

During any construction period ground disturbance, the applicant shall ensure that the project contractor implement measures to control dust and exhaust. Implementation of the measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a less-than-significant level. Additional measures are identified to reduce construction equipment exhaust emissions. The contractor shall implement the following best management practices that are required of all projects:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Effectiveness of Mitigation Measure AQ-1

The measures above are consistent with BAAQMD-recommended basic control measures for reducing fugitive particulate matter that are contained in the BAAQMD CEQA Air Quality Guidelines.

Operational Period Emissions

Operational air emissions from the project would be generated primarily from autos driven by future employees. Evaporative emissions from architectural coatings and maintenance products (classified as consumer products) are typical emissions from these types of uses. CalEEMod was used to estimate emissions from operation of the proposed project.

<u>CalEEMod Inputs</u>

Land Uses

The project operational land uses were entered into CalEEMod as described in Table 5 for the operational period modeling. This includes operation of both project phases. The land use emissions that include worker and service trips were modeled as one run and a separate run was used to model new forklifts and truck traffic.

Table 5. Summary of Project Land Use Inputs

Project Land Uses	Size	Units	Square Feet
Unrefrigerated Warehouse-No Rail	85.56	1,000 sf	85,560
Parking Lot	81.00	Space	32,400
User Define Industrial[1]	1.00	User Define Unit	0

[1] Separate model run used to model off-road equipment (forklift) and truck traffic.

Model Year

Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CalEEMod. The earliest year of operation would be 2023 with the earliest full year of operation in 2024. Model year 2023 was used to model full operation.

Traffic Information

CalEEMod allows the user to enter specific vehicle trip generation rates. Therefore, the project-specific daily trip generation rate provided by the traffic consultant was entered into the model.[8],[9] As described, the project would produce 87 plus 61 daily trips. There would be approximately 76 delivery-type trips, assumed to be Medium heavy-duty trucks (MHDT) that use diesel. There would be approximately 12 large truck trips assumed to be made by Heavy heavy-duty truck trips powered by diesel. The rest of the vehicles were assumed to be light-duty automobiles (LDT) or light-duty trucks (LDT). The default trip types and lengths specified by CalEEMod were used.

Energy

CalEEMod defaults for energy use were used, which include the 2019 Title 24 Building Standards. GHG emissions modeling includes those indirect emissions from electricity consumption. The CalEEMod default emission factor of 119.98 pounds of CO_2 per megawatt of electricity produced by Sonoma Clean Power was used.

Truck Trips and Forklifts

A separate model run was used to model the operational forklifts and truck traffic. The construction portion of the model was used to model these sources, since the Tier level of the forklift and the truck type could be specified. Delivery trucks were specified as MHDT and Haul trucks were specified as HHDT. A trip distance of 10 miles was used for each truck trip type. Since the project would use a new forklift, a Tier 4 final forklift was selected in this model run,

[8] W-Trans. 2021. Letter to Mr. Kevin O'Malley, *Subject: Draft Traffic Study for the 597 Helman Lane Project*. April 22.
[9] W-Trans. 2022. Letter to Mr. Calvin Sandell, *Subject: Draft Traffic Study for the 380 Blodgett Street Project*. January 28.

using the Mitigation tab.

Other Inputs

Default model assumptions for emissions associated with solid waste generation and water/wastewater use were applied to the project.

Summary of Computed Operational Emissions

Annual emissions were predicted using CalEEMod and daily emissions were estimating assuming 365 days of operation. Table 6 shows average daily construction emissions of ROG, NO_X, total PM_{10}, and total $PM_{2.5}$ during operation of the project. The operational period emissions would not exceed the BAAQMD significance thresholds.

Table 6. Operational Period Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
2024 Annual Project Operational Emissions (*tons/year*)	1.74	0.51	0.79	0.21
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Exceed Threshold?	*No*	*No*	*No*	*No*
2024 Daily Project Operational Emissions (*pounds/day*)[1]	9.52	2.81	4.35	1.18
BAAQMD Thresholds (pounds/day)	*54* lbs.	*54* lbs.	*82* lbs.	*54* lbs.
Exceed Threshold?	*No*	*No*	*No*	*No*
Notes: [1]Assumes 365-day operation.				

Impact AIR-3: Expose sensitive receptors to substantial pollutant concentrations? *Less-Than-Significant Impact.*

Project impacts related to increased community risk can occur either by introducing a new source of TACs with the potential to adversely affect existing sensitive receptors in the project vicinity or by significantly exacerbating existing cumulative TAC impacts. This project would introduce new sources of TACs during construction (i.e., on-site construction and truck hauling emissions) and operation (i.e., diesel-powered forklift).

Project construction activity would generate dust and equipment exhaust that would affect nearby sensitive receptors. The project would also include truck traffic and a forklift powered by a diesel engine, which would produce TAC and air pollutant emissions.

Project impacts to existing sensitive receptors were addressed for temporary construction activities and long-term operational conditions. There are also several sources of existing TACs and localized air pollutants in the vicinity of the project. The impact of the existing sources of TAC was also assessed in terms of the cumulative risk which includes the project contribution.

Community Risk Methodology for Construction and Operation

Community risk impacts were addressed by predicting increased cancer risk, the increase in annual $PM_{2.5}$ concentrations and computing the Hazard Index (HI) for non-cancer health risks. The risk impacts from the project are the combination of risk from construction and operation sources. These sources include on-site construction activity, construction truck hauling, and increased traffic from the project. To evaluate the increased cancer risks from the project, a 30-year exposure period was used, per BAAQMD guidance,[10] with the sensitive receptors being exposed to both project construction and operation emissions during this timeframe.

The project increased cancer risk is computed by summing the project construction cancer risk and operation cancer risk contribution. Unlike, the increased maximum cancer risk, the annual $PM_{2.5}$ concentration, and HI values are not additive but based on an annual maximum risk for the entirety of the project. The project maximally exposed individual (MEI) is identified as the sensitive receptor that is most impacted by the project's construction and operation.

The methodology for computing community risks impacts is contained in *Attachment 1*. This involved the calculation of TAC and $PM_{2.5}$ emissions, dispersion modeling of these emissions, and computations of cancer risk and non-cancer health effects.

Modeled Sensitive Receptors

Receptors for this assessment included locations where sensitive populations would be present for extended periods of time (i.e., chronic exposures). This includes the nearby existing residences to the north and south of the project site, as shown in Figure 1. Residential receptors are assumed to include all receptor groups (i.e., third trimester, infants, children, and adults) with almost continuous exposure to project emissions.

Community Risks from Project Construction

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known TAC. These exhaust air pollutant emissions would not be considered to contribute substantially to existing or projected air quality violations. Construction exhaust emissions may still pose health risks for sensitive receptors such as surrounding residents. The primary community risk impact issue associated with construction emissions are cancer risk and exposure to $PM_{2.5}$. Diesel exhaust poses both a potential health and nuisance impact to nearby receptors. A health risk assessment of the project construction activities was conducted that evaluated potential health effects to nearby sensitive receptors from construction emissions of DPM and $PM_{2.5}$.[11] This assessment included dispersion modeling to predict the offsite and onsite concentrations resulting from project construction, so that increased cancer risks and non-cancer health effects could be evaluated.

<u>Construction Emissions</u>

The CalEEMod model provided total annual PM_{10} exhaust emissions (assumed to be DPM) for the off-road construction equipment and for exhaust emissions from on-road vehicles, with total emissions from all construction stages of 0.08 tons (157 pounds) for the 597 Helman portion and

[10] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.
[11] DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.

0.08 tons (163 pounds) for the 380 Blodgett portion. The on-road emissions are a result of haul truck travel during demolition and grading activities, worker travel, and vendor deliveries during construction. A trip length of one mile was used to represent vehicle travel while at or near the construction site. Uncontrolled fugitive $PM_{2.5}$ dust emissions were calculated by CalEEMod and EMFAC2021 as 0.10 tons (201 pounds) for the 597 Helman portion and 0.03 tons (50 pounds) for the 380 Blodgett portion.

Dispersion Modeling

The U.S. EPA ISCST3 dispersion model was used to predict DPM and $PM_{2.5}$ concentrations at sensitive receptors (residences) in the vicinity of the project construction area. The ISCST3 dispersion model is a BAAQMD-recommended model for use in modeling analysis of these types of emission activities for CEQA projects.[12,13] Emission sources for the construction site were grouped into two categories: exhaust emissions of DPM and fugitive $PM_{2.5}$ dust emissions.

To represent the construction equipment exhaust emissions, an area source emission release height of 20 feet (6 meters) was used for the area sources.[14] The release height incorporates both the physical release height from the construction equipment (i.e., the height of the exhaust pipe) and plume rise after it leaves the exhaust pipe. Plume rise is due to both the high temperature of the exhaust and the high velocity of the exhaust gas. It should be noted that when modeling an area source, plume rise is not calculated by the ISCST3 dispersion model as it would do for a point source (exhaust stack). Therefore, the release height from an area source used to represent emissions from sources with plume rise, such as construction equipment, should be based on the height the exhaust plume is expected to achieve, not just the height of the top of the exhaust pipe.

For modeling fugitive $PM_{2.5}$ emissions, a near-ground level release height of 7 feet (2 meters) was used for the area source. Fugitive dust emissions at construction sites come from a variety of sources, including truck and equipment travel, grading activities, truck loading (with loaders) and unloading (rear or bottom dumping), loaders and excavators moving and transferring soil and other materials, etc. All of these activities result in fugitive dust emissions at various heights at the point(s) of generation. Once generated, the dust plume will tend to rise as it moves downwind across the site and exit the site at a higher elevation than when it was generated. For all these reasons, a 7-foot release height was used as the average release height across the construction site. Emissions from the construction equipment and on-road vehicle travel were distributed throughout the modeled area sources.

Health risk impacts from construction operation were based on the construction emissions computed by CalEEMod and modeled with the ISCST3 model using 5 years of meteorological data (1990-1994) from the BAAQMD Valley Ford meteorological station The Valley Ford station is about 10 miles west-southwest from the project site. DPM and $PM_{2.5}$ emissions from

[12] Note that AERMOD is the preferred dispersion model for this type of assessment; however, adequate meteorological data is not available to use this model. Therefore, the ISCST3 model was used.
[13] Bay Area Air Quality Management District (BAAQMD), 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0.* May.
[14] California Air Resource Board, 2007. *Proposed Regulation for In-Use Off-Road Diesel Vehicles, Appendix D: Health Risk Methodology*. April. Web: https://ww3.arb.ca.gov/regact/2007/ordiesl07/ordiesl07.htm

construction activities during 2021 and 2022 and then 2022 and 2023 were modeled as area sources. Concentrations were calculated at nearby residential receptors at a receptor height of 1.5 meters. There are no other sensitive receptor types within 1,000 feet of the project site. Construction was assumed to occur for 9 hours per day (7:00am – 4:00pm).

Summary of Construction Community Risk Impacts

The increased cancer risk calculations were based on applying the BAAQMD recommended age sensitivity factors to the TAC concentrations, as described in *Attachment 1*. Age-sensitivity factors reflect the greater sensitivity of infants and small children to cancer causing TACs. Infant and adult exposures were assumed to occur at all residences during the entire construction period.

The maximum modeled annual $PM_{2.5}$ concentration was calculated based on combined exhaust and fugitive concentrations. The maximum computed HI value was based on the ratio of the maximum DPM concentration modeled and the chronic inhalation reference exposure level of 5 $\mu g/m^3$.

The maximum modeled annual DPM and $PM_{2.5}$ concentrations, which includes both the DPM and fugitive $PM_{2.5}$ concentrations, were identified at nearby sensitive receptors to find the MEI. The maximum construction impacts occurred at a residence southwest of the project site (see Figure 1). Table 7 lists the community risks from construction at the location of the residential MEI. *Attachment 3* to this report includes the emission calculations used for the construction modeling and the cancer risk calculations.

Community Risks from Project Operation – Traffic and Off-Road Equipment

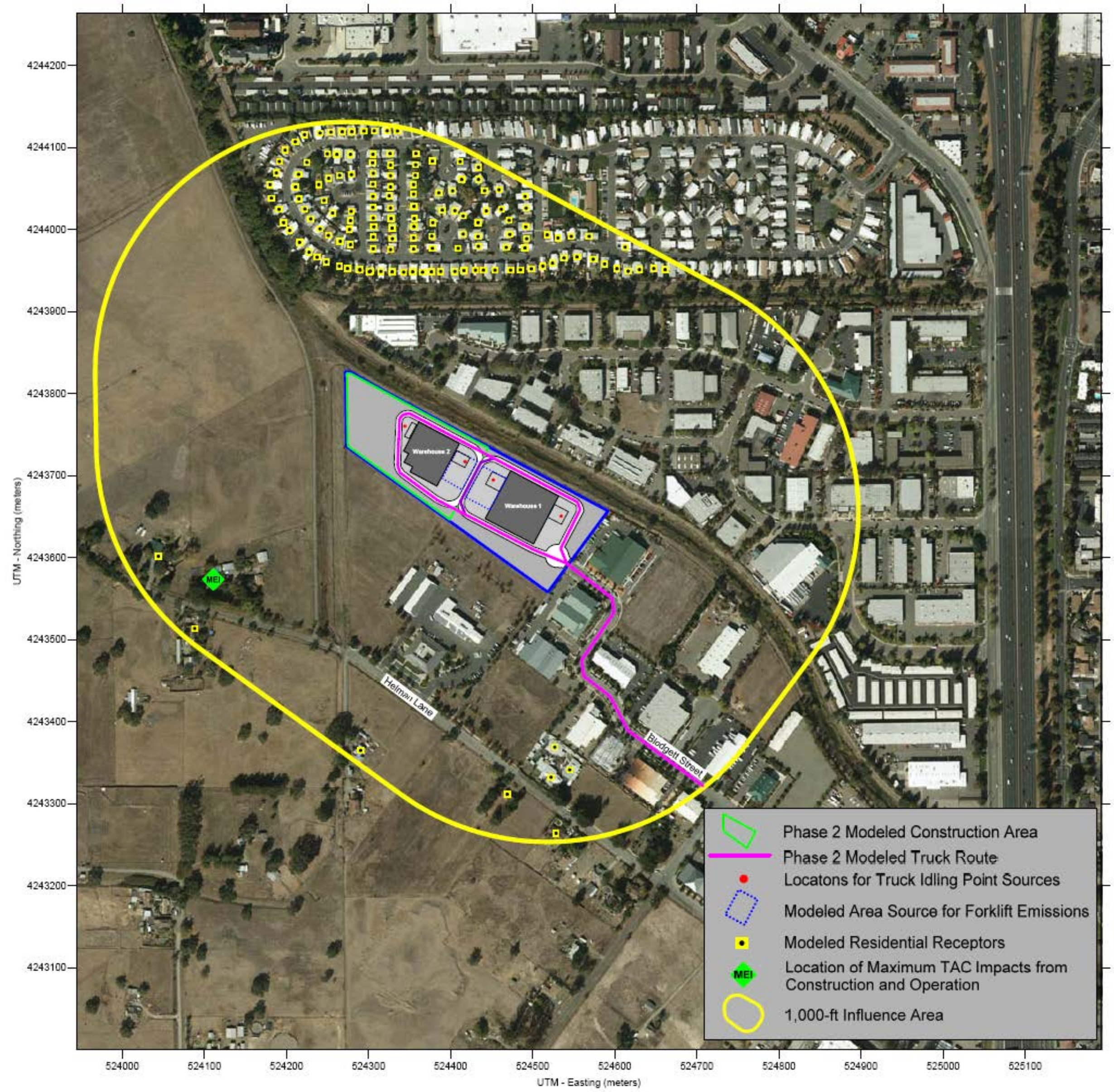
Operation of the project would have long-term emissions from mobile sources (i.e., truck traffic and forklift). While these emissions would not be as intensive at or near the site as construction activity, they would contribute to long-term effects to sensitive receptors. Operational impacts were calculated for project operation beginning in 2023. Emission sources evaluated included truck travel, truck idling at loading docks, and forklift operation.

Truck Traffic

Diesel powered vehicles are the primary traffic concern with local traffic-generated TAC impacts. This project would generate delivery (MHDT) and large (HHDT) truck trips that are assumed to be diesel powered.

Truck travel emissions were calculated for travel on Blodgett Street within 1,000 feet of the project site and for on-site travel. DPM (PM_{10} exhaust) and $PM_{2.5}$ ($PM_{2.5}$ exhaust and tire and brake wear) emissions were calculated using MHDT and HHDT diesel truck aggregate speed emission factors from the EMFAC2021 model for Sonoma County (SF) with the county default vehicle mix. Fugitive $PM_{2.5}$ paved road dust emissions were calculated using an emission factor from the CT-EMFAC2017 model for Sonoma County traffic. Truck travel emissions were modeled using line-volume sources. Emissions were assumed to occur 24 hours per day and modeled as such. The road segment used in modeling on- and off-site truck travel is shown in Figure 1.

Figure 1. Location of Project Construction Site, Modeled Project Operations, Off-Site Sensitive Receptors, and Maximum TAC Impact (MEI)



Truck idling is expected to occur at the project loading docks for arriving and departing trucks. There are two loading docks at the project warehouse, one on the east side of the warehouse and the other on the west side. MHDT and HHDT truck idling DPM and $PM_{2.5}$ emissions were calculated based on EMFAC2021 emission factors for travel at 5 mph and assuming 5 minutes idle per trip for a total of 10 minutes per truck visiting the site. Idling emissions were modeled using two point sources, one at each loading dock (see Figure 1). Emissions were assumed to occur 24 hours per day. Idle emission calculations and emission source parameters are contained in *Attachment 3*. Dispersion modeling was conducted for operational sources in the same manner as described above for construction activities.

Forklift(s)

The project would include one or two forklifts to load and unload storage Pods that weight up to 15,000 pounds. A diesel forklift was assumed for this operation. It was conservatively assumed that total forklift hours of operation would be 12 hours per day on site. Emission rates from the forklift were computed using CalEEMod, assuming the forklift was representative of equipment meeting Tier 4 final (i.e., model 2014 or newer)[15].

Annual DPM and $PM_{2.5}$ exhaust emissions from the diesel forklift were calculated in CalEEMod. Emissions from forklift operation were also modeled with ISCST3 as an area source (DPM & $PM_{2.5}$) with an assumed 5-meter release height. The area source was located on the west side of the warehouse adjacent to the loading dock. The forklift was modeled as operating 12 hours per day from 7:00 am to 5:00 pm. The location of the modeled area sources are also shown in Figure 1. Table 7 lists the community risks from project truck traffic and the forklift at the location of residential MEI. The emissions and health risk calculations for project traffic and forklift are included in *Attachment 3*.

Table 7. Project Construction and Operation Risk, and Cumulative Risk Impacts at the Off-Site Project MEI

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Impacts			
Project Construction: 597 Helman Year 1-2 Unmitigated	5.2 (infant)	0.06	0.01
380 Blodgett Year 2-3 Unmitigated	6.9 (infant)	0.05	0.01
Mitigated	*3.2 (infant)*	*0.03*	*<0.01*
Project Operation: Trucks &Forklift Years 2-30 Unmitigated	0.6 (child/adult)	<0.01	<0.01
Project Total/Maximum: Unmitigated Mitigated	12.7 (infant/child/adult) 9.0 (infant/child/adult)	0.06	0.01
BAAQMD Threshold – Project Sources	**10**	**0.3**	**1.0**
Exceed Threshold?	No	No	No

Summary of Project-Related Community Risks at the Offsite Project MEI

The risk impacts from a project are the combination of construction and operation sources. These sources include on-site construction activity, project forklift, and increased truck traffic from the project. The project impact is computed by adding the construction cancer risk for an infant at the MEI location to the increased cancer risk for the project operational conditions from the trucks and forklift at the over a 30-year period. The project MEI is identified as the sensitive receptor that is most impacted by the project's construction and operation.

For this project, the sensitive receptor identified in Figure 1 as the construction MEI is also the project MEI. At this location, the MEI would be exposed to 3 years of construction cancer risks and 28 years of operational cancer risks (includes truck traffic and forklift). The cancer risks from

[15] The project intends to purchase a new forklift for this operation.

construction and operation of the project were summed together. Unlike the increased maximum cancer risk, the annual $PM_{2.5}$ concentration and HI risks are not additive but based on an annual maximum risk for the entirety of the project.

Project risk impacts are shown in Table 7. The maximum increased cancer risks, maximum $PM_{2.5}$ concentration, and health hazard indexes from construction at the MEI do not exceed their respective BAAQMD single-source thresholds.

Cumulative Community Risks of all TAC Sources at the Off-Site Project MEI

Community health risk assessments typically look at all substantial sources of TACs that can affect sensitive receptors that are located within 1,000 feet of a project site (i.e., influence area). These sources include freeways or highways, rail lines, busy surface streets, and stationary sources identified by BAAQMD.

A review of the project area and based on provided traffic information indicated that no roadways within the influence area would have traffic exceeding 10,000 vehicles per day. A review of BAAQMD's stationary source map website identified three stationary sources with the potential to affect the project MEI. Figure 2 shows the location of the sources affecting the MEI. Community risk impacts from these sources upon the MEI reported in Table 8. Details of the cumulative modeling and community risk calculations are included in *Attachment 4.*

BAAQMD Permitted Stationary Sources

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Permitted Stationary Sources 2018* GIS website,[16] which identifies the location of nearby stationary sources and their estimated risk and hazard impacts, including emissions and adjustments to account for new OEHHA guidance. Three sources were identified using this tool with one source being a gas dispensing facility and the other two sources unknown. A Stationary Source Information Form (SSIF) containing the identified sources was prepared and submitted to BAAQMD. BAAQMD provided input and clarification about the stationary sources.[17] BAAQMD identified Sources #8674 and #10411 as permit shutdowns, so these two sources we not assessed.

The screening level risks and hazards provided by BAAQMD for the one stationary source was adjusted for distance using BAAQMD's *Distance Adjustment Multiplier Tool for Gas Dispensing Facilities*. Community risk impacts from stationary sources upon the MEI are reported in Table 7.

Summary of Cumulative Risks at the Project MEI

Table 8 reports both the project and cumulative community risk impacts at the sensitive receptors most affected by construction (i.e., the MEI). The project's community risk from project construction and operational activities would not exceed the maximum increased cancer risk, maximum $PM_{2.5}$ concentration, or HI single-source thresholds. In addition, the combined project and cumulative sources impacts would not exceed the cumulative-source thresholds.

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[16] BAAQMD, https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=2387ae674013413f987b1071715daa65

[17] Email correspondence with Matthew Hanson, Environmental Planner, BAAQMD, June 21, 2021.

Figure 2. Project Site and Nearby TAC and $PM_{2.5}$ Sources

Table 8. Cumulative Community Risk Impacts at the Location of the Project MEI

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Impacts			
Total/Maximum Project Impact - Unmitigated *Mitigated*	12.7 *<9.0*	0.06	0.01
BAAQMD Single-Source Threshold	***10***	***0.3***	***1.0***
Exceed Threshold? Unmitigated	*No*	*No*	*No*
Cumulative Sources			
Marin/Sonoma Mosquito & Vector Control (Facility ID #100856, Gas Dispensing Facility), MEI at 1000+ feet	<0.1	-	-
Combined Sources Unmitigated Mitigated	<12.8 <9.1	0.06	0.01
BAAQMD Cumulative Source Threshold	***100***	***0.8***	***10.0***
Exceed Threshold? Unmitigated	*No*	*No*	*No*

Mitigation Measure AQ-2: Use Construction equipment that has low diesel particulate matter exhaust emissions.

Implement a feasible plan to reduce diesel particulate matter emissions from new construction (i.e., 380 Blodgett phase) by 50 percent such that increased cancer risk and annual $PM_{2.5}$ concentrations from construction would be reduced below TAC significance levels is as follows:

1. All off-road mobile construction equipment larger than 25 horsepower used at the site for more than two continuous days or 20 hours total shall meet U.S. EPA Tier 4 emission standards for PM (PM_{10} and $PM_{2.5}$). Note that engines meeting the U.S. EPA Tier 2 or 3 standards that include particulate matter emissions control equivalent to CARB Level 3 verifiable diesel emission control devices would meet this standard.

2. Provide line power to the site during the early phases of construction to minimize the use of diesel-powered stationary equipment.

3. Alternatively, the applicant may develop another construction operations plan demonstrating that the construction equipment used on-site would achieve a reduction in construction diesel particulate matter emissions by 50 percent or greater. Elements of the plan could include a combination of some of the following measures:
   - Implementation of No. 1 above to use Tier 2 or 3 engines with DPF Level 3 or alternatively fueled equipment,
   - Installation of electric power lines during early construction phases to avoid use of diesel generators and compressors,
   - Use of electrically-powered equipment,
   - Forklifts and aerial lifts used for exterior and interior building construction shall be electric or propane/natural gas powered,
   - Change in construction build-out plans to lengthen phases, and
   - Application of different building methods that result in less diesel equipment usage.

   Such a construction operations plan would be subject to review by an air quality expert and approved by the City prior to construction.

Effectiveness of Mitigation Measure AQ-1 and AQ-2

CalEEMod was used to compute emissions associated with the implementation of Mitigation Measures AQ-1 and AQ-2, assuming that all off-road mobile equipment meets U.S. EPA Tier 4 engines standard and BAAQMD best management practices for construction were included. With these measures implemented, the project's total construction cancer risk levels (assuming infant exposure) would be reduced to 8.4 chances per million. A plan that reduces DPM emissions from the 380 Blodgett phase of construction by 50 percent would reduce total construction and operation cancer risk to about 9.1 chances per million, which would be below the BAAQMD single-source significance threshold.

Greenhouse Gas Emissions

Impact GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
Less-Than-Significant Impact.

The CalEEMod modeling for the proposed project, included in Attachment 2, shows total direct and indirect GHG emissions from the project at 563 metric tons during full operation in 2024. This is well below the bright-line threshold of 1,100 metric tons annually recommended by BAAQMD in the CEQA Air Quality Guidelines. Construction period emissions would range from 83 to 340 metric tons per year. Total construction emissions are 598 metric tons. As shown in Table 9, annual emissions from the are predicted to be 1,432 MT of CO_2e in 2024.

Table 9. Annual Project Operational GHG Emissions (CO_2e) in Metric Tons

Source Category	Proposed Project in 2024
Area	0
Energy Consumption	14
Mobile	63
Solid Waste Generation	17
Water Usage	14
Trucks and Forklift	455
Metric Ton Total	**563**
Bright-Line Significance Threshold[1]	*660*

[1] BAAQMD-recommended bright line threshold of 4.6 metric tons for 2020 adjusted to State reduction goals for 2030.

Impact GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?
Less-Than-Significant Impact.

The project would be subject to City requirements and policies and new requirements under rule making developed at the State and local level regarding greenhouse gas emissions and are subject to local policies that may affect emissions of greenhouse gases. This type of project is not anticipated to conflict with any strategy to reduce greenhouse gas emissions.

Supporting Documentation

Attachment 1 is the methodology used to compute community risk impacts, including the methods to compute increased cancer risk from exposure to project emissions.

Attachment 2 includes the CalEEMod output for project construction and operational criteria air pollutant. Also included are any modeling assumptions.

Attachment 3 is the health risk assessment. This includes the summary of the dispersion modeling and the cancer risk calculations for construction and operation. The ISCST3 dispersion modeling files for this assessment, which are quite voluminous, are available upon request and would be provided in digital format.

Attachment 4 includes the cumulative community risk calculations, modeling results, and health risk calculations from sources affecting the construction MEI.

Attachment 1: Health Risk Calculation Methodology

Health Risk Calculation Methodology

A health risk assessment (HRA) for exposure to Toxic Air Contaminates (TACs) requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risk at each sensitive receptor location. The State of California Office of Environmental Health Hazard Assessment (OEHHA) and California Air Resources Board (CARB) develop recommended methods for conducting health risk assessments. The most recent OEHHA risk assessment guidelines were published in February of 2015.[18] These guidelines incorporate substantial changes designed to provide for enhanced protection of children, as required by State law, compared to previous published risk assessment guidelines. CARB has provided additional guidance on implementing OEHHA's recommended methods.[19] This HRA used the 2015 OEHHA risk assessment guidelines and CARB guidance. The BAAQMD has adopted recommended procedures for applying the newest OEHHA guidelines as part of Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants.[20] Exposure parameters from the OEHHA guidelines and the recent BAAQMD HRA Guidelines were used in this evaluation.

Cancer Risk

Potential increased cancer risk from inhalation of TACs is calculated based on the TAC concentration over the period of exposure, inhalation dose, the TAC cancer potency factor, and an age sensitivity factor to reflect the greater sensitivity of infants and children to cancer causing TACs. The inhalation dose depends on a person's breathing rate, exposure time and frequency and duration of exposure. These parameters vary depending on the age, or age range, of the persons being exposed and whether the exposure is considered to occur at a residential location or other sensitive receptor location.

The current OEHHA guidance recommends that cancer risk be calculated by age groups to account for different breathing rates and sensitivity to TACs. Specifically, they recommend evaluating risks for the third trimester of pregnancy to age zero, ages zero to less than two (infant exposure), ages two to less than 16 (child exposure), and ages 16 to 70 (adult exposure). Age sensitivity factors (ASFs) associated with the different types of exposure are an ASF of 10 for the third trimester and infant exposures, an ASF of 3 for a child exposure, and an ASF of 1 for an adult exposure. Also associated with each exposure type are different breathing rates, expressed as liters per kilogram of body weight per day (L/kg-day) or liters per kilogram of body weight per 8-hour period for the case of worker or school child exposures. As recommended by the BAAQMD for residential exposures, 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th percentile breathing rates for child and adult exposures. For children at schools

[18] OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.
[19] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
[20] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.

and daycare facilities, BAAQMD recommends using the 95th percentile 8-hour breathing rates. Additionally, CARB and the BAAQMD recommend the use of a residential exposure duration of 30 years for sources with long-term emissions (e.g., roadways). For workers, assumed to be adults, a 25-year exposure period is recommended by the BAAQMD. For school children a 9-year exposure period is recommended by the BAAQMD.

Under previous OEHHA and BAAQMD HRA guidance, residential receptors are assumed to be at their home 24 hours a day, or 100 percent of the time. In the 2015 Risk Assessment Guidance, OEHHA includes adjustments to exposure duration to account for the fraction of time at home (FAH), which can be less than 100 percent of the time, based on updated population and activity statistics. The FAH factors are age-specific and are: 0.85 for third trimester of pregnancy to less than 2 years old, 0.72 for ages 2 to less than 16 years, and 0.73 for ages 16 to 70 years. Use of the FAH factors is allowed by the BAAQMD if there are no schools in the project vicinity have a cancer risk of one in a million or greater assuming 100 percent exposure (FAH = 1.0).

Functionally, cancer risk is calculated using the following parameters and formulas:

Cancer Risk (per million) = $CPF \times Inhalation\ Dose \times ASF \times ED/AT \times FAH \times 10^6$

Where:

CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = $C_{air} \times DBR^* \times A \times (EF/365) \times 10^{-6}$

Where:

C_{air} = concentration in air ($\mu g/m^3$)

DBR = daily breathing rate (L/kg body weight-day)

8HrBR = 8-hour breathing rate (L/kg body weight-8 hours)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10^{-6} = Conversion factor

* An 8-hour breathing rate (8HrBR) is used for worker and school child exposures.

The health risk parameters used in this evaluation are summarized as follows:

Parameter	***Exposure Type →***	**Infant**		**Child**	**Adult**
	Age Range →	**3rd Trimester**	**0<2**	**2 < 16**	**16 - 30**
DPM Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$		1.10E+00	1.10E+00	1.10E+00	1.10E+00
Daily Breathing Rate (L/kg-day) 80th Percentile Rate		273	758	572	261
Daily Breathing Rate (L/kg-day) 95th Percentile Rate		361	1,090	745	335
8-hour Breathing Rate (L/kg-8 hours) 95th Percentile Rate		-	1,200	520	240
Inhalation Absorption Factor		1	1	1	1
Averaging Time (years)		70	70	70	70
Exposure Duration (years)		0.25	2	14	14*
Exposure Frequency (days/year)		350	350	350	350*
Age Sensitivity Factor		10	10	3	1
Fraction of Time at Home (FAH)		0.85-1.0	0.85-1.0	0.72-1.0	0.73*

* For worker exposures (adult) the exposure duration and frequency are 25 years 250 days/year and FAH is not applicable.

Non-Cancer Hazards

Non-cancer health risk is usually determined by comparing the predicted level of exposure to a chemical to the level of exposure that is not expected to cause any adverse effects (reference exposure level), even to the most susceptible people. Potential non-cancer health hazards from TAC exposure are expressed in terms of a hazard index (HI), which is the ratio of the TAC concentration to a reference exposure level (REL). OEHHA has defined acceptable concentration levels for contaminants that pose non-cancer health hazards. TAC concentrations below the REL are not expected to cause adverse health impacts, even for sensitive individuals. The total HI is calculated as the sum of the HIs for each TAC evaluated and the total HI is compared to the BAAQMD significance thresholds to determine whether a significant non-cancer health impact from a project would occur.

Typically, for residential projects located near roadways with substantial TAC emissions, the primary TAC of concern with non-cancer health effects is diesel particulate matter (DPM). For DPM, the chronic inhalation REL is 5 micrograms per cubic meter ($\mu g/m^3$).

Annual $PM_{2.5}$ Concentrations

While not a TAC, fine particulate matter ($PM_{2.5}$) has been identified by the BAAQMD as a pollutant with potential non-cancer health effects that should be included when evaluating potential community health impacts under the California Environmental Quality Act (CEQA). The thresholds of significance for $PM_{2.5}$ (project level and cumulative) are in terms of an increase in the annual average concentration. When considering $PM_{2.5}$ impacts, the contribution from all sources of $PM_{2.5}$ emissions should be included. For projects with potential impacts from nearby local roadways, the $PM_{2.5}$ impacts should include those from vehicle exhaust emissions, $PM_{2.5}$ generated from vehicle tire and brake wear, and fugitive emissions from re-suspended dust on the roads.

Attachment 2: CalEEMod Input Assumptions and Outputs

Criteria Air Pollutant & GHG Emissions

Construction Criteria Air Pollutants						
Unmitigated	ROG	NOX	PM10 Exhaust	PM2.5 Exhaust	**CO2e**	
Year	Tons				MT	
Construction Equipment						
Part 1 2021	0.06	0.66	0.03	0.03	82.81	
	0.37	0.93	0.05	0.04	169.75	
Part 2 2022	0.12	0.96	0.04	0.04	171	
2023	0.32	0.92	0.04	0.04	174	
	Total Construction Emissions					
Tons	0.43	1.88	0.08	0.08	0	
Pounds/Workdays	*Average Daily Emissions*				Workdays	
Part 1 2021	2.00	20.98	1.02	0.91		63
2022	5.77	14.39	0.74	0.67		129
Part 2 2022	2.34	19.21	0.84	0.80		100
2023	4.21	12.32	0.53	0.50		150
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**		
	Total Construction Emissions					
Pounds	1736	6947	323	300		
Average	3.93	15.72	0.73	0.68		442
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**		

Operational Criteria Air Pollutants						
Unmitigated	ROG	NOX	Total PM10	Total PM2.5		
Year	Tons					
2023						
2024 Land Use	0.20	0.06	0.07	0.02		
2024 Equipment & Trucks	0.03	0.75	0.15	0.05		
Total	1.74	0.51	0.79	0.21		
	Existing Use Emissions					
Total						
	Net Annual Operational Emissions					
Tons/year	1.74	0.51	0.79	0.21		
Threshold - Tons/year	**10.0**	**10.0**	**15.0**	**10.0**		
	Average Daily Emissions					
Pounds Per Day	9.52	2.81	4.35	1.18		
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**		

Category	**CO2e**			
	Project	Existing	Project 2030	Existing
Area	0.00			
Energy	13.70			
Mobile	62.84			
Waste	16.78			
Water	13.63			
Equipment & Trucks	455.56			
TOTAL	562.51	0.00	0.00	0.00
Net GHG Emissions		562.51		0.00

Project Name: **597 Helman Lane, Cotati, CA**

Complete ALL Portions in Yellow

See Equipment Type TAB for type, horsepower and load factor

Project Size		**Dwelling Units**	**3.4 acres**	**total project acres disturbed**
		s.f. residential		
		s.f. retail		
		s.f. office/commercial		
	50,064	**s.f. other, specify:**	**metal warehouse building**	
		s.f. parking garage		**spaces**
	40,000	**s.f. parking lot**	**45**	**spaces**
Construction Hours		**am to**		**pm**

Pile Driving? Y/N? No

Project include generator on-site? Y/N? No

IF YES -->

Kilowatts/Horsepower:

Fuel Type:

Location in project:

Qty	Description	HP	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	Annual Hours	Comments
	Demolition	**Start Date:**	**None**	**Total phase:**				**Overall Import/Export Volumes**
		End Date:						
	Concrete/Industrial Saws	81	0.73			#DIV/0!	0	**Demolition Volume**
	Excavators	158	0.38			#DIV/0!	0	Square footage of buildings to be demolished
	Rubber-Tired Dozers	247	0.4			#DIV/0!	0	(*or* total tons to be hauled)
	Tractors/Loaders/Backhoes	97	0.37			#DIV/0!	0	_**None**_ square feet *or*
								**None** Hauling volume (tons)
	Site Preperation	**Start Date:**	**10/5/2021**	**Total phase:**				Any pavement demolished and hauled? _?_ tons
		End Date:	**10/15/2021**					
	Graders	187	0.41			#DIV/0!	0	
	Rubber Tired Dozers	247	0.4			#DIV/0!	0	
	Tractors/Loaders/Backhoes	97	0.37			#DIV/0!	0	
	Grading / Excavation	**Start Date:**	**10/16/2021**	**Total phase:**				
		End Date:	**12/1/2021**					**Soil Hauling Volume**
	Excavators	158	0.38			#DIV/0!	0	Export volume = _**3,000**_ cubic yards?
	Graders	187	0.41			#DIV/0!	0	Import volume = **0** cubic yards?
	Rubber Tired Dozers	247	0.4	1	2	#DIV/0!	0	
	Concrete/Industrial Saws	81	0.73	8	2	#DIV/0!	0	
	Tractors/Loaders/Backhoes	97	0.37	6	2	#DIV/0!	0	
	Other Equipment?							
	Trenching/Foundation	**Start Date:**	**12/1/2021**	**Total phase:**				
		End Date:	**2/22/2022**					
	Tractor/Loader/Backhoe	97	0.37	8	2	#DIV/0!	0	
	Excavators	158	0.38	8	2	#DIV/0!	0	
	Other Equipment?							
	Building - Exterior	**Start Date:**	**2/23/2022**	**Total phase:**				**Cement Trucks? _185_ Total Round-Trips**
		End Date:	**6/28/2022**					
	Cranes	231	0.29			#DIV/0!	0	Electric? (Y/N) _N_ Otherwise assumed diesel
	Forklifts	89	0.2			#DIV/0!	0	Liquid Propane (LPG)? (Y/N) _N_ Otherwise Assumed diesel
	Generator Sets	84	0.74			#DIV/0!	0	Or temporary line power? (Y/N) _Y_
	Tractors/Loaders/Backhoes	97	0.37			#DIV/0!	0	
	Welders	46	0.45			#DIV/0!	0	
	Other Equipment?					#DIV/0!		
	Paving	**Start Date:**	**2/23/2022**	**Total phase:**				
		Start Date:	**6/21/2022**					
	Cement and Mortar Mixers	9	0.56			#DIV/0!	0	
	Pavers	130	0.42			#DIV/0!	0	**Asphalt? _928_ cubic yards or ____ round trips?**
	Paving Equipment	132	0.36			#DIV/0!	0	
	Rollers	80	0.38			#DIV/0!	0	
	Tractors/Loaders/Backhoes	97	0.37			#DIV/0!	0	
	Other Equipment?							

Equipment types listed in "Equipment Types" worksheet tab.
Equipment listed in this sheet is to provide an example of inputs
It is assumed that water trucks would be used during grading
Add or subtract phases and equipment, as appropriate

Project Name:		**380 Blodgett St. (formerly 597 Helman Lane), Cotati, CA**						**Complete ALL Portions in Yellow**
	See Equipment Type TAB for type, horsepower and load factor							
	Project Size	**NA**	**Dwelling Units**	**2.7 acres**	**total project acres disturbed**			
		NA	**s.f. residential**					**Pile Driving? Y/N? No**
		NA	**s.f. retail**					**Project include generator on-site? Y/N? No**
		NA	**s.f. office/commercial**					**IF YES -->**
		35,500	**s.f. other, specify:**	**metal warehouse building**				**Kilowatts/Horsepower:**
		45,000	**s.f. paved non parking**					**Fuel Type:**
		5,200	**s.f. parking lot**	**36**	**spaces**			**Location in project:**
	Construction Hours	**7:00**	**am to**	**3:30**	**pm**			

Qty	Description	HP	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	Annual Hours	Comments
	Demolition	**Start Date:**	**None**	**Total phase:**				**Overall Import/Export Volumes**
		End Date:						
	Concrete/Industrial Saws	81	0.73			#DIV/0!	0	**Demolition Volume**
	Excavators	158	0.38			#DIV/0!	0	Square footage of buildings to be demolished
	Rubber-Tired Dozers	247	0.4			#DIV/0!	0	(*or* total tons to be hauled)
	Tractors/Loaders/Backhoes	97	0.37			#DIV/0!	0	_None_ square feet *or*
								None Hauling volume (tons)
	Site Preperation	**Start Date:**	**8/1/2022**	**Total phase:**	**5**			Any pavement demolished and hauled? _?_ tons
		End Date:						
1	Graders	187	0.41	8		0	0	
1	Scraper	367	0.48	8		0	0	
1	Tractors/Loaders/Backhoes	97	0.37	7		0	0	
	Grading / Excavation	**Start Date:**	**8/5/2022**	**Total phase:**	**6**			
		End Date:						**Soil Hauling Volume**
	Excavators	158	0.38			0	0	Export volume = _3,000_ cubic yards?
1	Graders	187	0.41	8		0	0	Import volume = _0_ cubic yards?
1	Rubber Tired Dozers	247	0.4	8		0	0	
	Concrete/Industrial Saws	81	0.73			0	0	
2	Tractors/Loaders/Backhoes	97	0.37	7		0	0	
	Other Equipment?							
	Trenching/Foundation	**Start Date:**	**9/15/2023**	**Total phase:**	**30**			
		End Date:						
1	Tractor/Loader/Backhoe	97	0.37	8		0	0	
1	Excavators	158	0.38	8		0	0	
	Other Equipment?							
	Building - Exterior	**Start Date:**	**11/1/2022**	**Total phase:**	**220**			**Cement Trucks? _185_ Total Round-Trips**
		End Date:						
1	Cranes	231	0.29	8		0	0	Electric? (Y/N) _N__ Otherwise assumed diesel
2	Forklifts	89	0.2	7		0	0	Liquid Propane (LPG)? (Y/N) _N__ Otherwise Assumed diesel
1	Generator Sets	84	0.74	8		0	0	Or temporary line power? (Y/N) __Y_
1	Tractors/Loaders/Backhoes	97	0.37	6		0	0	
3	Welders	46	0.45	8		0	0	
	Other Equipment?					0		
	Building - Exterior	**Start Date:**	**11/16/2022**	**Total phase:**	**10**			
		End Date:						
1	Aerial Lifts	63	0.31	6		0	0	
1	Air Compressors	78	0.48	6		0	0	
	Paving	**Start Date:**	**12/1/2022**	**Total phase:**	**10**			
		Start Date:						
1	Cement and Mortar Mixers	9	0.56	2		0	0	
1	Pavers	130	0.42	8		0	0	**Asphalt - 600 cubic yards or NA round trips?**
1	Paving Equipment	132	0.36	8		0	0	
1	Rollers	80	0.38	8		0	0	
1	Tractors/Loaders/Backhoes	97	0.37	8		0	0	
	Other Equipment?							

Equipment types listed in "Equipment Types" worksheet tab.
Equipment listed in this sheet is to provide an example of inputs
It is assumed that water trucks would be used during grading
Add or subtract phases and equipment, as appropriate

Typical Equipment Type & Load Factors		
OFFROAD Equipment Type	**Horsepower**	**Load Factor**
Aerial Lifts	63	0.31
Air Compressors	78	0.48
Bore/Drill Rigs	221	0.5
Cement and Mortar Mixers	9	0.56
Concrete/Industrial Saws	81	0.73
Cranes	231	0.29
Crawler Tractors	212	0.43
Crushing/Proc. Equipment	85	0.78
Dumpers/Tenders	16	0.38
Excavators	158	0.38
Forklifts	89	0.2
Generator Sets	84	0.74
Graders	187	0.41
Off-Highway Tractors	124	0.44
Off-Highway Trucks	402	0.38
Other Construction Equipment	172	0.42
Other General Industrial Equipment	88	0.34
Other Material Handling Equipment	168	0.4
Pavers	132	0.42
Paving Equipment	130	0.36
Plate Compactors	8	0.43
Pressure Washers	13	0.3
Pumps	84	0.74
Rollers	80	0.38
Rough Terrain Forklifts	100	0.4
Rubber Tired Dozers	247	0.4
Rubber Tired Loaders	203	0.36
Scrapers	367	0.48
Signal Boards	6	0.82
Skid Steer Loaders	65	0.37
Surfacing Equipment	263	0.3
Sweepers/Scrubbers	64	0.46
Tractors/Loaders/Backhoes	97	0.37
Trenchers	78	0.5
Welders	46	0.45

April 22, 2021

Mr. Kevin O'Malley
O'Malley Wilson Westphal
555 Fifth Street, Suite 200
Santa Rosa, CA 95401

Draft Traffic Study for the 597 Helman Lane Project

Dear Mr. O'Malley;

As requested, W-Trans has prepared a focused traffic study for the 597 Helman Lane Project in the City of Cotati. The purpose of this letter is to address potential traffic impacts associated with the proposal to construct a single-story warehouse on the 8.48-acre property.

Existing Conditions

The study area consists of Blodgett Street, which terminates at the frontage of the project site in the City of Cotati. Blodgett Street is classified as a collector street by the Cotati General Plan, is generally 40 feet wide and has two 12-foot travel lanes.

Project Description

The proposed project includes the construction of a 50,064 square foot warehouse on an undeveloped parcel. The warehouse is expected to provide paved parking areas and internal roadways consistent with typical warehouse land uses to ensure proper site circulation. Further, to accommodate employees and customers, this project would provide 45 vehicle parking spaces and six bicycle parking spaces.

Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 10th Edition, 2017 for Warehousing (ITE Land Use 150). Based on application of these rates, the proposed project is expected to generate an average of 87 trips per day, including 9 a.m. peak hour trips and 10 trips during the p.m. peak hour. These results are summarized in Table 1.

Table 1 – Trip Generation Summary

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Warehousing	50.1 ksf	1.74	87	0.17	9	7	2	0.19	10	3	7

Note: ksf = 1,000 square feet

Given the nominal number of peak hour trips that the project would be expected to generate, it is reasonable to conclude that it would have an imperceptible effect on traffic operation and further analysis is therefore unwarranted.

Vehicle Miles Traveled

Senate Bill (SB) 743 established a change in the metric to be applied for determining traffic impacts associated with development projects. Rather than the delay-based criteria associated with a Level of Service analysis, the increase in Vehicle Miles Traveled (VMT) as a result of a project will be the basis for determining impacts once this new metric is fully vetted and adopted. Because the City of Cotati has not yet adopted a standard of significance for evaluating VMT, guidance provided by the California Governor's Office of Planning and Research (OPR) in the publication *Transportation Impacts (SB 743) CEQA Guidelines Update and Technical Advisory*, 2018, was used. This document indicates that projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact.

The project is expected to generate 87 daily trips which satisfies OPR criteria for consideration as a small project. As a small project the impact on vehicle miles traveled can be assumed to be less-than-significant.

Alternative Modes

Pedestrian Facilities

Sidewalks are generally present on both sides of Blodgett Street, though gaps are present in the sidewalk network along Alder Avenue as well as Helman Lane.

Bicycle Facilities

The *Highway Design Manual*, Caltrans, 2017, classifies bikeways into four categories:

- **Class I Multi-Use Path** – a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.
- **Class II Bike Lane** – a striped and signed lane for one-way bike travel on a street or highway.
- **Class III Bike Route** – signing only for shared use with motor vehicles within the same travel lane on a street or highway.
- **Class IV Bikeway** – also known as a separated bikeway, a Class IV Bikeway is for the exclusive use of bicycles and includes a separation between the bikeway and the motor vehicle traffic lane. The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking.

Limited bicycling facilities are present in the vicinity of the project site, including an approximate 0.8-mile segment of bike lane on Redwood Drive approximately one-half mile away. According to the *Cotati Bicycle and Pedestrian Master Plan, 2014*, a Class I path is proposed along Laguna de Santa Rosa north of the project site.

Transit Facilities

Transit services throughout Sonoma County are provided by Sonoma County Transit (SCT). There are no transit routes that stop within one-quarter mile, which is considered a comfortable walking distance, of the project site. The closest transit access is approximately 0.7 mile from the project site on Gravenstein Highway at Alder Avenue. SCT Route 26 provides service between Sonoma State University and the Sebastopol Transit Hub on school days only and operates a stop on the Gravenstein Highway at Alder Avenue. While these bus stops are not within an acceptable walking distance of the project site, employees could reasonably ride a bicycle between the project site and these bus stops. Two to three bicycles can be carried on most SCT buses. Bike rack space is on a first come, first served basis. Additional bicycles are allowed on SCT buses at the discretion of the driver.

Dial-a-ride, also known as paratransit, or door-to-door service, is available for those who are unable to independently use the transit system due to a physical or mental disability. SCT Paratransit is designed to serve the needs of individuals with disabilities within the greater Sonoma County area. Trips for travel can be reserved Monday through Friday from 8:00 a.m. to 5:00 p.m., Saturday and Sunday from 9:00 a.m. and 5:00 p.m.

Site Access and Circulation

As proposed, access to the site would occur via a private driveway extending from the west end of Blodgett Street; however, the site plan (including the design of an extension to Blodgett Street) is still under development and does not reflect the final design. It is assumed that all driveways and internal roadways would be designed to current City standards to accommodate heavy vehicles and so can be expected to accommodate the access requirements for both emergency and passenger vehicles.

Sight Distance

At typical driveways a substantially clear line of sight should be maintained between the driver of a vehicle waiting on the driveway and the driver of an approaching vehicle. Adequate time should be provided for the waiting vehicle to either cross, turn left, or turn right, without requiring the through traffic to radically alter their speed.

It is assumed that the site would be accessed via one or two driveways located on a future cul-de-sac at the western terminus of Blodgett Street. The future cul-de-sac would be located on land with level terrain suggesting the future cul-de-sac would also be generally level. Further, cul-de-sacs are typically free of obstructions which may hinder sight distances and vehicle operating speeds within cul-de-sacs are normally 20 mph or less. Based upon this assessment, it is expected that the sight distance at the project driveways would be adequate if parking is prohibited within the cul-de-sac and adjacent vegetation is properly trimmed.

Site Circulation

In terms of on-site circulation, all interior drive aisles should provide connections to buildings and parking lots within the project site. The project site plan should be designed to comply with the City of Cotati standard plans and specifications, such that on-site circulation would function acceptably for all vehicles, including fire trucks.

Conclusions and Recommendations

- The proposed project is expected to generate an average of 87 trips per day, including 9 trips during the weekday a.m. peak hour and 10 during the p.m. peak hour.

- The limited access for pedestrians, bicyclist, and transit is acceptable for the rural location of the site and type of project proposed.

- The proposed project would have a less-than-significant transportation impact on vehicle miles traveled.

Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

Sincerely,

Brendan Lin
Assistant Engineer

Kenny Jeong, TE
Traffic Engineer

Dalene J. Whitlock, PE, PTOE
Senior Principal

DJW/kbj/bsl/COT096.L1

January 28, 2022

Mr. Calvin Sandell
3348 Paradise Drive
Tiburon, CA 94920

Draft Traffic Study for the 380 Blodgett Street Project

Dear Mr. Sandell;

As requested, W-Trans has prepared a focused traffic study for the 380 Blodgett Street Project in the City of Cotati. The purpose of this letter is to address potential traffic impacts associated with the proposal to construct a single-story 35,500 square foot warehouse.

Existing Conditions

The study area consists of Blodgett Street, which terminates at the frontage of the project site. Blodgett Street is classified as a collector street in the Cotati General Plan, is generally 40 feet wide and has two 12-foot travel lanes.

Project Description

The proposed project includes the construction of a 35,500 square foot warehouse on an undeveloped parcel as well as paved parking areas and internal roadways consistent with typical warehouse land uses. To accommodate employees and customers the project would provide 40 vehicle parking spaces and four bicycle parking spaces.

Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 11th Edition, 2021, for Warehousing (ITE Land Use 150). Based on application of these rates, the proposed project is expected to generate an average of 61 trips per day, including six a.m. peak hour trips and six trips during the p.m. peak hour. These results are summarized in Table 1.

Table 1 – Trip Generation Summary

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Warehousing	35.5 ksf	1.71	61	0.17	6	5	1	0.18	6	2	4

Note: ksf = 1,000 square feet

Given the nominal number of peak hour trips that the project would be expected to generate, it is reasonable to conclude that it would have an imperceptible effect on traffic operation and further analysis is therefore unwarranted.

Vehicle Miles Traveled (VMT) Evaluation

Senate Bill (SB) 743 established the increase in Vehicle Miles Traveled (VMT) as a result of a project as the basis for determining transportation impacts of development projects. The City of Cotati adopted a VMT policy on September 22, 2020, in their document titled "Guidelines for Analysis of Vehicle Miles Traveled (VMT)". Guidance provided in this document recommends the use of screening thresholds to quickly identify when a project should be expected to cause a less-than-significant impact in terms of VMT without conducting a detailed study. This document indicates that small infill projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact.

The project is expected to generate 61 daily trips which satisfies the criteria for consideration as a small infill project. As a small infill project, the impact on vehicle miles traveled can be assumed to be less than significant.

Alternative Modes

Pedestrian Facilities

Sidewalks are generally present on both sides of Blodgett Street, though gaps are present in the sidewalk network along Alder Avenue as well as Helman Lane. Internal pedestrian access within the site would be provided via a network of sidewalks and curb ramps. All pedestrian facilities are presumed to be built to satisfy current City of Cotati standards.

Finding – Existing and proposed pedestrian facilities serving the project site would be adequate since current design standards would be satisfied, and pedestrian access would be provided between the building access points and the surrounding public street network.

Bicycle Facilities

Limited bicycling facilities are present in the vicinity of the project site, including an approximate 0.8-mile segment of bike lane on Redwood Drive approximately one-half mile away. According to the *Cotati Bicycle and Pedestrian Master Plan, 2014*, a Class I path is proposed along the Laguna de Santa Rosa north of the project site.

Finding – Existing and planned bicycle facilities serving the project site would be adequate since the project would be in an area with a network of facilities available to bicycle users.

Transit Facilities

Development sites which are located within a one-half mile walk to a transit stop are generally considered to be adequately served by transit.

Transit services throughout Sonoma County are provided by Sonoma County Transit (SCT). There are no transit routes that stop within one-half mile. The closest transit access is approximately 0.7 mile from the project site on Gravenstein Highway at Alder Avenue. SCT Route 26 provides service between Sonoma State University and the Sebastopol Transit Hub on school days only and serves stops on Gravenstein Highway at Alder Avenue. While these bus stops are not within an acceptable walking distance of the project site, employees could reasonably ride a bicycle between the project site and each bus stop. Two to three bicycles can be carried on most SCT buses. Bike rack space is on a first come, first served basis. Additional bicycles are allowed on SCT buses at the discretion of the driver.

Dial-a-ride, also known as paratransit, or door-to-door service, is available for those who are unable to independently use the transit system due to a physical or mental disability. SCT Paratransit is designed to serve the needs of individuals with disabilities within the greater Sonoma County area. Trips for travel can be reserved Monday through Friday from 8:00 a.m. to 5:00 p.m., Saturday and Sunday from 9:00 a.m. and 5:00 p.m.

Finding – The lack of existing transit service within an acceptable walking distance of the project site is typical for such remote locations and is therefore considered acceptable, though employees could use a bicycle to reach nearby transit stops.

Site Access and Circulation

As proposed, access to the site would occur via a pair of shared driveways located at the western and northern sides of a planned cul-de-sac at the western terminus of Blodgett Street. Based on a review of the site plan, all internal drive aisles and driveways are expected to provide acceptable circulation for all vehicles. As demonstrated in the enclosed site plan, articulated trucks would be able to navigate the internal roadways, recessed loading docks and project driveways without striking any permanent fixtures. It is assumed that emergency vehicles can also navigate all areas of the site since these are typically smaller and more nimble than articulated trucks. Given the nominal number of new trips associated with the project it is reasonable to anticipate that it would have an imperceptible and therefore less-than-significant impact on emergency response times. Separate turn lanes are generally not necessary within a cul-de-sac since vehicle speeds within the circular area are relatively low and there is no opposing traffic to delay movements into the driveways from the cul-de-sac.

Sight Distance

At typical driveways a substantially clear line of sight should be maintained between the driver of a vehicle waiting on the driveway and the driver of an approaching vehicle. Adequate time should be provided for the waiting vehicle to either cross, turn left, or turn right, without requiring the through traffic to radically alter their speed.

The site would be accessed via the two shared driveways located on a future cul-de-sac at the western terminus of Blodgett Street. The future cul-de-sac would be located on land with level terrain suggesting the future cul-de-sac would also be generally level. Further, cul-de-sacs are typically free of obstructions which may hinder sight distances and vehicle operating speeds within cul-de-sacs are normally relatively slow at 20 mph or slower. Based upon this assessment, it is expected that the sight distance at the project driveways would be adequate if parking is prohibited within the cul-de-sac and adjacent vegetation is properly trimmed.

Site Circulation

In terms of on-site circulation, all interior drive aisles should provide connections to buildings and parking lots within the project site. The project site plan should be designed to comply with the City of Cotati standard plans and specifications, such that on-site circulation would function acceptably for all vehicles, including fire trucks.

Finding – On-site vehicle (including commercial and emergency vehicles) access is expected to be adequate. Adequate sight distance would be available at each driveway to accommodate all turns leaving the site if parking is prohibited within the cul-de-sac and adjacent vegetation is properly trimmed.

Conclusions and Recommendations

- The proposed project is expected to generate an average of 61 trips per day, including six trips during the weekday a.m. peak hour and six during the p.m. peak hour.
- The limited access for pedestrians, bicyclist, and transit is acceptable for the rural location of the site and type of project proposed.
- The proposed project would have a less-than-significant transportation impact on vehicle miles traveled.
- The site plan demonstrates that adequate access for vehicles (including commercial and emergency vehicles) would be provided.

Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

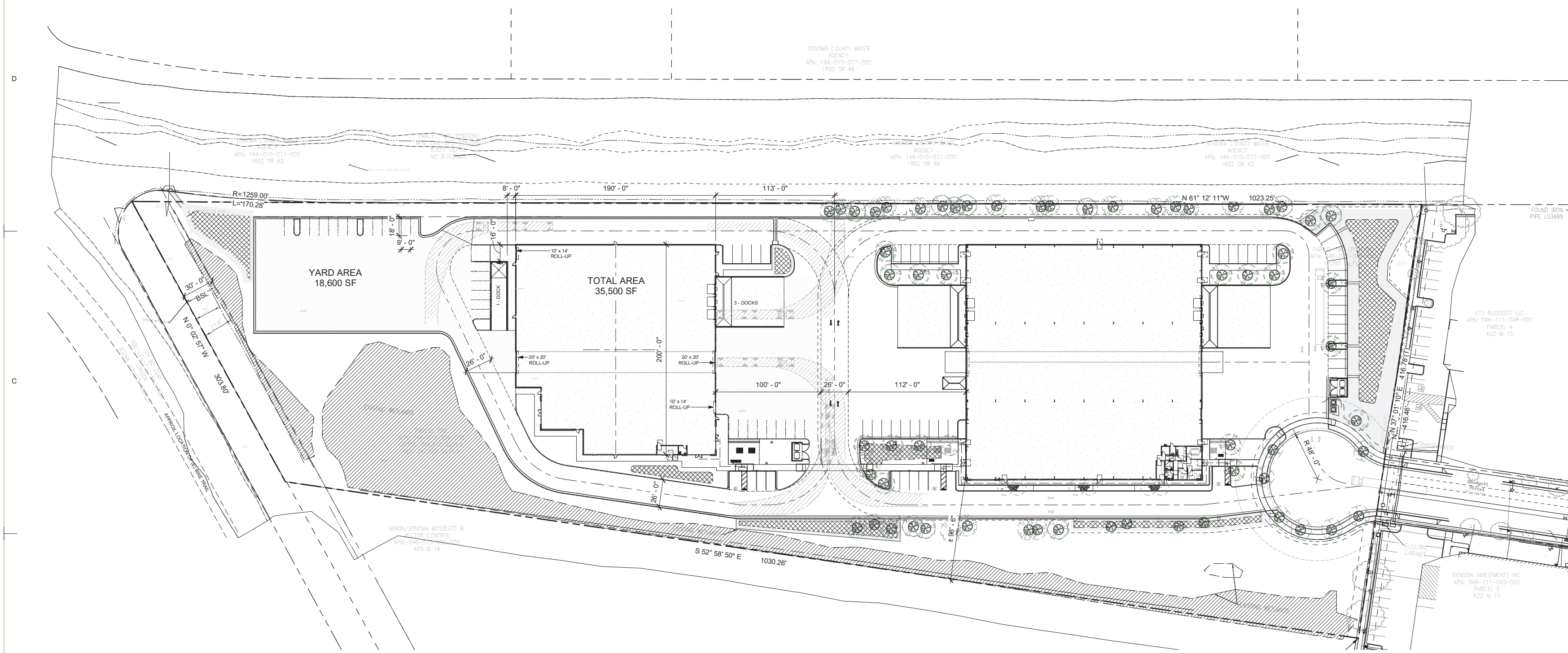
Sincerely,

Kenny Jeong, TE
Senior Engineer

Dalene J. Whitlock, PE, PTOE
Senior Principal

DJW/kbj/COT096-1.L1

Enclosure: Site Plan



A1 ARCHITECTURAL SITE PLAN - BUILDING #2
1" = 50'-0"

0' 25' 50' 100'

GENERAL NOTES

1. THE TOPOGRAPHIC INFORMATION IS BASED ON SURVEY DATED JANUARY 27, 2021 BY SOUSA LAND SURVEYS
2. THE SEASONAL WETLAND AREAS INDICATED ARE BASED ON A CAD MAP DATED JANUARY 28, 2021 BY SOL ECOLOGY

GRAPHICAL NOTATION

KEY NOTES

CODE NOTES

SEE SHEET G-003, G-004: Code Notes Reference "Paragraph.Item #"

CALIFORNIA BUILDING CODE

LOCAL ORDINANCE

SONOMA COUNTY

COTATI

o'malleywilsonwestphal
DANIEL A. WESTPHAL
Box 2484
Santa Rosa
California 95405
tel 707 636 0828
fax 707 636 0829

CONSULTANTS

SEAL

Sandell

DISTRIBUTION WAREHOUSE

380 Blodgett Street (formerly 597 Helman Lane)
Cotati, CA 94931

No.	Description	Date

DATE: 01/12/2022
PROJECT NUMBER: 20-054
PROJECT PHASE: CD
DRAWN BY: Author
CHECKED BY: Checker

SHEET TITLE

ARCHITECTURAL SITE PLAN

SHEET NUMBER

A-101-II

Daily Activity

Description	Previous Project	New Project (Note 1)	Total	Units
Delivery Trucks	48	28	76	Trips
Haul Trucks	8	2	10	Trips
Large Forklifts	10	2	12	Hours
Traffic	87	61	148	trips

Note1: In addition to the vehicles planned for the previously approved Cotati Building 1, PODS will have up to 2 additional local delivery trucks to deliver and retrieve the containers to local residents and businesses (approximately 32’ long each), making between 10 and 14 trips each per day. In addition, for Building 2 only, there will be deliveries and/or pick-ups by 1 to 2 OTR (tractor/trailer rigs) per day.

There may be an additional Building 2 forklift that operates for up to 2 per day. Note that the forklift is only used when a PODS container is being relocated - it does not idle during periods of extended non-use.

The facility will not have a back-up generator.

LDA	LDT1	LDT2	MDV			MHDT	HHDT
0.536774	0.058783	0.173424	0.127345		0.896326		
0.59886	0.065582165	0.193483	0.142074				
26%	3%	8%	6%			50%	7%

597 Helman Lane, Cotati - Sonoma-San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

597 Helman Lane, Cotati - Construction
Sonoma-San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	50.06	1000sqft	3.40	50,064.00	0
Parking Lot	45.00	Space	0.00	40,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	75
Climate Zone	4			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Assume PG&E rates

Land Use - Based on project construction worksheet

Construction Phase - Based on provided schedule with defaults for paving and interior work

Off-road Equipment - No demolition

Off-road Equipment - Provided construction information

Off-road Equipment - Trenching equipment

Trips and VMT - Concrete = 185 deliveries (370 trips) Asphalt = 928 cy = 93 deliveries = 186 trips at vendor distance

Grading - Based on project construction worksheet

Vehicle Trips - Use W-Trans Rate

Energy Use -

Operational Off-Road Equipment - Assume forklift is diesel

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Fleet Mix - W-Trans = 87 daily trips. Based on correspondance, 40-56 (48) daily trips are vendor type (MHDT) and 6 OTR Rigs + 2 (HDDT) = 7% HDDT, 55% MHDT,

Construction Off-road Equipment Mitigation - BMPs, Tier 4 interim engine mitigation

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	0.00	2,400.00
tblArchitecturalCoating	EF_Parking	0.00	150.00
tblAreaCoating	Area_Parking	0	2400
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim

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tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	230.00	90.00
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	NumDays	8.00	33.00
tblConstructionPhase	NumDays	5.00	9.00
tblEnergyUse	T24E	0.29	0.32
tblEnergyUse	T24NG	3.37	3.40
tblFleetMix	HHD	0.00	0.03
tblFleetMix	HHD	0.00	0.09
tblFleetMix	LDA	0.00	0.59
tblFleetMix	LDA	0.00	0.24
tblFleetMix	LDT1	0.00	0.04
tblFleetMix	LDT2	0.00	0.17
tblFleetMix	LDT2	0.00	0.12
tblFleetMix	LHD1	0.00	0.02
tblFleetMix	LHD2	0.00	6.0700e-003
tblFleetMix	MCY	0.00	4.9970e-003
tblFleetMix	MDV	0.00	0.10
tblFleetMix	MH	0.00	9.6700e-004
tblFleetMix	MHD	0.00	0.03
tblFleetMix	MHD	0.00	0.55
tblFleetMix	OBUS	0.00	3.1370e-003
tblFleetMix	SBUS	0.00	8.8000e-004
tblFleetMix	UBUS	0.00	1.7060e-003

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblGrading	MaterialExported	0.00	3,000.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	6.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	370.00
tblTripsAndVMT	HaulingTripNumber	0.00	186.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0597	0.6289	0.4091	7.4000e-004	0.1896	0.0302	0.2198	0.1003	0.0278	0.1281	0.0000	64.7905	64.7905	0.0209	9.0000e-005	65.3392
2022	0.3657	0.8631	0.9593	1.5400e-003	4.0000e-005	0.0440	0.0440	2.00E-05	0.0413	0.0413	0.0000	133.2719	133.2719	0.0334	3.7000e-004	134.2150
Maximum	**0.3657**	**0.8631**	**0.9593**	**1.5400e-003**	**0.1896**	**0.0440**	**0.2198**	**0.1003**	**0.0413**	**0.1281**	**0.0000**	**133.2719**	**133.2719**	**0.0334**	**3.7000e-004**	**134.2150**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2021	0.0137	0.2602	0.4752	7.4000e-004	0.0853	1.20E-03	0.0865	0.0451	1.2000e-003	0.0463	0.0000	64.7904	64.7904	0.0209	9.0000e-005	65.3392
2022	0.3021	0.6357	1.0501	1.5400e-003	4.0000e-005	4.32E-03	4.3600e-003	2.00E-05	4.3200e-003	4.3400e-003	0.0000	133.2717	133.2717	0.0334	3.7000e-004	134.2148
Maximum	**0.3021**	**0.6357**	**1.0501**	**1.5400e-003**	**0.0853**	**4.3200e-003**	**0.0865**	**0.0451**	**4.3200e-003**	**0.0463**	**0.0000**	**133.2717**	**133.2717**	**0.0334**	**3.7000e-004**	**134.2148**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**25.76**	**39.96**	**-11.47**	**0.00**	**54.99**	**92.56**	**65.55**	**54.99**	**92.01**	**70.09**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**9-27-2021**	**12-26-2021**	0.6637	0.2634
2	**12-27-2021**	**3-26-2022**	0.6475	0.5538
3	**3-27-2022**	**6-26-2022**	0.5805	0.3874
4	**6-27-2022**	**9-26-2022**	0.0126	0.0084
		Highest	0.6637	0.5538

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/27/2021	9/26/2021	5	0	
2	Site Preparation	Site Preparation	10/5/2021	10/15/2021	5	9	
3	Grading	Grading	10/16/2021	12/1/2021	5	33	
4	Trenching/Foundation	Trenching	12/1/2021	2/22/2022	5	60	
5	Building Construction	Building Construction	2/23/2022	6/28/2022	5	90	
6	Paving	Paving	2/23/2022	3/18/2022	5	18	default CalEEMod
7	Architectural Coating	Architectural Coating	2/25/2022	3/22/2022	5	18	default CalEEMod

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 16.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 75,096; Non-Residential Outdoor: 25,032; Striped Parking Area: 2,400

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	0	8.00	158	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Trenching/Foundation	Excavators	1	6.00	158	0.38
Trenching/Foundation	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	0	0.00	0.00	0.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	375.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT
Trenching/Foundation	2	5.00	0.00	0.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	38.00	15.00	370.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	186.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	8.00	0.00	0.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0813	0.0000	0.0813	0.0447	0.0000	0.0447	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0175	0.1822	0.0952	1.7000e-004		9.2000e-003	9.2000e-003		8.4600e-003	8.4600e-003	0.0000	15.0461	15.0461	4.8700e-003	0.0000	15.1677
Total	**0.0175**	**0.1822**	**0.0952**	**1.7000e-004**	**0.0813**	**9.2000e-003**	**0.0905**	**0.0447**	**8.4600e-003**	**0.0532**	**0.0000**	**15.0461**	**15.0461**	**4.8700e-003**	**0.0000**	**15.1677**

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Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	6.0000e-005	5.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0154	0.0154	1.0000e-005	1.0000e-005	0.0173
Total	**1.4000e-004**	**6.0000e-005**	**5.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0154**	**0.0154**	**1.0000e-005**	**1.0000e-005**	**0.0173**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0366	0.0000	0.0366	0.0201	0.0000	0.0201	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1400e-003	0.0547	0.1033	1.7000e-004		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004	0.0000	15.0461	15.0461	4.8700e-003	0.0000	15.1677
Total	**3.1400e-003**	**0.0547**	**0.1033**	**1.7000e-004**	**0.0366**	**2.8000e-004**	**0.0369**	**0.0201**	**2.8000e-004**	**0.0204**	**0.0000**	**15.0461**	**15.0461**	**4.8700e-003**	**0.0000**	**15.1677**

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Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	6.0000e-005	5.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0154	0.0154	1.0000e-005	1.0000e-005	0.0173
Total	**1.4000e-004**	**6.0000e-005**	**5.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0154**	**0.0154**	**1.0000e-005**	**1.0000e-005**	**0.0173**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1083	0.0000	0.1083	0.0556	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0378	0.4082	0.2617	4.9000e-004		0.0191	0.0191		0.0176	0.0176	0.0000	42.9886	42.9886	0.0139	0.0000	43.3362
Total	**0.0378**	**0.4082**	**0.2617**	**4.9000e-004**	**0.1083**	**0.0191**	**0.1274**	**0.0556**	**0.0176**	**0.0732**	**0.0000**	**42.9886**	**42.9886**	**0.0139**	**0.0000**	**43.3362**

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Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-004	3.3600e-003	2.0600e-003	0.0000	0.0000	1.0000e-005	1.0000e-005	0.0000	1.0000e-005	1.0000e-005	0.0000	0.4145	0.4145	1.0000e-005	7.0000e-005	0.4343
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	1.7000e-004	1.5700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0469	0.0469	4.0000e-005	2.0000e-005	0.0527
Total	**5.8000e-004**	**3.5300e-003**	**3.6300e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**0.4614**	**0.4614**	**5.0000e-005**	**9.0000e-005**	**0.4870**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0487	0.0000	0.0487	0.0250	0.0000	0.0250	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.5800e-003	0.1705	0.3133	4.9000e-004		8.0000e-004	8.0000e-004		8.0000e-004	8.0000e-004	0.0000	42.9886	42.9886	0.0139	0.0000	43.3361
Total	**8.5800e-003**	**0.1705**	**0.3133**	**4.9000e-004**	**0.0487**	**8.0000e-004**	**0.0495**	**0.0250**	**8.0000e-004**	**0.0258**	**0.0000**	**42.9886**	**42.9886**	**0.0139**	**0.0000**	**43.3361**

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Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-004	3.3600e-003	2.0600e-003	0.0000	0.0000	1.0000e-005	1.0000e-005	0.0000	1.0000e-005	1.0000e-005	0.0000	0.4145	0.4145	1.0000e-005	7.0000e-005	0.4343
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	1.7000e-004	1.5700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0469	0.0469	4.0000e-005	2.0000e-005	0.0527
Total	**5.8000e-004**	**3.5300e-003**	**3.6300e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**0.4614**	**0.4614**	**5.0000e-005**	**9.0000e-005**	**0.4870**

3.5 Trenching/Foundation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.5900e-003	0.0349	0.0477	7.0000e-005		1.8600e-003	1.8600e-003		1.7200e-003	1.7200e-003	0.0000	6.2681	6.2681	2.0300e-003	0.0000	6.3188
Total	**3.5900e-003**	**0.0349**	**0.0477**	**7.0000e-005**		**1.8600e-003**	**1.8600e-003**		**1.7200e-003**	**1.7200e-003**	**0.0000**	**6.2681**	**6.2681**	**2.0300e-003**	**0.0000**	**6.3188**

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Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	4.0000e-005	3.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0109	0.0109	1.0000e-005	0.0000	0.0123
Total	**1.0000e-004**	**4.0000e-005**	**3.7000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0109**	**0.0109**	**1.0000e-005**	**0.0000**	**0.0123**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1500e-003	0.0313	0.0540	7.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	6.2681	6.2681	2.0300e-003	0.0000	6.3188
Total	**1.1500e-003**	**0.0313**	**0.0540**	**7.0000e-005**		**1.2000e-004**	**1.2000e-004**		**1.2000e-004**	**1.2000e-004**	**0.0000**	**6.2681**	**6.2681**	**2.0300e-003**	**0.0000**	**6.3188**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	4.0000e-005	3.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0109	0.0109	1.0000e-005	0.0000	0.0123
Total	**1.0000e-004**	**4.0000e-005**	**3.7000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0109**	**0.0109**	**1.0000e-005**	**0.0000**	**0.0123**

3.5 Trenching/Foundation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.0900e-003	0.0479	0.0762	1.1000e-004		2.4400e-003	2.4400e-003		2.2500e-003	2.2500e-003	0.0000	10.0855	10.0855	3.2600e-003	0.0000	10.1671
Total	**5.0900e-003**	**0.0479**	**0.0762**	**1.1000e-004**		**2.4400e-003**	**2.4400e-003**		**2.2500e-003**	**2.2500e-003**	**0.0000**	**10.0855**	**10.0855**	**3.2600e-003**	**0.0000**	**10.1671**

Unmitigated Construction Off-Site

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	6.0000e-005	5.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0170	0.0170	1.0000e-005	1.0000e-005	0.0191
Total	**1.4000e-004**	**6.0000e-005**	**5.6000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0170**	**0.0170**	**1.0000e-005**	**1.0000e-005**	**0.0191**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.8500e-003	0.0504	0.0869	1.1000e-004		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004	0.0000	10.0855	10.0855	3.2600e-003	0.0000	10.1671
Total	**1.8500e-003**	**0.0504**	**0.0869**	**1.1000e-004**		**1.9000e-004**	**1.9000e-004**		**1.9000e-004**	**1.9000e-004**	**0.0000**	**10.0855**	**10.0855**	**3.2600e-003**	**0.0000**	**10.1671**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	6.0000e-005	5.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0170	0.0170	1.0000e-005	1.0000e-005	0.0191
Total	**1.4000e-004**	**6.0000e-005**	**5.6000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0170**	**0.0170**	**1.0000e-005**	**1.0000e-005**	**0.0191**

3.6 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0768	0.7027	0.7364	1.2100e-003		0.0364	0.0364		0.0343	0.0343	0.0000	104.2764	104.2764	0.0250	0.0000	104.9009
Total	**0.0768**	**0.7027**	**0.7364**	**1.2100e-003**		**0.0364**	**0.0364**		**0.0343**	**0.0343**	**0.0000**	**104.2764**	**104.2764**	**0.0250**	**0.0000**	**104.9009**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Hauling	1.6000e-004	3.3400e-003	2.1200e-003	0.0000	0.0000	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.4113	0.4113	1.0000e-005	6.0000e-005	0.4308
Vendor	3.6000e-004	7.7700e-003	4.9000e-003	1.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.8781	0.8781	2.0000e-005	1.4000e-004	0.9202
Worker	2.6200e-003	1.0700e-003	0.0104	0.0000	2.0000e-005	1.0000e-005	3.0000e-005	1.0000e-005	1.0000e-005	1.0000e-005	0.0000	0.3143	0.3143	2.6000e-004	1.1000e-004	0.3526
Total	**3.1400e-003**	**0.0122**	**0.0175**	**1.0000e-005**	**4.0000e-005**	**2.0000e-005**	**7.0000e-005**	**2.0000e-005**	**2.0000e-005**	**3.0000e-005**	**0.0000**	**1.6037**	**1.6037**	**2.9000e-004**	**3.1000e-004**	**1.7036**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0240	0.4911	0.8043	1.2100e-003		3.8100e-003	3.8100e-003		3.8100e-003	3.8100e-003	0.0000	104.2762	104.2762	0.0250	0.0000	104.9008
Total	**0.0240**	**0.4911**	**0.8043**	**1.2100e-003**		**3.8100e-003**	**3.8100e-003**		**3.8100e-003**	**3.8100e-003**	**0.0000**	**104.2762**	**104.2762**	**0.0250**	**0.0000**	**104.9008**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.6000e-004	3.3400e-003	2.1200e-003	0.0000	0.0000	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.4113	0.4113	1.0000e-005	6.0000e-005	0.4308

Vendor	3.6000e-004	7.7700e-003	4.9000e-003	1.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.8781	0.8781	2.0000e-005	1.4000e-004	0.9202
Worker	2.6200e-003	1.0700e-003	0.0104	0.0000	2.0000e-005	1.0000e-005	3.0000e-005	1.0000e-005	1.0000e-005	1.0000e-005	0.0000	0.3143	0.3143	2.6000e-004	1.1000e-004	0.3526
Total	**3.1400e-003**	**0.0122**	**0.0175**	**1.0000e-005**	**4.0000e-005**	**2.0000e-005**	**7.0000e-005**	**2.0000e-005**	**2.0000e-005**	**3.0000e-005**	**0.0000**	**1.6037**	**1.6037**	**2.9000e-004**	**3.1000e-004**	**1.7036**

3.7 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.7900e-003	0.0857	0.1098	1.7000e-004		4.3900e-003	4.3900e-003		4.0500e-003	4.0500e-003	0.0000	14.7383	14.7383	4.6300e-003	0.0000	14.8540
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.7900e-003**	**0.0857**	**0.1098**	**1.7000e-004**		**4.3900e-003**	**4.3900e-003**		**4.0500e-003**	**4.0500e-003**	**0.0000**	**14.7383**	**14.7383**	**4.6300e-003**	**0.0000**	**14.8540**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-005	1.6800e-003	1.0700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2068	0.2068	0.0000	3.0000e-005	0.2166

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Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.1000e-004	1.1000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0331	0.0331	3.0000e-005	1.0000e-005	0.0371
Total	**3.6000e-004**	**1.7900e-003**	**2.1700e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.2398**	**0.2398**	**3.0000e-005**	**4.0000e-005**	**0.2537**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.6200e-003	0.0706	0.1218	1.7000e-004		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004	0.0000	14.7383	14.7383	4.6300e-003	0.0000	14.8540
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.6200e-003**	**0.0706**	**0.1218**	**1.7000e-004**		**2.6000e-004**	**2.6000e-004**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**14.7383**	**14.7383**	**4.6300e-003**	**0.0000**	**14.8540**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-005	1.6800e-003	1.0700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2068	0.2068	0.0000	3.0000e-005	0.2166

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.1000e-004	1.1000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0331	0.0331	3.0000e-005	1.0000e-005	0.0371
Total	**3.6000e-004**	**1.7900e-003**	**2.1700e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.2398**	**0.2398**	**3.0000e-005**	**4.0000e-005**	**0.2537**

3.8 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2694					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8400e-003	0.0127	0.0163	3.0000e-005		7.4000e-004	7.4000e-004		7.4000e-004	7.4000e-004	0.0000	2.2979	2.2979	1.5000e-004	0.0000	2.3017
Total	**0.2712**	**0.0127**	**0.0163**	**3.0000e-005**		**7.4000e-004**	**7.4000e-004**		**7.4000e-004**	**7.4000e-004**	**0.0000**	**2.2979**	**2.2979**	**1.5000e-004**	**0.0000**	**2.3017**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-004	5.0000e-005	4.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0132	0.0132	1.0000e-005	0.0000	0.0149
Total	**1.1000e-004**	**5.0000e-005**	**4.4000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0132**	**0.0132**	**1.0000e-005**	**0.0000**	**0.0149**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2694					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.9000e-004	9.5400e-003	0.0165	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.2979	2.2979	1.5000e-004	0.0000	2.3017
Total	**0.2699**	**9.5400e-003**	**0.0165**	**3.0000e-005**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**2.2979**	**2.2979**	**1.5000e-004**	**0.0000**	**2.3017**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-004	5.0000e-005	4.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0132	0.0132	1.0000e-005	0.0000	0.0149
Total	**1.1000e-004**	**5.0000e-005**	**4.4000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0132**	**0.0132**	**1.0000e-005**	**0.0000**	**0.0149**

597 Helman Lane Warehouse - Part 2 Construction - Sonoma-San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

380 Blodgett Warehouse - Part 2 Construction

Sonoma-San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	35.50	1000sqft	2.70	35,500.00	0
Other Asphalt Surfaces	31.60	1000sqft	0.00	31,600.00	0
Other Non-Asphalt Surfaces	18.60	1000sqft	0.00	18,600.00	0
Parking Lot	32.00	Space	0.00	12,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	75
Climate Zone	4			**Operational Year**	2024
Utility Company	Sonoma Clean Power				
CO2 Intensity (lb/MWhr)	119.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project size = 2.7 acres. Paved area = 5,200 + 45,000 = 50,200

Construction Phase - Based on provided construction schedule

Off-road Equipment - added aerial lift

Off-road Equipment - added trenching equipment

Grading - material export = 3,000cy

Trips and VMT - added 370 cement and 120 asphalt trips at vendor distance

Vehicle Trips - Default trip rate

Off-road Equipment -

Construction Off-road Equipment Mitigation - Tier 4 Mobile Off-Road equipment and BMPs

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	55
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	3.00	5.00
tblConstructionPhase	PhaseEndDate	8/3/2022	8/5/2022
tblConstructionPhase	PhaseEndDate	8/11/2022	8/12/2022
tblConstructionPhase	PhaseStartDate	8/4/2022	8/5/2022
tblGrading	MaterialExported	0.00	3,000.00
tblLandUse	LotAcreage	0.81	2.70

tblLandUse	LotAcreage	0.73	0.00
tblLandUse	LotAcreage	0.43	0.00
tblLandUse	LotAcreage	0.29	0.00
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblTripsAndVMT	HaulingTripLength	20.00	7.30
tblTripsAndVMT	HaulingTripLength	20.00	7.30
tblTripsAndVMT	HaulingTripNumber	0.00	370.00
tblTripsAndVMT	HaulingTripNumber	0.00	120.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1171	0.9605	0.9272	1.9500e-003	0.0515	0.0421	0.0936	0.0178	0.0401	0.0580	0.0000	168.9883	168.9883	0.0276	5.2200e-003	171.2349
2023	0.3160	0.9239	1.0034	2.0100e-003	0.0272	0.0395	0.0667	7.3900e-003	0.0378	0.0452	0.0000	172.1606	172.1606	0.0271	3.9600e-003	174.0193
Maximum	**0.3160**	**0.9605**	**1.0034**	**2.0100e-003**	**0.0515**	**0.0421**	**0.0936**	**0.0178**	**0.0401**	**0.0580**	**0.0000**	**172.1606**	**172.1606**	**0.0276**	**5.2200e-003**	**174.0193**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0839	0.7284	1.0177	1.9500e-003	0.0258	0.0193	0.0451	9.0500e-003	0.0192	0.0283	0.0000	168.9882	168.9882	0.0276	5.2200e-003	171.2348
2023	0.2874	0.7459	1.0917	2.0100e-003	0.0149	0.0196	0.0344	4.3700e-003	0.0195	0.0239	0.0000	172.1604	172.1604	0.0271	3.9600e-003	174.0191
Maximum	**0.2874**	**0.7459**	**1.0917**	**2.0100e-003**	**0.0258**	**0.0196**	**0.0451**	**9.0500e-003**	**0.0195**	**0.0283**	**0.0000**	**172.1604**	**172.1604**	**0.0276**	**5.2200e-003**	**174.0191**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**14.28**	**21.76**	**-9.27**	**0.00**	**48.28**	**52.40**	**50.39**	**46.79**	**50.24**	**49.40**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	**Start Date**	**End Date**	**Maximum Unmitigated ROG + NOX (tons/quarter)**	**Maximum Mitigated ROG + NOX (tons/quarter)**
1	**8-1-2022**	**10-31-2022**	0.6751	0.5060
2	**11-1-2022**	**1-31-2023**	0.5723	0.4466
3	**2-1-2023**	**4-30-2023**	0.5240	0.4169
4	**5-1-2023**	**7-31-2023**	0.5299	0.4683
		Highest	0.6751	0.5060

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1626	1.0000e-005	1.0800e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.1000e-003	2.1000e-003	1.0000e-005	0.0000	2.2400e-003
Energy	6.6000e-004	5.9900e-003	5.0300e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	13.5225	13.5225	2.0500e-003	3.5000e-004	13.6790

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mobile	0.0363	0.0517	0.3403	6.6000e-004	0.0663	6.2000e-004	0.0670	0.0178	5.8000e-004	0.0184	0.0000	61.7641	61.7641	4.2100e-003	3.2400e-003	62.8351
Waste						0.0000	0.0000		0.0000	0.0000	6.7738	0.0000	6.7738	0.4003	0.0000	16.7818
Water						0.0000	0.0000		0.0000	0.0000	2.6045	2.4175	5.0219	0.2682	6.4000e-003	13.6324
Total	**0.1996**	**0.0577**	**0.3464**	**7.0000e-004**	**0.0663**	**1.0700e-003**	**0.0674**	**0.0178**	**1.0300e-003**	**0.0188**	**9.3783**	**77.7062**	**87.0845**	**0.6748**	**9.9900e-003**	**106.9306**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1626	1.0000e-005	1.0800e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.1000e-003	2.1000e-003	1.0000e-005	0.0000	2.2400e-003
Energy	6.6000e-004	5.9900e-003	5.0300e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	13.5225	13.5225	2.0500e-003	3.5000e-004	13.6790
Mobile	0.0363	0.0517	0.3403	6.6000e-004	0.0663	6.2000e-004	0.0670	0.0178	5.8000e-004	0.0184	0.0000	61.7641	61.7641	4.2100e-003	3.2400e-003	62.8351
Waste						0.0000	0.0000		0.0000	0.0000	6.7738	0.0000	6.7738	0.4003	0.0000	16.7818
Water						0.0000	0.0000		0.0000	0.0000	2.6045	2.4175	5.0219	0.2682	6.4000e-003	13.6324
Total	**0.1996**	**0.0577**	**0.3464**	**7.0000e-004**	**0.0663**	**1.0700e-003**	**0.0674**	**0.0178**	**1.0300e-003**	**0.0188**	**9.3783**	**77.7062**	**87.0845**	**0.6748**	**9.9900e-003**	**106.9306**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/1/2022	8/5/2022	5	5	
2	Grading	Grading	8/5/2022	8/12/2022	5	6	
3	Building Construction	Building Construction	8/12/2022	6/15/2023	5	220	
4	Paving	Paving	6/16/2023	6/29/2023	5	10	
5	Architectural Coating	Architectural Coating	6/30/2023	7/13/2023	5	10	
6	Trenching/foundation	Trenching	8/6/2022	9/16/2022	5	30	

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 6

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 53,250; Non-Residential Outdoor: 17,750; Striped Parking Area: 3,780

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Scrapers	1	8.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	130	0.42

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48
Architectural Coating	Aerial Lifts	1	6.00	63	0.31
Trenching/foundation	Excavators	1	6.00	158	0.38
Trenching/foundation	Tractors/Loaders/Backhoes	1	6.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	375.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	41.00	16.00	370.00	10.80	7.30	7.30	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	120.00	10.80	7.30	7.30	LD_Mix	HDT_Mix	HHDT
Architectural Coating	2	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Trenching/foundation	2	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.9800e-003	0.0000	3.9800e-003	4.3000e-004	0.0000	4.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4500e-003	0.0392	0.0251	6.0000e-005		1.4900e-003	1.4900e-003		1.3700e-003	1.3700e-003	0.0000	5.3868	5.3868	1.7400e-003	0.0000	5.4303
Total	**3.4500e-003**	**0.0392**	**0.0251**	**6.0000e-005**	**3.9800e-003**	**1.4900e-003**	**5.4700e-003**	**4.3000e-004**	**1.3700e-003**	**1.8000e-003**	**0.0000**	**5.3868**	**5.3868**	**1.7400e-003**	**0.0000**	**5.4303**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	6.0000e-005	6.0000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1320	0.1320	1.0000e-005	0.0000	0.1335
Total	**8.0000e-005**	**6.0000e-005**	**6.0000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1320**	**0.1320**	**1.0000e-005**	**0.0000**	**0.1335**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.7900e-003	0.0000	1.7900e-003	1.9000e-004	0.0000	1.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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Off-Road	1.0400e-003	0.0173	0.0341	6.0000e-005		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004	0.0000	5.3868	5.3868	1.7400e-003	0.0000	5.4303
Total	**1.0400e-003**	**0.0173**	**0.0341**	**6.0000e-005**	**1.7900e-003**	**1.0000e-004**	**1.8900e-003**	**1.9000e-004**	**1.0000e-004**	**2.9000e-004**	**0.0000**	**5.3868**	**5.3868**	**1.7400e-003**	**0.0000**	**5.4303**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	6.0000e-005	6.0000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.1320	0.1320	1.0000e-005	0.0000	0.1335
Total	**8.0000e-005**	**6.0000e-005**	**6.0000e-004**	**0.0000**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.1320**	**0.1320**	**1.0000e-005**	**0.0000**	**0.1335**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0214	0.0000	0.0214	0.0103	0.0000	0.0103	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6200e-003	0.0510	0.0277	6.0000e-005		2.2300e-003	2.2300e-003		2.0500e-003	2.0500e-003	0.0000	5.4308	5.4308	1.7600e-003	0.0000	5.4747
Total	**4.6200e-003**	**0.0510**	**0.0277**	**6.0000e-005**	**0.0214**	**2.2300e-003**	**0.0237**	**0.0103**	**2.0500e-003**	**0.0124**	**0.0000**	**5.4308**	**5.4308**	**1.7600e-003**	**0.0000**	**5.4747**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.7000e-004	0.0340	6.9300e-003	1.2000e-004	3.1200e-003	3.0000e-004	3.4200e-003	8.6000e-004	2.8000e-004	1.1400e-003	0.0000	11.9527	11.9527	3.4000e-004	1.8900e-003	12.5237
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-004	8.0000e-005	9.0000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1980	0.1980	1.0000e-005	1.0000e-005	0.2002
Total	**9.8000e-004**	**0.0341**	**7.8300e-003**	**1.2000e-004**	**3.3600e-003**	**3.0000e-004**	**3.6600e-003**	**9.2000e-004**	**2.8000e-004**	**1.2000e-003**	**0.0000**	**12.1507**	**12.1507**	**3.5000e-004**	**1.9000e-003**	**12.7239**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.6400e-003	0.0000	9.6400e-003	4.6300e-003	0.0000	4.6300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1100e-003	0.0191	0.0364	6.0000e-005		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004	0.0000	5.4308	5.4308	1.7600e-003	0.0000	5.4747
Total	**1.1100e-003**	**0.0191**	**0.0364**	**6.0000e-005**	**9.6400e-003**	**1.0000e-004**	**9.7400e-003**	**4.6300e-003**	**1.0000e-004**	**4.7300e-003**	**0.0000**	**5.4308**	**5.4308**	**1.7600e-003**	**0.0000**	**5.4747**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.7000e-004	0.0340	6.9300e-003	1.2000e-004	1.8300e-003	3.0000e-004	2.1200e-003	5.4000e-004	2.8000e-004	8.2000e-004	0.0000	11.9527	11.9527	3.4000e-004	1.8900e-003	12.5237
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-004	8.0000e-005	9.0000e-004	0.0000	1.2000e-004	0.0000	1.3000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1980	0.1980	1.0000e-005	1.0000e-005	0.2002
Total	**9.8000e-004**	**0.0341**	**7.8300e-003**	**1.2000e-004**	**1.9500e-003**	**3.0000e-004**	**2.2500e-003**	**5.8000e-004**	**2.8000e-004**	**8.6000e-004**	**0.0000**	**12.1507**	**12.1507**	**3.5000e-004**	**1.9000e-003**	**12.7239**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0937	0.7375	0.7248	1.2600e-003		0.0355	0.0355		0.0340	0.0340	0.0000	104.8785	104.8785	0.0202	0.0000	105.3843
Total	**0.0937**	**0.7375**	**0.7248**	**1.2600e-003**		**0.0355**	**0.0355**		**0.0340**	**0.0340**	**0.0000**	**104.8785**	**104.8785**	**0.0202**	**0.0000**	**105.3843**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9000e-004	6.6000e-003	1.7600e-003	2.0000e-005	5.2000e-004	5.0000e-005	5.7000e-004	1.4000e-004	5.0000e-005	1.9000e-004	0.0000	2.0961	2.0961	6.0000e-005	3.3000e-004	2.1962
Vendor	1.7400e-003	0.0474	0.0129	1.7000e-004	5.2500e-003	4.8000e-004	5.7200e-003	1.5200e-003	4.6000e-004	1.9700e-003	0.0000	16.5751	16.5751	3.2000e-004	2.5100e-003	17.3312
Worker	7.9100e-003	5.7000e-003	0.0624	1.5000e-004	0.0163	1.1000e-004	0.0164	4.3300e-003	1.0000e-004	4.4200e-003	0.0000	13.6660	13.6660	5.2000e-004	4.6000e-004	13.8167
Total	**9.8400e-003**	**0.0597**	**0.0770**	**3.4000e-004**	**0.0220**	**6.4000e-004**	**0.0227**	**5.9900e-003**	**6.1000e-004**	**6.5800e-003**	**0.0000**	**32.3371**	**32.3371**	**9.0000e-004**	**3.3000e-003**	**33.3441**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0691	0.5572	0.7890	1.2600e-003		0.0180	0.0180		0.0180	0.0180	0.0000	104.8783	104.8783	0.0202	0.0000	105.3842
Total	**0.0691**	**0.5572**	**0.7890**	**1.2600e-003**		**0.0180**	**0.0180**		**0.0180**	**0.0180**	**0.0000**	**104.8783**	**104.8783**	**0.0202**	**0.0000**	**105.3842**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	tons/yr										MT/yr					
Hauling	1.9000e-004	6.6000e-003	1.7600e-003	2.0000e-005	3.0000e-004	5.0000e-005	3.5000e-004	9.0000e-005	5.0000e-005	1.4000e-004	0.0000	2.0961	2.0961	6.0000e-005	3.3000e-004	2.1962
Vendor	1.7400e-003	0.0474	0.0129	1.7000e-004	3.2100e-003	4.8000e-004	3.6900e-003	1.0200e-003	4.6000e-004	1.4700e-003	0.0000	16.5751	16.5751	3.2000e-004	2.5100e-003	17.3312
Worker	7.9100e-003	5.7000e-003	0.0624	1.5000e-004	8.5400e-003	1.1000e-004	8.6400e-003	2.4300e-003	1.0000e-004	2.5300e-003	0.0000	13.6660	13.6660	5.2000e-004	4.6000e-004	13.8167
Total	**9.8400e-003**	**0.0597**	**0.0770**	**3.4000e-004**	**0.0121**	**6.4000e-004**	**0.0127**	**3.5400e-003**	**6.1000e-004**	**4.1400e-003**	**0.0000**	**32.3371**	**32.3371**	**9.0000e-004**	**3.3000e-003**	**33.3441**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1020	0.8106	0.8458	1.4900e-003		0.0365	0.0365		0.0350	0.0350	0.0000	123.5827	123.5827	0.0234	0.0000	124.1670
Total	**0.1020**	**0.8106**	**0.8458**	**1.4900e-003**		**0.0365**	**0.0365**		**0.0350**	**0.0350**	**0.0000**	**123.5827**	**123.5827**	**0.0234**	**0.0000**	**124.1670**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	6.4400e-003	1.9200e-003	2.0000e-005	6.1000e-004	4.0000e-005	6.5000e-004	1.7000e-004	4.0000e-005	2.0000e-004	0.0000	2.3648	2.3648	7.0000e-005	3.7000e-004	2.4778
Vendor	1.0400e-003	0.0452	0.0127	1.9000e-004	6.1800e-003	2.4000e-004	6.4200e-003	1.7900e-003	2.3000e-004	2.0200e-003	0.0000	18.7766	18.7766	3.4000e-004	2.8400e-003	19.6317
Worker	8.6400e-003	5.9200e-003	0.0672	1.7000e-004	0.0192	1.2000e-004	0.0193	5.1000e-003	1.1000e-004	5.2000e-003	0.0000	15.6926	15.6926	5.5000e-004	5.0000e-004	15.8555
Total	**9.8100e-003**	**0.0575**	**0.0818**	**3.8000e-004**	**0.0259**	**4.0000e-004**	**0.0263**	**7.0600e-003**	**3.8000e-004**	**7.4200e-003**	**0.0000**	**36.8340**	**36.8340**	**9.6000e-004**	**3.7100e-003**	**37.9651**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0760	0.6362	0.9261	1.4900e-003		0.0185	0.0185		0.0185	0.0185	0.0000	123.5826	123.5826	0.0234	0.0000	124.1669
Total	**0.0760**	**0.6362**	**0.9261**	**1.4900e-003**		**0.0185**	**0.0185**		**0.0185**	**0.0185**	**0.0000**	**123.5826**	**123.5826**	**0.0234**	**0.0000**	**124.1669**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	6.4400e-003	1.9200e-003	2.0000e-005	3.6000e-004	4.0000e-005	3.9000e-004	1.1000e-004	4.0000e-005	1.4000e-004	0.0000	2.3648	2.3648	7.0000e-005	3.7000e-004	2.4778
Vendor	1.0400e-003	0.0452	0.0127	1.9000e-004	3.7800e-003	2.4000e-004	4.0200e-003	1.2000e-003	2.3000e-004	1.4300e-003	0.0000	18.7766	18.7766	3.4000e-004	2.8400e-003	19.6317
Worker	8.6400e-003	5.9200e-003	0.0672	1.7000e-004	0.0101	1.2000e-004	0.0102	2.8700e-003	1.1000e-004	2.9700e-003	0.0000	15.6926	15.6926	5.5000e-004	5.0000e-004	15.8555

Total	**9.8100e-003**	**0.0575**	**0.0818**	**3.8000e-004**	**0.0142**	**4.0000e-004**	**0.0146**	**4.1800e-003**	**3.8000e-004**	**4.5400e-003**	**0.0000**	**36.8340**	**36.8340**	**9.6000e-004**	**3.7100e-003**	**37.9651**

3.5 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.4000e-003	0.0431	0.0584	9.0000e-005		2.1700e-003	2.1700e-003		2.0000e-003	2.0000e-003	0.0000	7.7564	7.7564	2.4600e-003	0.0000	7.8179
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.4000e-003**	**0.0431**	**0.0584**	**9.0000e-005**		**2.1700e-003**	**2.1700e-003**		**2.0000e-003**	**2.0000e-003**	**0.0000**	**7.7564**	**7.7564**	**2.4600e-003**	**0.0000**	**7.8179**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-005	3.8600e-003	1.1500e-003	1.0000e-005	3.7000e-004	2.0000e-005	3.9000e-004	1.0000e-004	2.0000e-005	1.2000e-004	0.0000	1.4179	1.4179	4.0000e-005	2.2000e-004	1.4857
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7000e-004	1.8000e-004	2.0600e-003	1.0000e-005	5.9000e-004	0.0000	5.9000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.4825	0.4825	2.0000e-005	2.0000e-005	0.4875
Total	**3.5000e-004**	**4.0400e-003**	**3.2100e-003**	**2.0000e-005**	**9.6000e-004**	**2.0000e-005**	**9.8000e-004**	**2.6000e-004**	**2.0000e-005**	**2.8000e-004**	**0.0000**	**1.9003**	**1.9003**	**6.0000e-005**	**2.4000e-004**	**1.9731**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.7700e-003	0.0395	0.0664	9.0000e-005		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004	0.0000	7.7564	7.7564	2.4600e-003	0.0000	7.8178
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.7700e-003**	**0.0395**	**0.0664**	**9.0000e-005**		**2.1000e-004**	**2.1000e-004**		**2.1000e-004**	**2.1000e-004**	**0.0000**	**7.7564**	**7.7564**	**2.4600e-003**	**0.0000**	**7.8178**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-005	3.8600e-003	1.1500e-003	1.0000e-005	2.1000e-004	2.0000e-005	2.4000e-004	6.0000e-005	2.0000e-005	8.0000e-005	0.0000	1.4179	1.4179	4.0000e-005	2.2000e-004	1.4857
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7000e-004	1.8000e-004	2.0600e-003	1.0000e-005	3.1000e-004	0.0000	3.1000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.4825	0.4825	2.0000e-005	2.0000e-005	0.4875
Total	**3.5000e-004**	**4.0400e-003**	**3.2100e-003**	**2.0000e-005**	**5.2000e-004**	**2.0000e-005**	**5.5000e-004**	**1.5000e-004**	**2.0000e-005**	**1.7000e-004**	**0.0000**	**1.9003**	**1.9003**	**6.0000e-005**	**2.4000e-004**	**1.9731**

597 Helman Lane Warehouse - Part 2 Construction - Sonoma-San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1983					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0900e-003	8.5100e-003	0.0132	2.0000e-005		3.9000e-004	3.9000e-004		3.9000e-004	3.9000e-004	0.0000	1.8299	1.8299	2.6000e-004	0.0000	1.8362
Total	**0.1993**	**8.5100e-003**	**0.0132**	**2.0000e-005**		**3.9000e-004**	**3.9000e-004**		**3.9000e-004**	**3.9000e-004**	**0.0000**	**1.8299**	**1.8299**	**2.6000e-004**	**0.0000**	**1.8362**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.0000e-004	1.1000e-003	0.0000	3.1000e-004	0.0000	3.2000e-004	8.0000e-005	0.0000	9.0000e-005	0.0000	0.2573	0.2573	1.0000e-005	1.0000e-005	0.2600
Total	**1.4000e-004**	**1.0000e-004**	**1.1000e-003**	**0.0000**	**3.1000e-004**	**0.0000**	**3.2000e-004**	**8.0000e-005**	**0.0000**	**9.0000e-005**	**0.0000**	**0.2573**	**0.2573**	**1.0000e-005**	**1.0000e-005**	**0.2600**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1983					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0900e-003	8.5100e-003	0.0132	2.0000e-005		3.9000e-004	3.9000e-004		3.9000e-004	3.9000e-004	0.0000	1.8299	1.8299	2.6000e-004	0.0000	1.8362
Total	**0.1993**	**8.5100e-003**	**0.0132**	**2.0000e-005**		**3.9000e-004**	**3.9000e-004**		**3.9000e-004**	**3.9000e-004**	**0.0000**	**1.8299**	**1.8299**	**2.6000e-004**	**0.0000**	**1.8362**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	1.0000e-004	1.1000e-003	0.0000	1.6000e-004	0.0000	1.7000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.2573	0.2573	1.0000e-005	1.0000e-005	0.2600
Total	**1.4000e-004**	**1.0000e-004**	**1.1000e-003**	**0.0000**	**1.6000e-004**	**0.0000**	**1.7000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.2573**	**0.2573**	**1.0000e-005**	**1.0000e-005**	**0.2600**

3.7 Trenching/foundation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.1300e-003	0.0388	0.0618	9.0000e-005		1.9800e-003	1.9800e-003		1.8200e-003	1.8200e-003	0.0000	8.1775	8.1775	2.6400e-003	0.0000	8.2436
Total	**4.1300e-003**	**0.0388**	**0.0618**	**9.0000e-005**		**1.9800e-003**	**1.9800e-003**		**1.8200e-003**	**1.8200e-003**	**0.0000**	**8.1775**	**8.1775**	**2.6400e-003**	**0.0000**	**8.2436**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	2.1000e-004	2.2600e-003	1.0000e-005	5.9000e-004	0.0000	5.9000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.4950	0.4950	2.0000e-005	2.0000e-005	0.5005
Total	**2.9000e-004**	**2.1000e-004**	**2.2600e-003**	**1.0000e-005**	**5.9000e-004**	**0.0000**	**5.9000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.4950**	**0.4950**	**2.0000e-005**	**2.0000e-005**	**0.5005**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5000e-003	0.0409	0.0704	9.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	8.1775	8.1775	2.6400e-003	0.0000	8.2436
Total	**1.5000e-003**	**0.0409**	**0.0704**	**9.0000e-005**		**1.5000e-004**	**1.5000e-004**		**1.5000e-004**	**1.5000e-004**	**0.0000**	**8.1775**	**8.1775**	**2.6400e-003**	**0.0000**	**8.2436**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	2.1000e-004	2.2600e-003	1.0000e-005	3.1000e-004	0.0000	3.1000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.4950	0.4950	2.0000e-005	2.0000e-005	0.5005
Total	**2.9000e-004**	**2.1000e-004**	**2.2600e-003**	**1.0000e-005**	**3.1000e-004**	**0.0000**	**3.1000e-004**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**0.0000**	**0.4950**	**0.4950**	**2.0000e-005**	**2.0000e-005**	**0.5005**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

597 Helman Lane Warehouse - Part 2 Construction - Sonoma-San Francisco County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	tons/yr										MT/yr					
Mitigated	0.0363	0.0517	0.3403	6.6000e-004	0.0663	6.2000e-004	0.0670	0.0178	5.8000e-004	0.0184	0.0000	61.7641	61.7641	4.2100e-003	3.2400e-003	62.8351
Unmitigated	0.0363	0.0517	0.3403	6.6000e-004	0.0663	6.2000e-004	0.0670	0.0178	5.8000e-004	0.0184	0.0000	61.7641	61.7641	4.2100e-003	3.2400e-003	62.8351

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	61.77	61.77	61.77	180,338	180,338
Total	61.77	61.77	61.77	180,338	180,338

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.536774	0.058783	0.173424	0.127345	0.036375	0.008877	0.014453	0.006568	0.001093	0.000297	0.030119	0.001546	0.004347
Other Non-Asphalt Surfaces	0.536774	0.058783	0.173424	0.127345	0.036375	0.008877	0.014453	0.006568	0.001093	0.000297	0.030119	0.001546	0.004347
Parking Lot	0.536774	0.058783	0.173424	0.127345	0.036375	0.008877	0.014453	0.006568	0.001093	0.000297	0.030119	0.001546	0.004347
Unrefrigerated Warehouse-No Rail	0.536774	0.058783	0.173424	0.127345	0.036375	0.008877	0.014453	0.006568	0.001093	0.000297	0.030119	0.001546	0.004347

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	7.0058	7.0058	1.9300e-003	2.3000e-004	7.1235
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	7.0058	7.0058	1.9300e-003	2.3000e-004	7.1235
NaturalGas Mitigated	6.6000e-004	5.9900e-003	5.0300e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	6.5168	6.5168	1.2000e-004	1.2000e-004	6.5555
NaturalGas Unmitigated	6.6000e-004	5.9900e-003	5.0300e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	6.5168	6.5168	1.2000e-004	1.2000e-004	6.5555

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	122120	6.6000e-004	5.9900e-003	5.0300e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	6.5168	6.5168	1.2000e-004	1.2000e-004	6.5555

Total		**6.6000e-004**	**5.9900e-003**	**5.0300e-003**	**4.0000e-005**		**4.5000e-004**	**4.5000e-004**		**4.5000e-004**	**4.5000e-004**	**0.0000**	**6.5168**	**6.5168**	**1.2000e-004**	**1.2000e-004**	**6.5555**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	122120	6.6000e-004	5.9900e-003	5.0300e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	6.5168	6.5168	1.2000e-004	1.2000e-004	6.5555
Total		**6.6000e-004**	**5.9900e-003**	**5.0300e-003**	**4.0000e-005**		**4.5000e-004**	**4.5000e-004**		**4.5000e-004**	**4.5000e-004**	**0.0000**	**6.5168**	**6.5168**	**1.2000e-004**	**1.2000e-004**	**6.5555**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	4480	0.2438	7.0000e-005	1.0000e-005	0.2479
Unrefrigerated Warehouse-No Rail	124250	6.7619	1.8600e-003	2.3000e-004	6.8756
Total		**7.0058**	**1.9300e-003**	**2.4000e-004**	**7.1235**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	4480	0.2438	7.0000e-005	1.0000e-005	0.2479
Unrefrigerated Warehouse-No Rail	124250	6.7619	1.8600e-003	2.3000e-004	6.8756
Total		**7.0058**	**1.9300e-003**	**2.4000e-004**	**7.1235**

6.0 Area Detail

6.1 Mitigation Measures Area

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1626	1.0000e-005	1.0800e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.1000e-003	2.1000e-003	1.0000e-005	0.0000	2.2400e-003
Unmitigated	0.1626	1.0000e-005	1.0800e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.1000e-003	2.1000e-003	1.0000e-005	0.0000	2.2400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0198					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1427					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-004	1.0000e-005	1.0800e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.1000e-003	2.1000e-003	1.0000e-005	0.0000	2.2400e-003
Total	**0.1627**	**1.0000e-005**	**1.0800e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.1000e-003**	**2.1000e-003**	**1.0000e-005**	**0.0000**	**2.2400e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0198					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1427					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-004	1.0000e-005	1.0800e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.1000e-003	2.1000e-003	1.0000e-005	0.0000	2.2400e-003
Total	**0.1627**	**1.0000e-005**	**1.0800e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.1000e-003**	**2.1000e-003**	**1.0000e-005**	**0.0000**	**2.2400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	5.0219	0.2682	6.4000e-003	13.6324
Unmitigated	5.0219	0.2682	6.4000e-003	13.6324

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			

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Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	8.20937 / 0	5.0219	0.2682	6.4000e-003	13.6324
Total		**5.0219**	**0.2682**	**6.4000e-003**	**13.6324**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	8.20937 / 0	5.0219	0.2682	6.4000e-003	13.6324
Total		**5.0219**	**0.2682**	**6.4000e-003**	**13.6324**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	6.7738	0.4003	0.0000	16.7818
Unmitigated	6.7738	0.4003	0.0000	16.7818

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	33.37	6.7738	0.4003	0.0000	16.7818
Total		**6.7738**	**0.4003**	**0.0000**	**16.7818**

Mitigated

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	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	33.37	6.7738	0.4003	0.0000	16.7818
Total		**6.7738**	**0.4003**	**0.0000**	**16.7818**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	85.56	1000sqft	5.10	85,560.00	0
Parking Lot	81.00	Space	0.73	32,400.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Precipitation Freq (Days)** 75

Climate Zone 4 **Operational Year** 2024

Utility Company Sonoma Clean Power

CO2 Intensity (lb/MWhr) 119.98 **CH4 Intensity (lb/MWhr)** 0.033 **N2O Intensity (lb/MWhr)** 0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Based on project 2021 and 2022 construction worksheet

Construction Phase - Operation run

Off-road Equipment - No demolition

Trips and VMT - Concrete = 185 deliveries (370 trips) Asphalt = 928 cy = 93 deliveries = 186 trips at vendor distance

Grading - Based on project construction worksheet

Vehicle Trips - Default trip rate = 150 daily trips but 60% assumed to be trucks and modeled seperately (Rate = 0.70/1ksf)

Energy Use -

Operational Off-Road Equipment - Forklift modeled seperately

Fleet Mix - Default trip rate. Trucks modeled seperately

Off-road Equipment - operation run

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	0.00
tblConstructionPhase	PhaseEndDate	9/9/2022	8/26/2022
tblGrading	AcresOfGrading	0.00	15.00
tblLandUse	LotAcreage	1.96	5.10
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	0.00
tblVehicleTrips	ST_TR	1.74	0.70
tblVehicleTrips	SU_TR	1.74	0.70
tblVehicleTrips	WD_TR	1.74	0.70

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3817	1.0000e-005	1.5300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9800e-003	2.9800e-003	1.0000e-005	0.0000	3.1700e-003
Energy	1.5900e-003	0.0144	0.0121	9.0000e-005		1.1000e-003	1.1000e-003		1.1000e-003	1.1000e-003	0.0000	32.6207	32.6207	4.9500e-003	8.5000e-004	32.9984
Mobile	0.0352	0.0501	0.3300	6.4000e-004	0.0643	6.0000e-004	0.0649	0.0172	5.7000e-004	0.0178	0.0000	59.8863	59.8863	4.0800e-003	3.1400e-003	60.9248
Offroad	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	16.3266	0.0000	16.3266	0.9649	0.0000	40.4484
Water						0.0000	0.0000		0.0000	0.0000	6.2771	5.8265	12.1036	0.6463	0.0154	32.8560
Total	**0.4185**	**0.0646**	**0.3436**	**7.3000e-004**	**0.0643**	**1.7100e-003**	**0.0660**	**0.0172**	**1.6800e-003**	**0.0189**	**22.6037**	**98.3365**	**120.9401**	**1.6202**	**0.0194**	**167.2307**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3817	1.0000e-005	1.5300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9800e-003	2.9800e-003	1.0000e-005	0.0000	3.1700e-003
Energy	1.5900e-003	0.0144	0.0121	9.0000e-005		1.1000e-003	1.1000e-003		1.1000e-003	1.1000e-003	0.0000	32.6207	32.6207	4.9500e-003	8.5000e-004	32.9984
Mobile	0.0352	0.0501	0.3300	6.4000e-004	0.0643	6.0000e-004	0.0649	0.0172	5.7000e-004	0.0178	0.0000	59.8863	59.8863	4.0800e-003	3.1400e-003	60.9248
Offroad	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	16.3266	0.0000	16.3266	0.9649	0.0000	40.4484
Water						0.0000	0.0000		0.0000	0.0000	6.2771	5.8265	12.1036	0.6463	0.0154	32.8560
Total	**0.4185**	**0.0646**	**0.3436**	**7.3000e-004**	**0.0643**	**1.7100e-003**	**0.0660**	**0.0172**	**1.6800e-003**	**0.0189**	**22.6037**	**98.3365**	**120.9401**	**1.6202**	**0.0194**	**167.2307**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description

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1	Site Preparation	Site Preparation	8/27/2022	8/26/2022		5	0	

Acres of Grading (Site Preparation Phase): 15

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.73

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0352	0.0501	0.3300	6.4000e-004	0.0643	6.0000e-004	0.0649	0.0172	5.7000e-004	0.0178	0.0000	59.8863	59.8863	4.0800e-003	3.1400e-003	60.9248
Unmitigated	0.0352	0.0501	0.3300	6.4000e-004	0.0643	6.0000e-004	0.0649	0.0172	5.7000e-004	0.0178	0.0000	59.8863	59.8863	4.0800e-003	3.1400e-003	60.9248

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	59.89	59.89	59.89	174,855	174,855
Total	59.89	59.89	59.89	174,855	174,855

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.536774	0.058783	0.173424	0.127345	0.036375	0.008877	0.014453	0.006568	0.001093	0.000297	0.030119	0.001546	0.004347
Unrefrigerated Warehouse-No Rail	0.536774	0.058783	0.173424	0.127345	0.036375	0.008877	0.014453	0.006568	0.001093	0.000297	0.030119	0.001546	0.004347

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

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Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	16.9144	16.9144	4.6500e-003	5.6000e-004	17.1987
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	16.9144	16.9144	4.6500e-003	5.6000e-004	17.1987
NaturalGas Mitigated	1.5900e-003	0.0144	0.0121	9.0000e-005		1.1000e-003	1.1000e-003		1.1000e-003	1.1000e-003	0.0000	15.7064	15.7064	3.0000e-004	2.9000e-004	15.7997
NaturalGas Unmitigated	1.5900e-003	0.0144	0.0121	9.0000e-005		1.1000e-003	1.1000e-003		1.1000e-003	1.1000e-003	0.0000	15.7064	15.7064	3.0000e-004	2.9000e-004	15.7997

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	294326	1.5900e-003	0.0144	0.0121	9.0000e-005		1.1000e-003	1.1000e-003		1.1000e-003	1.1000e-003	0.0000	15.7064	15.7064	3.0000e-004	2.9000e-004	15.7997
Total		**1.5900e-003**	**0.0144**	**0.0121**	**9.0000e-005**		**1.1000e-003**	**1.1000e-003**		**1.1000e-003**	**1.1000e-003**	**0.0000**	**15.7064**	**15.7064**	**3.0000e-004**	**2.9000e-004**	**15.7997**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	294326	1.5900e-003	0.0144	0.0121	9.0000e-005		1.1000e-003	1.1000e-003		1.1000e-003	1.1000e-003	0.0000	15.7064	15.7064	3.0000e-004	2.9000e-004	15.7997
Total		**1.5900e-003**	**0.0144**	**0.0121**	**9.0000e-005**		**1.1000e-003**	**1.1000e-003**		**1.1000e-003**	**1.1000e-003**	**0.0000**	**15.7064**	**15.7064**	**3.0000e-004**	**2.9000e-004**	**15.7997**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	11340	0.6172	1.7000e-004	2.0000e-005	0.6275
Unrefrigerated Warehouse-No Rail	299460	16.2972	4.4800e-003	5.4000e-004	16.5712
Total		**16.9144**	**4.6500e-003**	**5.6000e-004**	**17.1987**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	11340	0.6172	1.7000e-004	2.0000e-005	0.6275
Unrefrigerated Warehouse-No Rail	299460	16.2972	4.4800e-003	5.4000e-004	16.5712
Total		**16.9144**	**4.6500e-003**	**5.6000e-004**	**17.1987**

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6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3817	1.0000e-005	1.5300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9800e-003	2.9800e-003	1.0000e-005	0.0000	3.1700e-003
Unmitigated	0.3817	1.0000e-005	1.5300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9800e-003	2.9800e-003	1.0000e-005	0.0000	3.1700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0453					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3363					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.4000e-004	1.0000e-005	1.5300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9800e-003	2.9800e-003	1.0000e-005	0.0000	3.1700e-003
Total	**0.3817**	**1.0000e-005**	**1.5300e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**2.9800e-003**	**2.9800e-003**	**1.0000e-005**	**0.0000**	**3.1700e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0453					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3363					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.4000e-004	1.0000e-005	1.5300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9800e-003	2.9800e-003	1.0000e-005	0.0000	3.1700e-003
Total	**0.3817**	**1.0000e-005**	**1.5300e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**2.9800e-003**	**2.9800e-003**	**1.0000e-005**	**0.0000**	**3.1700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	12.1036	0.6463	0.0154	32.8560
Unmitigated	12.1036	0.6463	0.0154	32.8560

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	19.7858 / 0	12.1036	0.6463	0.0154	32.8560
Total		**12.1036**	**0.6463**	**0.0154**	**32.8560**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	19.7858 / 0	12.1036	0.6463	0.0154	32.8560
Total		**12.1036**	**0.6463**	**0.0154**	**32.8560**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	16.3266	0.9649	0.0000	40.4484
Unmitigated	16.3266	0.9649	0.0000	40.4484

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	80.43	16.3266	0.9649	0.0000	40.4484
Total		**16.3266**	**0.9649**	**0.0000**	**40.4484**

Mitigated

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	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	80.43	16.3266	0.9649	0.0000	40.4484
Total		**16.3266**	**0.9649**	**0.0000**	**40.4484**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Forklifts	0	0.00	260	89	0.20	Diesel

UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Forklifts	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	75
Climate Zone	4			**Operational Year**	2024
Utility Company	Sonoma Clean Power				
CO2 Intensity (lb/MWhr)	119.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Equipment and Trucks only

Construction Phase - Respresents forklift operation

Off-road Equipment - Heavy duty forklift

Grading - no construction

Trips and VMT - 76 daily vendor trips and 10 daily haul trips (3650 annual) at roughly 10mi/trip

Construction Off-road Equipment Mitigation - New Forklift so meets at least Tier 4final

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	1.00	365.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	PhaseEndDate	1/2/2023	12/31/2023
tblLandUse	LotAcreage	0.00	1.00
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblTripsAndVMT	HaulingTripLength	20.00	10.00
tblTripsAndVMT	HaulingTripNumber	0.00	3,650.00
tblTripsAndVMT	VendorTripLength	7.30	10.00
tblTripsAndVMT	VendorTripNumber	0.00	76.00
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	MHDT
tblTripsAndVMT	WorkerTripNumber	3.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0476	1.0870	0.7958	4.6600e-003	0.1461	0.0158	0.1619	0.0437	0.0146	0.0583	0.0000	439.5524	439.5524	0.0294	0.0512	455.5553
Maximum	**0.0476**	**1.0870**	**0.7958**	**4.6600e-003**	**0.1461**	**0.0158**	**0.1619**	**0.0437**	**0.0146**	**0.0583**	**0.0000**	**439.5524**	**439.5524**	**0.0294**	**0.0512**	**455.5553**

Mitigated Construction

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0302	0.7525	0.8847	4.6600e-003	0.1461	4.9400e-003	0.1511	0.0437	4.7900e-003	0.0485	0.0000	439.5523	439.5523	0.0294	0.0512	455.5552
Maximum	**0.0302**	**0.7525**	**0.8847**	**4.6600e-003**	**0.1461**	**4.9400e-003**	**0.1511**	**0.0437**	**4.7900e-003**	**0.0485**	**0.0000**	**439.5523**	**439.5523**	**0.0294**	**0.0512**	**455.5552**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**36.65**	**30.78**	**-11.17**	**0.00**	**0.00**	**68.63**	**6.68**	**0.00**	**67.21**	**16.84**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2023**	**3-31-2023**	0.2832	0.1964
2	**4-1-2023**	**6-30-2023**	0.2770	0.1893
3	**7-1-2023**	**9-30-2023**	0.2801	0.1914
		Highest	0.2832	0.1964

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2023	12/31/2023	7	365	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rough Terrain Forklifts	1	12.00	100	0.40
Site Preparation	Graders	0	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	1	0.00	76.00	3,650.00	10.80	10.00	10.00	LD_Mix	MHDT	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0291	0.3850	0.6293	9.5000e-004		0.0124	0.0124		0.0114	0.0114	0.0000	83.3118	83.3118	0.0269	0.0000	83.9855
Total	**0.0291**	**0.3850**	**0.6293**	**9.5000e-004**	**0.0000**	**0.0124**	**0.0124**	**0.0000**	**0.0114**	**0.0114**	**0.0000**	**83.3118**	**83.3118**	**0.0269**	**0.0000**	**83.9855**

Unmitigated Construction Off-Site

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.6900e-003	0.1491	0.0399	5.9000e-004	0.0152	9.4000e-004	0.0161	4.1700e-003	9.0000e-004	5.0700e-003	0.0000	57.6347	57.6347	1.6300e-003	9.1100e-003	60.3900
Vendor	0.0158	0.5529	0.1267	3.1300e-003	0.1309	2.4500e-003	0.1334	0.0395	2.3400e-003	0.0419	0.0000	298.6059	298.6059	8.5000e-004	0.0421	311.1798
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0185**	**0.7020**	**0.1665**	**3.7200e-003**	**0.1461**	**3.3900e-003**	**0.1495**	**0.0437**	**3.2400e-003**	**0.0469**	**0.0000**	**356.2406**	**356.2406**	**2.4800e-003**	**0.0512**	**371.5698**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0117	0.0505	0.7181	9.5000e-004		1.5500e-003	1.5500e-003		1.5500e-003	1.5500e-003	0.0000	83.3118	83.3118	0.0269	0.0000	83.9854
Total	**0.0117**	**0.0505**	**0.7181**	**9.5000e-004**	**0.0000**	**1.5500e-003**	**1.5500e-003**	**0.0000**	**1.5500e-003**	**1.5500e-003**	**0.0000**	**83.3118**	**83.3118**	**0.0269**	**0.0000**	**83.9854**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.6900e-003	0.1491	0.0399	5.9000e-004	0.0152	9.4000e-004	0.0161	4.1700e-003	9.0000e-004	5.0700e-003	0.0000	57.6347	57.6347	1.6300e-003	9.1100e-003	60.3900
Vendor	0.0158	0.5529	0.1267	3.1300e-003	0.1309	2.4500e-003	0.1334	0.0395	2.3400e-003	0.0419	0.0000	298.6059	298.6059	8.5000e-004	0.0421	311.1798
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0185**	**0.7020**	**0.1665**	**3.7200e-003**	**0.1461**	**3.3900e-003**	**0.1495**	**0.0437**	**3.2400e-003**	**0.0469**	**0.0000**	**356.2406**	**356.2406**	**2.4800e-003**	**0.0512**	**371.5698**

Attachment 3: Health Risk Assessment

Construction Emissions and Health Risk Calculations

380 Blodgett Street, Cotati, CA - Phase 2 Construction Emissions

DPM Emissions and Modeling Emission Rates - Uncontrolled

Emissions Model Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2022	Construction	0.0421	DPM	84.2	0.02563	3.23E-03	15,197	**2.13E-07**
2023	Construction	0.0395	DPM	79.0	0.02405	3.03E-03	15,197	**1.99E-07**
Total		***0.0816***		***163.2***	***0.0497***	***0.0063***		

Modeled Operation Hours

hr/day =	9	(7am - 4pm)
days/yr =	365	
hours/year =	3285	

PM2.5 Fugitive Dust Emissions for Modeling - Uncontrolled

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2022	Construction	FUG	0.0178	35.6	0.01084	1.37E-03	15,197	**8.98E-08**
2023	Construction	FUG	0.0074	14.8	0.00450	5.67E-04	15,197	**3.73E-08**
Total			***0.0252***	***50.4***	***0.0153***	***0.0019***		

Modeled Operation Hours

hr/day =	9	(7am - 4pm)
days/yr =	365	
hours/year =	3285	

DPM Construction Emissions and Modeling Emission Rates - With Controls

Emissions Model Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2022	Construction	0.0193	DPM	38.6	0.01175	1.48E-03	15,197	**9.74E-08**
2023	Construction	0.0196	DPM	39.2	0.01193	1.50E-03	15,197	**9.89E-08**
Total		***0.0389***		***77.8***	***0.0237***	***0.0030***		

Modeled Operation Hours

hr/day =	9	(7am - 4pm)
days/yr =	365	
hours/year =	3285	

PM2.5 Fugitive Dust Construction Emissions for Modeling - With Controls

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2022	Construction	FUG	0.0091	18.1	0.00551	6.94E-04	15,197	**4.57E-08**
2023	Construction	FUG	0.0044	8.7	0.00266	3.35E-04	15,197	**2.21E-08**
Total			***0.0134***	***26.8***	***0.0082***	***0.0010***		

Modeled Operation Hours

hr/day =	9	(7am - 4pm)
days/yr =	365	
hours/year =	3285	

Construction Impacts - Phase 1 & Phase 2 Without Controls

597 Helman Lane - Maximum Impacts at Construction MEI Location - Uncontrolled

Emissions Year	Maximum Concentrations Exhaust PM10/DPM (µg/m³)	Maximum Concentrations Fugitive PM2.5 (µg/m³)	Cancer Risk (per million) Child	Cancer Risk (per million) Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration (µg/m³)
2021	0.0118	0.0459	2.10	0.03	0.002	0.058
2022	0.0186	0.0001	3.05	0.05	0.004	0.019
Total	-	-	**5.2**	**0.09**	-	-
Maximum	0.0186	0.0459	-	-	**0.004**	**0.06**

380 Blodgett - Maximum Impacts at Construction MEI Location - Uncontrolled

Emissions Year	Maximum Concentrations Exhaust PM10/DPM (µg/m³)	Maximum Concentrations Fugitive PM2.5 (µg/m³)	Cancer Risk (per million) Child	Cancer Risk (per million) Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration (µg/m³)
2022	0.0360	0.0179	5.92	0.10	0.007	0.054
2023	0.0337	0.0075	0.96	0.10	0.007	0.041
Total	-	-	**6.9**	**0.20**	-	-
Maximum	0.0360	0.0179	-	-	**0.007**	**0.05**

Construction Impacts - Phase 1 Uncontrolled & Phase 2 Mitigated

597 Helman Lane - Maximum Impacts at Construction MEI Location - Uncontrolled

Emissions Year	Maximum Concentrations Exhaust PM10/DPM (µg/m³)	Maximum Concentrations Fugitive PM2.5 (µg/m³)	Cancer Risk (per million) Child	Cancer Risk (per million) Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration (µg/m³)
2021	0.0118	0.0459	2.10	0.034	0.0024	0.058
2022	0.0186	0.0001	3.05	0.053	0.0037	0.019
Total	-	-	**5.2**	**0.09**	-	-
Maximum	0.0186	0.0459	-	-	**0.004**	**0.06**

380 Blodgett - Maximum Impacts at Construction MEI Location - With Mitigation

Emissions Year	Maximum Concentrations Exhaust PM10/DPM (µg/m³)	Maximum Concentrations Fugitive PM2.5 (µg/m³)	Cancer Risk (per million) Child	Cancer Risk (per million) Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration (µg/m³)
2022	0.0165	0.0091	2.71	0.047	0.003	0.026
2023	0.0167	0.0044	0.48	0.048	0.003	0.021
Total	-	-	**3.2**	**0.10**	-	-
Maximum	0.0167	0.0091	-	-	**0.003**	**0.03**

597 Helman Lane - Cotati, CA - Uncontrolled Emissions
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors-1.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child				Adult
Age -->	3rd Trimester	0 - 2	2 - 9	2 - 16	16 - 30
Parameter					
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	Infant/Child - Exposure Information DPM Conc (ug/m3) Year	Annual	Age Sensitivity Factor	Infant/Child Cancer Risk (per million)	Adult - Exposure Information Modeled DPM Conc (ug/m3) Year	Annual	Age Sensitivity Factor	Adult Cancer Risk (per million)	Fugitive PM2.5	Total PM2.5
0	0.25	-0.25 - 0*	2021	0.0118	10	0.16	2021	-	-	-		
1	1	0 - 1	2021	0.0118	10	1.94	2021	0.0118	1	0.03	0.0459	0.058
2	1	1 - 2	2022	0.0186	10	3.05	2022	0.0186	1	0.05	0.0001	0.019
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00		
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00		
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00		
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00		
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00		
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00		
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00		
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00		
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00		
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00		
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00		
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00		
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00		
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00		
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00		
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00		
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00		
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00		
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00		
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00		
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00		
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00		
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00		
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00		
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00		
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00		
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00		
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00		
Total Increased Cancer Risk						**5.2**				**0.09**		

* Third trimester of pregnancy

380 Blodgett Street - Cotati, CA Phase 2 - Uncontrolled Emissions
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors-1.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child				**Adult**
Age -->	**3rd Trimester**	**0 - 2**	**2 - 9**	**2 - 16**	**16 - 30**
Parameter					
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	**Exposure Duration (years)**	**Age**	**Infant/Child - Exposure Information DPM Conc (ug/m3) Year**	**Annual**	**Age Sensitivity Factor**	**Infant/Child Cancer Risk (per million)**	**Adult - Exposure Information Modeled DPM Conc (ug/m3) Year**	**Annual**	**Age Sensitivity Factor**	**Adult Cancer Risk (per million)**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2021	0.0000	10	0.00	2021	-	-	-		
1	1	0 - 1	2021	0.0000	10	0.00	2021	0.0000	1	0.00		
2	1	1 - 2	2022	0.0360	10	5.92	2022	0.0360	1	0.10	0.0179	0.054
3	1	2 - 3	2023	0.0337	3	0.96	2023	0.0337	1	0.10	0.0075	0.041
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00		
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00		
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00		
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00		
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00		
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00		
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00		
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00		
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00		
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00		
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00		
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00		
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00		
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00		
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00		
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00		
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00		
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00		
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00		
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00		
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00		
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00		
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00		
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00		
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00		
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00		
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00		
Total Increased Cancer Risk						**6.88**				**0.20**		

* Third trimester of pregnancy

380 Blodgett Street - Cotati, CA   Phase 2 - Mitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors-1.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child				Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 9**	**2 - 16**	**16 - 30**
Parameter					
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information			Infant/Child	Adult - Exposure Information			Adult		
	Exposure				Age	Cancer	Modeled		Age	Cancer		
Exposure	Duration		DPM Conc (ug/m3)		Sensitivity	Risk	DPM Conc (ug/m3)		Sensitivity	Risk	Fugitive	Total
Year	(years)	Age	Year	Annual	Factor	(per million)	Year	Annual	Factor	(per million)	PM2.5	PM2.5
0	0.25	-0.25 - 0*	2021	0.0000	10	0.00	2021	-	-	-		
1	1	0 - 1	2021	0.0000	10	0.00	2021	0.0000	1	0.000		
2	1	1 - 2	2022	0.0165	10	2.71	2022	0.0165	1	0.047	0.0091	0.026
3	1	2 - 3	2023	0.0167	3	0.48	2023	0.0167	1	0.048	0.0044	0.021
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00		
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00		
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00		
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00		
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00		
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00		
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00		
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00		
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00		
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00		
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00		
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00		
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00		
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00		
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00		
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00		
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00		
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00		
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00		
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00		
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00		
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00		
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00		
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00		
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00		
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00		
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00		
Total Increased Cancer Risk						**3.18**				**0.10**		

* Third trimester of pregnancy

Project Operation Emissions and Health Risk Calculations

380 Blodgett Street, Cotati, CA - Phase 2
2023 Warehouse Operation - Truck Emissions - DPM and PM2.5

Road Segment/Truck Type	Pollutant / Source	Road Travel Length (ft)	Road Travel Length (m)	Modeled Road Width (ft)	Initial[a] Vertical Height (m)	Release[a] Height (m)	No. of Daily Trucks	DPM/PM2.5[b] Emission Factor (g/veh-mi)	Truck Travel DPM Emissions Daily (g/day)	Hourly (lb/hr)
OffSite & OnSite Loop										
Truck Route - HHDT	DPM/Exhaust	4,536	1383	12	6.8	3.4	2	0.02450	0.042	3.87E-06
Truck Route - MHDT	DPM/Exhaust	4,536	1383	12	6.8	3.4	14	0.01454	0.175	1.61E-05
Subtotal	***DPM/Exhaust***	-	-	-	-	-	-	-	***0.217***	***1.99E-05***
East Loading Dock Road Segment										
Truck Route - HHDT	DPM/Exhaust	287	87	12	6.8	3.4	2	0.02450	0.003	2.44E-07
Truck Route - MHDT	DPM/Exhaust	287	87	12	6.8	3.4	14	0.01454	0.011	1.02E-06
Subtotal	***DPM/Exhaust***	-	-	-	-	-	-	-	***0.014***	***1.26E-06***
Total Truck DPM	**DPM/Exhaust**	**4,823**	**1470**	**12**	**6.8**	**3.4**	**16**	**-**	**0.231**	**2.12E-05**
OffSite & OnSite Loop										
Truck Route - HHDT	PM2.5/Exhaust	4,536	1383	12	2.6	1.3	2	0.02344	0.040	3.70E-06
Truck Route - MHDT	PM2.5/Exhaust	4,536	1383	12	2.6	1.3	14	0.01391	0.167	1.54E-05
Subtotal	***PM2.5/Exhaust***	-	-	-	-	-	-	-	***0.208***	***1.91E-05***
East Loading Dock Road Segment										
Truck Route - HHDT	PM2.5/Exhaust	287	87	12	2.6	1.3	2	0.02344	0.003	2.34E-07
Truck Route - MHDT	PM2.5/Exhaust	287	87	12	2.6	1.3	14	0.01391	0.011	9.71E-07
Subtotal	***PM2.5/Exhaust***	-	-	-	-	-	-	-	***0.013***	***1.21E-06***
Total Truck PM2.5 Exhaust	**PM2.5/Exhaust**	**4,823**	**1470**	**12**	**2.6**	**1.3**	**16**	**-**	**0.221**	**2.03E-05**
OffSite & OnSite Loop										
Truck Route - HHDT	PM2.5/Tire&Brake	4,536	1383	12	2.6	1.3	2	0.03652	0.063	5.76E-06
Truck Route - MHDT	PM2.5/Tire&Brake	4,536	1383	12	2.6	1.3	14	0.01885	0.227	2.08E-05
Truck Route - HHDT & MHDT	PM2.5/Road Dust	4,536	1383	12	2.6	1.3	16	0.14287	1.964	1.80E-04
Subtotal	***PM2.5/Road Dust***	-	-	-	-	-	-	-	***2.253***	***2.07E-04***
East Loading Dock Road Segment										
Truck Route - HHDT	PM2.5/Tire&Brake	287	87	12	2.6	1.3	2	0.03652	0.004	3.64E-07
Truck Route - MHDT	PM2.5/Tire&Brake	287	87	12	2.6	1.3	14	0.01885	0.014	1.32E-06
Truck Route - HHDT & MHDT	PM2.5/Road Dust	287	87	12	2.6	1.3	16	0.14287	0.124	1.14E-05
Subtotal	***PM2.5/Road Dust***	-	-	-	-	-	-	-	***0.142***	***1.31E-05***
Total Truck Fugitive PM2.5	**PM2.5/Road Dust**	**4,823**	**1470**	**12**	**2.6**	**1.3**	**16**	**-**	**2.396**	**2.20E-04**

[a] Line-volume source parameters based on EPA 2015

[b] Emission factor from EMFAC2021 for 2023 for running exhaust and tire & brake wear, and from CT-EMFAC2017 for road dust.

On-Site Diesel Truck Idle Emissions

Idle Area	Point Source Name	Stack[a] Height (m)	Stack[a] Diameter (m)	Stack[a] Velocity (m/s)	Stack[a] Temp (°K)	No. of Daily Trucks	Idle[b] Emission Factor (g/veh-hr)	Truck Idle Emissions / Idle Emissions Daily (g/day)	Hourly (lb/hr)
Loading Dock East - HHDT	-	3.84	0.1	51.71	366	1	0.69166	0.1153	1.06E-05
Loading Dock East -MHDT	-	3.84	0.1	51.71	366	7	0.41507	0.4842	4.45E-05
Loading Dock East - Total Truck	***IDLA_DPM***	***3.84***	***0.1***	***51.71***	***366***	***8***	***-***	***0.5995***	***5.51E-05***
Loading Dock West - HHDT	-	3.84	0.1	51.71	366	1	0.69166	0.1153	1.06E-05
Loading Dock West - MHDT	-	3.84	0.1	51.71	366	7	0.41507	0.4842	4.45E-05
Loading Dock West - Total Truck	***IDLB_DPM***	***3.84***	***0.1***	***51.71***	***366***	***8***	***-***	***0.5995***	***5.51E-05***

[a] Point source parameters from SJVAPCD *Guidance for Air Dispersion Modeling*.

Truck Information

HHDT Trucks per day =	2
MHDT Trucks per day =	14
Total Trucks per day =	16
Operation Days =	365
Delivery Truck Hours (hrs/day) =	24

Truck Idle DPM Emission Information (2023)

EMFAC2021 HHDT Emission Factor @ 5 mph (g/mi) =	0.13833
EMFAC2021 MHDT Emission Factor @ 5 mph (g/mi) =	0.08301
HHDT Truck Idle Emission Rate (g/hr) =	0.69166
MHDT Truck Idle Emission Rate (g/hr) =	0.41507
Idle Time per Trip (min)	5
Idle Time per Truck (min)	10

Idle emission factor (g/hr) = EF @5 mph (g/mi) * 5 mph

References

EPA 2015 - *Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM2.5 and PM10 nonattainment and maintenance Areas*, November 2015

380 Blodgett Street, Cotati, CA - Phase 2
2023 Warehouse Operation - Diesel Forklift Emissions - DPM and PM2.5

DPM Emissions and Modeling Emission Rates

Emissions Model Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	(lb/hr)	(g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2023	Forklift Operation	0.0016	DPM_FL	3.1	0.00085	1.07E-04	1,090	**9.82E-08**

Modeled Operation Hours
hr/day = 10 (7am - 5pm)
days/yr = 365
hours/year = 3650

PM2.5 Emissions and Modeling Emission Rates

Emissions Model Year	Activity	PM2.5 (ton/year)	Area Source	PM2.5 Emissions (lb/yr)	(lb/hr)	(g/s)	Modeled Area (m^2)	PM2.5 Emission Rate ($g/s/m^2$)
2023	Forklift Operation	0.0015	DPM_FL	3.0	0.00083	1.05E-04	1,090	**9.63E-08**

Modeled Operation Hours
hr/day = 10 (7am - 5pm)
days/yr = 365
hours/year = 3650

380 Blodgett Street - Phase 2 Project Operation - TACs & PM2.5
ISCST3 Risk Modeling Parameters and
Maximum Concentrations at Project MEI Receptor
Residential Recepotrs - 1.5 Meter Receptor Heights

Emissions Year	2023
Receptor Information	
Number of Receptors	1 (Project MEI Receptor)
Receptor Height =	1.5 meter
Receptor distances =	at Project MEI
Meteorological Conditions	
BAAQMD Valley Ford Met Data	1990 - 1994
Land Use Classification	rural
Wind speed =	variable
Wind direction =	variable

MEI Maximum DPM Concentrations

Emission Source	Concentration ($\mu g/m^3$) DPM
Truck Travel	0.00006
Truck Idle	0.00006
Forklift Operation	0.00065
Total	**0.00077**

MEI Maximum PM2.5 Concentrations

Emission Source	Concentrations ($\mu g/m^3$) Total PM2.5
Truck Travel	0.00096
Truck Idle	0.00006
Forklift Operation	0.00064
Total	**0.00166**

380 Blodgett Street, Cotati, CA - Phase 2 Project Operation
DPM Cancer Risks From Project Operation Sources
Maximum DPM Cancer Risk at Project MEI Receptor
1.5 Meter Receptor Heights

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00

	Infant/Child			Adult
Age -->	3rd Trimester	0 - <2	2 - <16	16 - 30
Parameter				
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

MEI Cancer Risk From Project Trucks (travel & idling)
1.5 meter receptor height

Exposure Duration (years)	Age	Age Sensitivity Factor	DPM Annual Conc (ug/m3)	DPM Cancer Risk (per million)
0.25	-0.25 - 0*	10	0.00012	0.00
2	1 - 2	10	0.00012	0.04
14	3 - 16	3	0.00012	0.04
14	17 - 30	1	0.00012	0.00
Total Increased Cancer Risk				**0.089**

* Third trimester of pregnancy

MEI Cancer Risk From Project Forklift
1.5 meter receptor height

Exposure Duration (years)	Age	Age Sensitivity Factor	DPM Annual Conc (ug/m3)	DPM Cancer Risk (per million)
0.25	-0.25 - 0*	10	0.00065	0.01
2	1 - 2	10	0.00065	0.21
14	3 - 16	3	0.00065	0.24
14	17 - 30	1	0.00065	0.03
Total Increased Cancer Risk				**0.484**

* Third trimester of pregnancy

Total MEI Cancer Risk From Project Operation
1.5 meter receptor height

Exposure Duration (years)	Age	Age Sensitivity Factor	DPM Annual Conc (ug/m3)	DPM Cancer Risk (per million)
0.25	-0.25 - 0*	10	0.00077	0.01
2	1 - 2	10	0.00077	0.25
14	3 - 16	3	0.00077	0.28
14	17 - 30	1	0.00077	0.03
Total Increased Cancer Risk				**0.57**

* Third trimester of pregnancy

Attachment 4: Cumulative Community Risk from Existing TAC Sources

Bay Area Air Quality Management District

Risk & Hazard Stationary Source Inquiry Form

This form is required when users request stationary source data from BAAQMD

This form is to be used with the BAAQMD's Google Earth stationary source screening tables.

Click here for guidance on coducting risk & hazard screening, including roadways & freeways, refer to the District's Risk & Hazard Analysis flow chart.

Click here for District's Recommended Methods for Screening and Modeling Local Risks and Hazards document.

Table A: Requester Contact Information

Date of Request	**6/15/2021**
Contact Name	Casey Divine
Affiliation	Illingworth & Rodkin, Inc.
Phone	707-794-0400 x103
Email	cdivine@illingworthrodkin.com
Project Name	597 Helman Lane
Address	597 Helman Lane
City	Cotati
County	Sonoma
Type (residential, commercial, mixed use, industrial, etc.)	industrial
Project Size (# of units or building square feet)	50ksf
Comments:	

For Air District assistance, the following steps must be completed:

1. Complete all the contact and project information requested in **Table A** ncomplete forms will not be processed. Please include a project site map.

2. Download and install the free program Google Earth, **http://www.google.com/earth/download/ge/,** and then download the county specific Google Earth stationary source application files from the District's website, **http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.** The small points on the map represent stationary sources permitted by the District (Map A on right). These permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc. Click on a point to view the source's Information Table, including the name, location, and preliminary estimated cancer risk, hazard index, and PM2.5 concentration.

3. Find the project site in Google Earth by inputting the site's address in the Google Earth search box.

4. Identify stationary sources within at least a 1000ft radius of project site. Verify that the location of the source on the map matches with the source's address in the Information Table, by using the Google Earth address search box to confirm the source's address location. Please report any mapping errors to the District.

5. List the stationary source information in **Table B** lue section only.

6. Note that a small percentage of the stationa ve Health Risk Screening Assessment (HRSA) data INSTEAD of screening level data. These sources will be noted by an asterisk next to the Plant Name (Map B on right). If HRSA values are presented, these values have already been modeled and cannot be adjusted further.

7. Email this completed form to District staff. District staff will provide the most recent risk, hazard, and PM2.5 data that are available for the source(s). If this information or data are not available, source emissions data will be provided. Staff will respond to inquiries within three weeks.

Note that a public records request received for the same stationary source information will cancel the processing of your SSIF request.

Submit forms, maps, and questions to Areana Flores at 415-749-4616, or aflores@baaqmd.gov

Table B: Google Earth data											Project MEI			
Distance from Receptor (feet) or MEI[1]	Plant No.	Facility Name	Address	Cancer Risk[2]	Hazard Risk[2]	$PM_{2.5}$[2]	Source No.[3]	Type of Source[4]	Fuel Code[5]	Status/Comments	Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
1000	8674	Grafix	681 Portal Street	-	-	-		Contact BAAQMD		Permit Shutdown in 2019	0.13	#VALUE!	#VALUE!	#VALUE!
1000	10411	J & M Precision Sheetmetal	430 Aaron Street	-	-	-		Contact BAAQMD		Permit Shutdown in 2020	0.13	#VALUE!	#VALUE!	#VALUE!
1000	100856	Marin/Sonoma Mosquito & Vector Control	595 Helman Ln	0.64	-	-		Gas Dispensing Facility		2018 Dataset	0.01	0.01	#VALUE!	#VALUE!

Footnotes:
1. Maximally exposed individual
2. These Cancer Risk, Hazard Index, and PM2.5 columns represent the values in the Google Earth Plant Information Table.
3. Each plant may have multiple permits and sources.
4. Permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc.
5. Fuel codes: 98 = diesel, 189 = Natural Gas.
6. If a Health Risk Screening Assessment (HRSA) was completed for the source, the application number will be listed here.
7. The date that the HRSA was completed.
8. Engineer who completed the HRSA. For District purposes only.
9. All HRSA completed before 1/5/2010 need to be multiplied by an age sensitivity factor of 1.7.
10. The HRSA "Chronic Health" number represents the Hazard Index.
11. Further information about common sources:
   a. Sources that only include diesel internal combustion engines can be adjusted using the BAAQMD's Diesel Multiplier worksheet.
   b. The risk from natural gas boilers used for space heating when <25 MM BTU/hr would have an estimated cancer risk of one in a million or less, and a chronic hazard index of 0.003
   c. BAAQMD Reg 11 Rule 16 required that all co-residential (sharing a wall, floor, ceiling or is in the same building as a residential unit) dry cleaners cease use of perc on July 1, 2010.
   Therefore, there is no cancer risk, hazard or PM2.5 concentrations from co-residential dry cleaning businesses in the BAAQMD.
   d. Non co-residential dry cleaners must phase out use of perc by Jan. 1, 2023. Therefore, the risk from these dry cleaners does not need to be factored in over a 70-year period, but instead should
   e. Gas stations can be adjusted using BAAQMD's Gas Station Distance Mulitplier worksheet.
   f. Unless otherwise noted, exempt sources are considered insignificant. See BAAQMD Reg 2 Rule 1 for a list of exempt sources.
   g. This spray booth is considered to be insignificant.

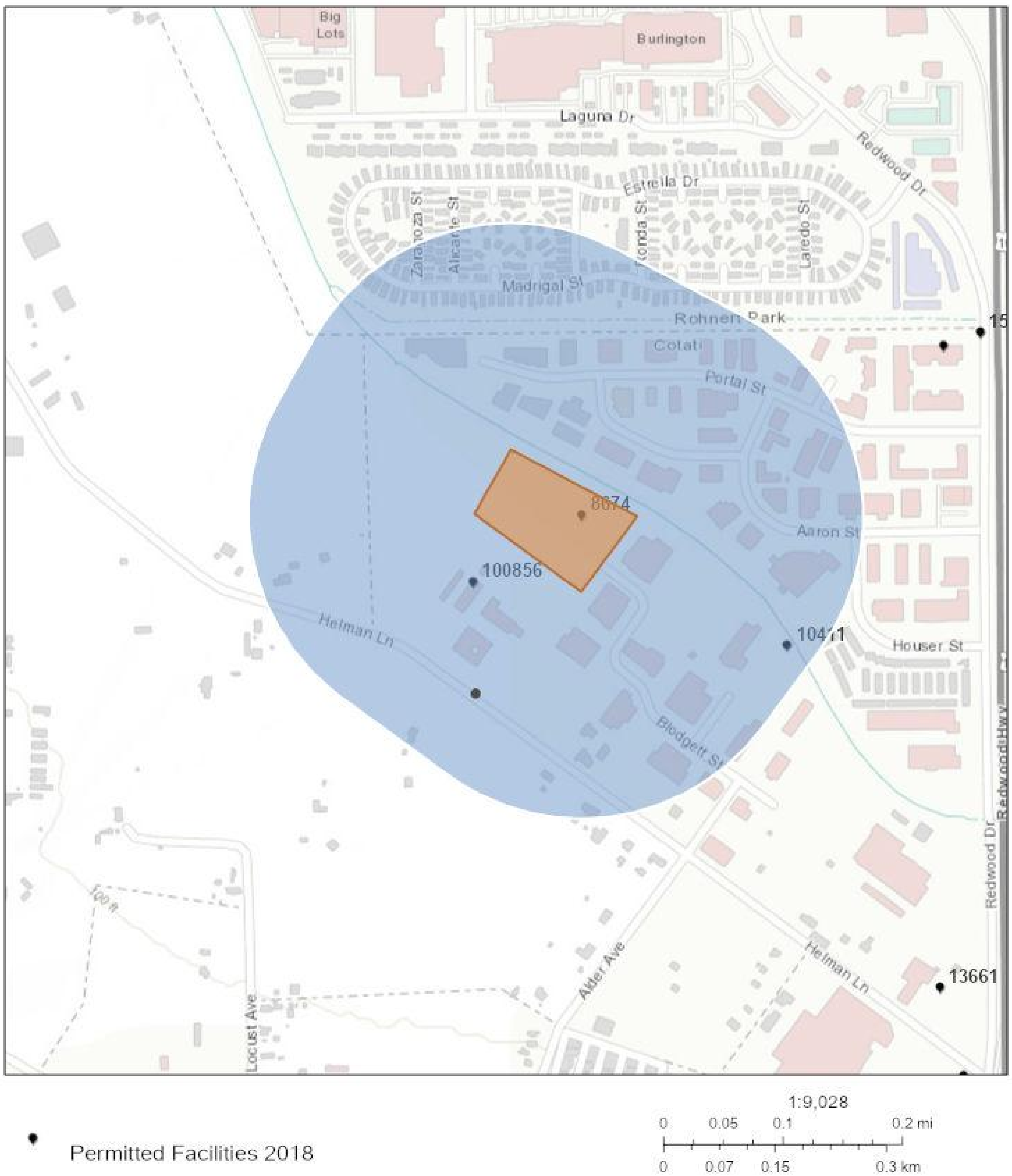
Date last updated:
03/13/2018

Stationary Source Risk & Hazards Screening Report

Area of Interest (AOI) Information

Area : 5,314,759.23 ft²

Jun 15 2021 11:06:01 Pacific Daylight Time



Sonoma County, Bureau of Land Management, Esri, HERE, Garmin, INCREMENT P, Intermap, USGS, METI/NASA, EPA, USDA

Summary

Name	Count	Area(ft²)	Length(ft)
Permitted Facilities 2018	3	N/A	N/A

Permitted Facilities 2018

#	FACID	Name	Address	City	St
1	8674	Grafix	681 Portal Street	Cotati	CA
2	10411	J & M Precision Sheetmetal	430 Aaron Street	Cotati	CA
3	100856	Marin/Sonoma Mosquito & Vector Control	595 Helman Ln	Cotati	CA

#	Zip	County	Cancer	Hazard	PM_25	Type	Count
1	94931	Sonoma	0.000	0.000	0.000	Contact BAAQMD	1
2	94931	Sonoma	0.000	0.000	0.000	Contact BAAQMD	1
3	94931	Sonoma	0.640	0.000	0.000	Gas Dispensing Facility	1

Note: The estimated risk and hazard impacts from these sources would be expected to be substantially lower when site specific Health Risk Screening Assessments are conducted.

The screening level map is not recommended for evaluating sensitive land uses such as schools, senior centers, day cares, and health facilities.

BIOLOGICAL RESOURCES REPORT

Sandell Warehouse Project Building 2

Sonoma County, CA

Prepared For:

Bert Sandell
Sandell Holdings LLC
3348 Paradise Drive
Tiburon, CA 94920

Project No. 2064

Prepared By:

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707-241-7718

January 2022

SOL ECOLOGY

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

AOD	Area of Development
CDFG/CDFW	California Department of Fish and Game/Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CTS	California Tiger Salamander
ESA	Federal Endangered Species Act
ITP	Incidental Take Permit
MBTA	Migratory Bird Treaty Act
NRCS	Natural Resources Conservation Service
OHWM	Ordinary High-Water Mark
RWQCB	Regional Water Quality Control Board
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WBWG	Western Bat Working Group
WEF	Wildlife Exclusion Fence
WTK	White-tailed kite

1.0 INTRODUCTION

On January 12, 2021, Sol Ecology, Inc. (Sol Ecology) performed a biological resources study for a new warehouse expansion project on the parcel located at 380 Blodgett Street (formerly 597 Helman Lane) in Cotati, Sonoma County, California (Project Study Area, see Appendix A – Figure 1). This report's primary purpose is to evaluate the potential biological impacts associated with the addition of a second warehouse and associated infrastructure to the west of the approved site, along with stormwater improvements for both buildings.

The purpose of the study was to gather information necessary to complete a review of potential biological resource impacts from development of the proposed project, under the guidelines of the California Environmental Quality Act (CEQA) for the County of Sonoma Permit and Resource Management Department and other applicable state and federal regulations. This report describes the results of the site assessment and survey(s) for the presence of sensitive biological resources protected by local, state, and federal laws and regulations. This report also contains an evaluation of potential impacts to sensitive biological resources that may occur from the proposed project and potential mitigation measures to compensate for those impacts as warranted. This report is based on information available at the time of the study and on-site conditions that were observed on the date of the site visit(s).

1.1 Project Setting

The 8.48-acre Project Study Area is located within APN 046-073-006 at the address of 380 Blodgett Street (formerly 597 Helman Lane) in the City of Cotati, Sonoma County, accessed via Blodgett Street, off of Alder Avenue (Appendix A, Figure 1). The parcel is zoned Commercial/Industrial (CI) and the assessor use code is 0050 (Rural Residential, Vacant Homesite) within the Central District (Township 6N and Range 8W) (County of Sonoma 2021). The Project Study Area is located within the Santa Rosa Plain and is bounded by the Laguna de Santa Rosa and Sonoma County Water Agency (SCWA) access road to the north, industrial development to the east, agricultural lands to the west including a channelized stream that drains to the Laguna de Santa Rosa, and Marin-Sonoma Mosquito Control facility and adjacent grassland habitat to the south.

The Project and parcel are divided into two sections, the western half is referred to as Building 2 AOD, and the eastern half referred to as Building 1 AOD. For this report, the Project Study Area includes the Building 2 Area of Development (AOD), stormwater improvements associated with both Buildings 1 and 2, and surrounding grassland and wetland habitats to the west and south. Building 1 is currently under construction and habitat within this area has been removed in accordance with the adopted IS/MND and NOD issued on September 29, 2021, and Incidental Take Permit from the California Department of Fish and Wildlife (CDFW) issued on October 5, 2021.

1.2 Project Description

The proposed project includes construction of a new 35,500 square foot warehouse along with a driveway and parking, an outdoor storage yard, landscaping, and bioretention swales. The new warehouse will be located immediately adjacent to the previously approved project site and will be connected by an access road surrounding the building. Bioretention swales will be constructed to the west and south of Building 2, and to the east of Building 1 as shown in Attachment A, Figure 1; two smaller bioretention features will be constructed within the Building 2 AOD. A small portion of floodplain habitat to the east of Building 1 will be avoided but is included in the Building 2 impact totals due to indirect effects caused by isolation of upland habitat from neighboring parcels to the south and west.

The total new AOD for Building 2 is 135,641 SF (3.1 acres), including 131,569 SF (3.02 acres) of permanent impacts to upland habitat and 4,072 SF (0.09 acre) of temporary impacts as shown in Table 1 below; temporary impacts include a 3-foot-wide area surrounding Building 2 AOD to allow space for exterior curb construction and placement of wildlife exclusion fencing.

Table 1. Permanent and Temporary Impacts to Upland Habitat

Impact Type	New hardscape (building, parking/access, yard)	Bioretention Areas and isolated upland habitat	Total
Permanent Impact	2.6 ac	0.4 ac	**3.0**
Temporary Impact	0.1 ac	-	**0.1**
		All Impacts Total (ac)	**3.1**

The Project has been designed to avoid the Laguna de Santa Rosa, wetland habitats, and the western unnamed channel tributary to Laguna de Santa Rosa. The bioretention swales proposed along both Buildings 1 and 2 perimeters are approximately 9 inches deeper than the surrounding areas with soil media installed another 2.5 feet below and the retention/infiltration trench another 2 feet below the soil media. The swales are designed to prevent the draining of water from adjacent undisturbed wetland areas and will collect and infiltrate impervious surface runoff from the AOD, ultimately recharging the groundwater system.

The warehouse will be accessed through the Building 1 entranceway located at the terminus of Blodgett Street and all access will occur along previously disturbed and exclusion fenced routes. There will be no additional temporary disturbance associated with equipment and vehicle access.

2.0 METHODS

On January 12, 2021, the Project Study Area was traversed on foot to determine the presence of (1) plant communities both sensitive and non-sensitive, (2) special status plant and wildlife species, (3) presence of essential habitat elements for any special status plant or wildlife species, and (4) a preliminary assessment of the presence and extent of wetland and non-wetland waters.

2.1 Literature Review

To evaluate whether special status species or other sensitive biological resources (e.g., wetlands) could occur in the study area and vicinity, Sol Ecology biologists reviewed the following:

- California Native Plant Society's (CNPS's) Inventory of Rare and Endangered Plants of California search for U.S. Geological Survey (USGS) 7.5-minute Cotati quadrangle and eight adjacent quadrangles (CNPS 2021a);
- California Natural Diversity Database (CNDDB) records search for USGS 7.5-minute Cotati quadrangle and eight adjacent quadrangles (CDFW 2021);
- U.S. Fish and Wildlife Service (USFWS) list of threatened and endangered species for the Project Study Area (IPaC) (USFWS 2021a);
- California Department of Fish and Game (CDFG) publication "California's Wildlife, Volumes I-III" (Zeiner et al. 1990);
- CDFG publication *California Bird Species of Special Concern* (Shuford and Gardali 2008)
- CDFW and University of California Press publication *California Amphibian and Reptile Species of Special Concern* (Thomson et al. 2016);
- USFWS National Wetlands Inventory, Wetlands Mapper (USFWS 2021b); and
- U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Web Soil Survey (USDA 2019).

Based on information from the above sources, Sol Ecology developed lists of special status species and natural communities of special concern that could be present in the Project vicinity (Appendix B). Figures 2 and 3 present the results of a 5-mile CNDDB record search around the study area for special status plants and wildlife (Appendix A).

2.2 Field Survey

Sol Ecology biologists conducted biological resource surveys on January 12, 2021. Field surveyor qualifications are in Appendix C. Biologists walked throughout the entire study area identifying all plant and wildlife species encountered and mapping vegetation communities. Plant species were recorded and identified to a taxonomic level sufficient to determine rarity using the second edition of the *Jepson Manual* (Baldwin et al. 2012). Vegetation communities were identified using the online version of *A Manual of California Vegetation* (CNPS 2021b). Dispersal habitat, foraging habitat, refugia or estivation habitat, and breeding (or nesting habitat) were noted for wildlife species.

Protocol-level floristic plant surveys of the entire Project Study Area were conducted by Roy Buck with EcoSystems West Consulting Group in the spring of 2008 and 2009, and Jane Valerius Environmental Consulting group in the spring of 2018 with negative findings. Additional surveys were performed by Sol Ecology on March 16, April 14, and May 13, 2021 in accordance the Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed Plants on the Santa Rosa Plain (USFWS 2005), and CDFW Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018). A copy of the Special Status Rare Plant Survey is provided in Appendix D and has previously been submitted to CDFW in July 2021.

Sol Ecology biologists also performed reconnaissance-level surveys for special status wildlife species on and adjacent to the Project Study Area on January 12, 2021, and on subsequent visits in October 2021 prior to construction of Building 1. The focus of the surveys was to identify whether suitable habitat elements for each of the special status species documented in the surrounding vicinity are present in the Project Study Area or not and whether the project would have the potential to result in impacts to any of these species and/or their habitats either on- or off-site. Habitat elements examined included: soil type, elevation, vegetation community, dispersal habitat, foraging habitat, refugia or estivation habitat, and breeding (or nesting) habitat.

In cases where little information is known about species occurrences and habitat requirements, the species evaluation was based on best professional judgment of Sol Ecology biologists with experience working with the species and habitats. If a special status species was observed during the site visit, its presence is recorded and discussed. For some threatened and endangered species, a site survey at the level conducted for this report may not be sufficient to determine presence or absence of a species to the specifications of regulatory agencies.

A formal wetland delineation on the property was conducted in 2008 (Macmillan 2008). In 2008, Lucy Macmillan identified wetland and non-wetland waters potentially subject to regulation by the federal government (U.S. Army Corps of Engineers [USACE]) and the state of California (Regional Water Quality Control Board [RWQCB] and CDFW). A Jurisdictional Determination was issued by the USACE on June 3, 2010; the boundaries of the 2010 wetlands are shown in Appendix A, Figure 1.

3.0 RESULTS

3.1 Existing Conditions and General Wildlife Use

Elevations within the Project Study Area range from approximately 27 to 30 meters (91 to 99 feet) above mean sea level. The Project Study Area encompasses one soil map unit identified by the USDA, NRCS (USDA 2019):

- **Clear Lake clay, sandy substratum, drained, 0 to 2 percent slopes, MLRA 14**: This soil map unit is poorly drained and occurs on basin floors. The soil parent material is basin alluvium derived from volcanic and sedimentary rock over fan alluvium derived from volcanic and sedimentary rock. Clear lake clay is rated as a hydric soil. Minor components include Haire (5%), Whight (5%), and Reyes (5%).

Vegetation communities present in the study area were classified using the online version of *A Manual of California Vegetation* (CNPS 2021b). However, in some cases it is necessary to identify variants of community types or to describe non-vegetated areas that are not described in the literature. Vegetation communities were classified as non-sensitive or sensitive natural communities as defined by CEQA and other applicable laws and regulations. Photographs of the study area are provided in Appendix E.

3.1.1 Non-Sensitive Natural Communities

<u>California Annual Grassland</u>
California annual grassland is continuous throughout the herbaceous layer within the Project Study Area. The study area is regularly disked and therefore, the grassland community has developed following repeated disturbance. The grassland community consists primarily of non-native (invasive) annual grasses and non-native forbs. Non-native annual grass species observed include oats (*Avena* sp.), rye grass (*Festuca perennis*), and soft chess (*Bromus hordeaceus*). Non-native forb species observed within the grassland include bristly ox-tongue (*Helminthotheca echioides*), carrot (*Daucus carota*), and radish (*Raphanus sativus*).

3.1.2 Sensitive Natural Communities

<u>Seasonal Wetlands</u>
Approximately 0.88 acres of seasonal wetlands are present within the Project Study Area, verified by the USACE on June 3, 2010 (File No. SPN-2001-25967-N). The seasonal wetlands were dominated by hydrophytic vegetation including buttercup (*Ranunculus muricatus*), rye grass, semaphore grass (*Pleuropogon californicus*), and soft chess. Hydric soils within the seasonal wetlands displayed a depleted matrix (10YR 3/2 or 3/1) with heavy mottling and/or oxidized rhizospheres in the top 10 inches. The presence of a biotic crust (algal matting) was the primary Indicator of hydrology within the wetlands (Macmillan 2008).

3.2 Special Status Plants

Special status plant species include plant species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing under the Federal Endangered Species Act (ESA) or California Endangered Species Act (CESA). These acts afford protection to both listed species and those that are formal candidates for listing. Plant species on CNPS' Inventory of Rare and Endangered Plants of California with California Rare Plant Ranks of 1 and 2 are also considered special status plant species and must be considered under CEQA. Further, California Rare Plant Ranks 3 and 4 are evaluated within this report to ensure locally important plant species are included for impact significance.

Protocol-level botanical surveys were performed the approximately 8.5-acre property in 2008 and in 2009 by Roy Buck, EcoSystems West Consulting Group and in 2018 by Jane Valerius Environmental Consulting in accordance with Santa Rosa Conservation Strategy Appendix D Plant Survey Protocol (USFWS 2005). No special status plants were found during any of the surveys. Additional surveys were performed by Sol Ecology on March 16, April 14, and May 13, 2021, in accordance with the USFWS and CDFW 2018 protocols. The surveys were performed over the entire site, including wetlands mapped on the western and southern borders and were floristic in nature. Target species included Sonoma sunshine (*Blennosperma bakeri*), Burke's goldfields (*Lasthenia burkei*), and Sebastopol meadowfoam (*Limnanthes vinculans*). Reference visits to the Alton Conservation Bank were performed prior to each survey to verify bloom. No special status plants were observed on or adjacent to the Project Study Area; the results of the 2021 surveys are provided in Appendix D.

Based upon a review of the resources and databases given in Section 2.1, 84 special status plant species have been documented within a 9-quad search of the study area (Appendix B). Based on the presence of vegetation communities described above and soils at the site, the presence of active cultivation for the last 20 years or more, and negative findings during protocol-level surveys in 2008, 2009, 2018, and 2021, the site is unlikely to support any of the special status species found in similar habitats within the vicinity. Other special status plant species documented within the 9-quad search are unlikely or have no potential to occur in the study area for one or more of the following reasons:

- Hydrologic conditions (e.g., vernal pools, bogs and fens, freshwater marshes, and swamps) necessary to support the special status plants do not exist on site.
- Edaphic (soil) conditions (e.g., sandy, rocky, gravelly, talus) necessary to support the special status plants do not exist on site.
- Topographic conditions (e.g., slopes) necessary to support the special status plants do not exist on site.
- Unique pH conditions (e.g., serpentine) necessary to support the special status plant species are not present on site.
- Associated vegetation communities (e.g., chaparral, coastal bluffs, oak woodland, conifer forest) necessary to support the special status plants do not exist on site.

3.3 Special Status Wildlife

In addition to wildlife listed as federal or state endangered and/or threatened, federal and state candidate species, CDFW Species of Special Concern, CDFW California Fully Protected species, USFWS Birds of Conservation Concern, and CDFW Special-status Invertebrates are all considered special status species. Although these species generally have no special legal status, they are given special consideration under CEQA. The federal Bald and Golden Eagle Protection Act also provides broad protections to both eagle species that are roughly analogous to those of listed species. Bat species are also evaluated for conservation status by the Western Bat Working Group (WBWG), a non-governmental entity; bats named as a “High Priority” or “Medium Priority” species for conservation by the WBWG are typically considered special status and considered under CEQA; bat roosts are protected under CDFW Fish and Game Code. In addition to regulations for special status species, most native birds in the United States (including non-status species) are protected by the federal Migratory Bird Treaty Act of 1918 (MBTA) and the California Fish and Game Code (CFGC), i.e., sections 3503, 3503.5 and 3513. Under these laws, deliberately destroying active bird nests, eggs, and/or young is illegal.

Based on the databases given in Section 2.1, 48 special status wildlife species have been documented within a 9-quad search of the study area (Appendix B). Based on the presence of biological communities described above, the Project Study Area has the potential to support three (3) of these species, one of which is both federal and state listed (Table 1). The remaining species found in the database search are unlikely or have no potential to occur for one or more of the following reasons:

- No suitably sized burrows or evidence of potential dens are present on or immediately adjacent to the study area, partially attributed to historic annual disking practices (e.g., American badger).
- Limited small mammal forage habitat for raptors and other species due to historic annual disking (e.g., American badger).
- No suitable roosting habitat such as barns, old buildings, or large snags (e.g., Townsend’s big-eared bat or pallid bat).
- No suitable stream or pond habitat (e.g., for foothill yellow-legged frog, California red-legged frog, California freshwater shrimp or western pond turtle); note that the Laguna de Santa Rosa may support pond turtle, however Sonoma County Water Agency chain-link fencing located along the southern boundary of the Laguna prevents pond turtle from accessing the site.
- No suitable riparian, freshwater marsh, woodland, or forest habitat (e.g., western yellow-billed cuckoo, tricolored blackbird, northern spotted owl).

Table 1. Special Status Wildlife with Potential to Occur in the Study Area

Scientific Name/ Common Name	Status [1]	Habitat	Potential for Occurrence
Birds			
white-tailed kite (WTK) *Elanus leucurus*	CFP	Year-round resident in coastal and valley lowlands with scattered trees and large shrubs, including grasslands, marshes, and agricultural areas. Nests in trees, of which the type and setting are highly variable. Preys on small mammals and other vertebrates.	**Low potential**. Suitable nesting substrate is not present in the project study area, though a few sparse trees and shrubs around the perimeter may offer marginal nesting opportunity. Suitable foraging habitat is present.
burrowing owl (BUOW) *Athene cunicularia*	SSC	Occur in annual and perennial grasslands and agricultural areas. It is believed that burrowing owls may potentially occur wherever there is ground squirrel (e.g., *Spermophilus beecheyi*) colonies as this owl uses ground squirrel burrows throughout the year. Burrows are the essential component of burrowing owl habitat (CDFG 1995). BUOW may utilize multiple burrows/sites throughout the year (e.g., small seasonal migrations).	**Low potential.** Annual grasslands are present within study area and agricultural areas exist to the south and west. However, no evidence of suitably sized burrows is present on or immediately adjacent to the study area. The site is not suitable because there are no sandy soils on site, as BUOW requires friable soils. However, BUOW may overwinter on adjacent parcels. BUOW does not nest in Sonoma County (Shuford and Gardali).
Amphibians and Reptiles			
California tiger salamander (CTS) *Ambystoma californiense*	FE, ST	Inhabits grassland, oak woodland, ruderal, and seasonal pool habitats. Adults are fossorial and utilize mammal burrows and other subterranean refugia. Breeding occurs primarily in vernal pools and other seasonal water features.	**Moderate potential.** Wetland habitats on the site are seasonal in nature and do not likely pond for a sufficient duration to support breeding. Suitable upland habitat is present. The site is surrounded by multiple CTS occurrences, the nearest of which is approximate 800 feet to the south. The Project Study Area provides only marginal upland habitat due to historic land use practices and the presence of clay soils. Burrow density is relatively low except on the outer perimeter on the western and northwestern side of the property.

[1] FE/SE – Federal/State Endangered
SCE/T – State Candidate Endangered/Threatened
SSC – Species of Special Concern
SSI – Special Status Invertebrate
WBWG – Western Bat Working Group – Medium or High Priority Species
FT/ST – Federal/State Threatened
CFP – California Fully Protected
BCC – Bird of Conservation Concern
LC – Species of Local Concern

4.0 POTENTIAL IMPACTS AND MITIGATION

The assessment of impacts under CEQA is based on the change caused by the Project relative to the existing conditions within the Project Study Area. In applying CEQA Appendix G, the terms "substantial" and "substantially" are used as the basis for significance determinations in many of the thresholds but are not defined qualitatively or quantitatively in CEQA or in technical literature. In some cases, the determination requires application of best professional judgment based on knowledge of site conditions as well as the ecology and physiology of biological resources present in a given area. The CEQA and State CEQA Guidelines defines "significant effect on the environment" as "a substantial adverse change in the physical conditions which exist in the area affected by the proposed project." Pursuant to Appendix G, Section IV of the State CEQA Guidelines, the proposed Project would have a significant impact on biological resources if it would:

A. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

B. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

C. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

D. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.

E. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

F. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

4.1 Potentially Significant Impacts

4.1.1. Sensitive Natural Communities

Seasonal wetlands are sensitive natural communities occurring within the Project Study Area and are regulated by the USACE and RWQCB. Project activities resulting in fill or modification (including diversion) of seasonal wetlands within the Project Study Area must be authorized by the USACE pursuant to Section 404 of the Clean Water Act, and the RWQCB pursuant to Section

401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Based on preliminary calculations, approximately 0.88 acre of seasonal wetland habitat is present and will be avoided by the proposed project as shown in Appendix A, Figure 1. Impacts to wetland habitat is considered significant under CEQA; based on the current site plan the proposed project will have no effect on any sensitive natural communities. The property owner obtained a determination letter from the U.S. Army Corps of Engineers dated April 1, 2021, that found Building 1 AOD on the same parcel would not result in the placement of fill materials within waters or wetlands subject to Corps regulation on the project site; therefore, no Department of the Army permit was required. A similar letter will be requested from the U.S. Army Corps of Engineers for the Building 2 AOD.

The City of Cotati Municipal Code requires a minimum buffer area of 50-feet between project development and seasonal wetland habitat to maintain sufficient watershed to support the wetland. A wetland buffer reduction may be allowable where the alternative buffer provides adequate watershed hydrology and protection of the resource value. Given that surface and subsurface flow on the parcel drains toward the Laguna de Santa Rosa, rather than towards the seasonal wetlands, a setback reduction is not likely to affect the watershed surrounding adjacent wetlands and would not alter hydrology of these features. A curb will be installed around the perimeter of the development to direct surface flow and runoff into new bioretention swales, which will ensure water percolates back into the water table to support wetland functions and values on the site. Building 2 AOD will be setback at least 10 feet or more from adjacent seasonal wetlands except in one location where the curb will be within 8 feet of the outer point of the SWA wetland.

As mentioned in Section 1.2, the bioretention swales are designed to avoid draining water from adjacent undisturbed wetland areas and will filtrate stormwater back into the ground to support seasonal wetland habitats to the south and west. The bioretention swales will also maintain a 10-foot setback except in two places: 1) along the southern perimeter the bioretention swale will be located within 3 feet of the SWA wetland at western end only, and 2) along the western boundary, the bioretention swale will be within 7 feet of SWB near the outfall in the northwestern corner. A minimum 30-foot setback from the top of bank of the Laguna de Santa Rosa is provided. The Laguna de Santa Rosa is separated from the project site by a maintained levee road and chain link fence.

4.1.2. Special-Status Plant Species

A total of eleven (11) protocol-level surveys conducted in 2008, 2009, 2018, and 2021 concluded no special status species are present, including those listed species potentially present in seasonal wetland habitat on the Santa Rosa Plain. Given that no special status plant species have been observed during protocol-level surveys and due to the highly disturbed nature of the site, no impacts to special status plants are anticipated.

4.1.3. Special Status Wildlife Species

Three special status wildlife species have potential to occur within the Project Study Area: white-tailed kite, burrowing owl, and California tiger salamander. In addition, the study area provides suitable nesting substrate for several migratory bird species protected under the MBTA.

<u>Migratory Birds, Burrowing Owl (BUOW)and White-Tailed Kite (WTK)</u>

The Project Study Area provides suitable nesting substrate (trees, shrubs, grasses) for many non-status migratory birds. Annual disking likely precludes most bird species from nesting on the site and the lack of sandy soil reduces the potential for overwintering BUOW. Proposed construction activities have the potential to impact nesting birds and/or wintering BUOW if present adjacent to activities. Impacts to BUOW or nesting birds resulting in nest abandonment or direct mortality to chicks or eggs is considered a significant impact under CEQA.

<u>California Tiger Salamander (CTS)</u>

The Project Study Area provides suitable upland estivation habitat for CTS and is within 2,200 feet of at least two breeding occurrences, the nearest of which is approximately 800 feet from the south end of the site. Little burrowing habitat is present due to agricultural practices on the site. Nonetheless, the project has the potential to impact CTS given proximity to nearby occurrences and the absence of any barriers to dispersal. Given this species is both federal and state listed, any direct mortality is considered significant under CEQA. Impacts to CTS may occur during ground-disturbing activities if present. Because the site is bounded by the Laguna de Santa Rosa and the proposed project will be designed to be close to existing development on Blodgett Ct, the project will not result in any permanent barrier to dispersing adults. The site itself is not within any obvious corridor between breeding occurrences and likely represents only limited upland estivation habitat for CTS the breed in the vicinity.

The project would result in the adverse modification of critical habitat for CTS given its location on the Santa Rosa Plain. A total of approximately **3.1 acres** of upland habitat would be affected by the proposed project, including 3.0 acres of permanent impact for the construction of Building 2 AOD, bioretention areas, and upland habitat in the northeast corner which will be isolated as a result of the project. A total of 0.1 acre of CTS upland habitat will be temporarily impacted to allow for exclusion fencing and access to the outer curb for construction and installation of permanent barrier fencing. Lastly, compensatory mitigation for the project would likely come from permittee-responsible mitigation (PRM) lands which could result in minor impacts to CTS upland habitat through construction of breeding ponds, if necessary.

4.2 Recommended Avoidance and Minimization Measures

The following measures are recommended to be implemented in the event any of the impacts described in Section 4.1 cannot be completely avoided by project design and/or recommended work windows (e.g., vegetation removal between September 1 and February 1.).

MM BIO-1. Best Management Practices
Best management practices should be employed to prevent discharge or spilling of materials or liquids into the adjacent seasonal wetlands. The 10-foot setback (or adjusted setback) should be demarcated using either orange construction fence and/or wildlife exclusion fence described in MM BIO-5. No refueling of vehicles or equipment shall occur outside of the project footprint.

MM BIO-2. Nesting Bird Surveys. If construction begins during the nesting bird season between February 1 and August 31, the following is recommended to ensure potentially significant impacts to migratory nesting birds and raptors (including WTK) are avoided:

- Pre-construction nesting bird surveys should be performed within the project study area and up to 250 feet of proposed activities no more than 7 days prior to construction. If a lapse of 7 days or more in construction occurs, another survey shall be conducted.
- If nests are found, a no-disturbance buffer should be placed around the nest until young have fledged or the nest is determined to be no longer active by the biologist. The size of the buffer may be determined by the biologist based on species, ambient conditions, and proximity to project-related activities. Larger buffers are not likely necessary due to ambient conditions. Any active nests shall be monitored by a qualified biologist daily at a minimum for the first week to ensure the buffer is adequate to avoid nest disturbance, then weekly thereafter.

MM BIO-3. Burrowing Owl. A qualified biologist shall follow the California a Department of Fish and Game (now CDFW) 2012 Staff Report on Burrowing Owl Mitigation (CDFW 2012 Staff Report) habitat assessment and survey methodology prior to project activities occurring during the burrowing owl wintering season from September 1 to January 31. If work is initiated outside of the wintering season, no surveys are needed. The habitat assessment and surveys shall encompass a sufficient buffer zone to detect owls nearby that may be impacted. Time lapses between surveys or project activities shall trigger subsequent surveys, as determined by a qualified biologist, including but not limited to a final survey within 24 hours prior to ground disturbance and before construction equipment mobilizes to the Project area. The qualified biologist shall have a minimum of two years of experience implementing the CDFW 2012 Staff Report survey methodology resulting in detections. Detected burrowing owls shall be avoided pursuant to the buffer zone prescribed in the CDFW 2012 Staff Report, unless otherwise approved in writing by CDFW, and any eviction plan shall be subject to CDFW review.

Please be advised that CDFW does not consider eviction of burrowing owls (i.e., passive removal of an owl from its burrow or other shelter) as a “take” avoidance, minimization, or mitigation measure: therefore, offsite habitat compensation shall be included in the eviction plan. Habitat compensation acreages shall be approved by CDFW, as the amount depends on site-specific conditions, and completed before project construction. It shall also include placement of a conservation easement and preparation and implementation of a long-term management plan.

MM BIO-4. Section 2081 Permitting and Compensatory Mitigation. At minimum, the Applicant shall consult with the CDFW and obtain a Section 2081 Incidental Take Permit (ITP) for CTS prior to commencing construction-related activities on the project site. Compensatory mitigation shall be provided at a ratio of 2:1 for all permanent impacts, and at 1:1 for any temporary effects. Mitigation shall be purchased at a CDFW-approved conservation bank or through a CDFW-approved off-site mitigation site prior to issuance of the ITP. Copies of the CDFW's 2081 ITP and copies of USFWS concurrence or Minor Habitat Conservation Plan (HCP) if required shall be provided to the City of Cotati prior to commencement of grading or other construction activities on the site. The Applicant shall conform with all of the measures set forth in the ITP and/or HCP if required, including any off-site compensatory mitigation requirements (e.g., construction of CTS breeding pools in upland habitat, if required).

MM BIO-5. Wildlife Exclusion Fencing (WEF). Prior to the start of construction, WEF will be installed at the edge of the project footprint in all areas where CTS could enter the construction area. The location of the fencing shall be determined by the onsite project manager and the CDFW-approved biologist in cooperation with CDFW prior to the start of staging or surface disturbing activities. A conceptual fencing plan shall be submitted to CDFW for review and approval prior to WEF installation. The WEF shall remain in place throughout the duration of the project and shall be inspected weekly and fully maintained. Repairs to the WEF shall be made within 24 hours of discovery. Upon project completion the WEF shall be completely removed and replaced with permanent barrier fencing.

MM BIO-6. Relocation Plan. A Relocation Plan shall be prepared and be consistent with the Guidelines for the relocation of California tiger salamander (*Ambystoma californiense*) (Shaffer et. al. 2008). The Relocation Plan shall contain the name(s) of the Service-approved biologist(s) to relocate CTS, method of relocation (if different than number 3 below), a map, and description of the proposed release site(s) and burrow(s), and written permission from the landowner to use their land as a relocation site.

MM BIO-7. Protocol for Species Observation, Handling, and Relocation. Only Service-approved biologists shall participate in activities associated with the capture, handling, relocation, and monitoring of CTS. If a CTS is encountered, work activities within 50 feet of the individual shall cease immediately and the Onsite Project Manager and Service-approved biologist shall be notified. Based on the professional judgment of the Service-approved biologist, if project activities can be conducted without harming or injuring the individual(s), it may be left at the location of discovery and monitored by the Service-approved biologist.

MM BIO-8. Biological Monitors. Qualified biological monitor(s) will be on site each day during all earth moving activities. The biological monitor(s) shall conduct clearance surveys at the beginning of each day and regularly throughout the workday when construction activities are occurring that may displace, injure, or kill CTS through contact with workers, vehicles, and equipment. Where feasible and only on a case-by-case basis, rodent burrows and other ground openings suspected to contain CTS that would be destroyed from project activities may be carefully excavated with hand tools. Pre-soaking the area prior to ground disturbance may also increase emergence of the species for translocation.

Before the start of work each day, the biological monitor will check for animals under all equipment such as vehicles and stored pipes. The biological monitor will check all excavated steep-walled holes or trenches greater than one foot deep for any CTS. CTS will be removed by the biological monitor and relocated according to the Relocation Plan.

To prevent inadvertent entrapment of animals during construction, all excavated, steep-walled holes or trenches more than 6 inches deep will be covered with plywood (or similar materials) that leave no entry gaps at the close of each working day or provided with one or more escape ramps constructed of earth fill or wooden planks. The Biological Monitor shall inspect all holes and trenches at the beginning of each workday and before such holes or trenches are filled. All replacement pipes, culverts, or similar structures stored in the project footprint overnight will be inspected before they are subsequently moved, capped, and/or buried.

MM BIO-9. Biological Monitoring Records. The biological monitor(s) shall maintain monitoring records in accordance with applicable permits. All monitoring records shall be provided to the applicable agency(ies) within 30 days of the completion of monitoring work.

MM BIO-10. Proper Use of Erosion Control Materials. Plastic or synthetic monofilament netting will not be used in order to prevent CTS from becoming entangled, trapped, or injured. This includes products that use photodegradable or biodegradable synthetic netting, which can take several months to decompose. Acceptable materials include natural fibers such as jute, coconut, twine, or other similar fibers.

MM BIO-11. Vegetation Removal. A Service-approved biologist will be present during all vegetation clearing and grubbing activities. Grasses and weedy vegetation should be mowed to a height no greater than 6 inches prior to ground-disturbing activities. All cleared vegetation will be removed from the project footprint to prevent attracting animals to the project site. Prior to vegetation removal, the Service-approved biologist shall thoroughly survey the area for CTS. Once the qualified biologist has thoroughly surveyed the area, clearing and grubbing may continue without further restrictions on equipment; however, the qualified biologist shall remain onsite to monitor for CTS until all clearing and grubbing activities are complete.

MM BIO-12. Nighttime Activities. Construction and ground disturbance will occur only during daytime hours and will cease no less than 30 minutes before sunset and will not begin again prior to no less than 30 minutes after sunrise.

MM BIO-13. Trash. All foods and food-related trash items will be enclosed in sealed trash containers at the end of each day and removed from the site every three days.

MM BIO-13. Wet Weather Restrictions. If work is proposed to occur during the wet weather season between October 15 and April 15, no grading shall be permitted when a ¼-inch or more precipitation is forecasted within 72 hours to avoid impacts to CTS that may be leaving estivation habitat and moving to nearby breeding sites. Work shall be suspended until at least 24 hours following a major rain event.

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APPENDIX A

PROJECT FIGURES: PROJECT STUDY AREA AND CNDDDB MAP RESULTS

Figure 1. Project Location, Wetlands, and CTS Habitat Map

Sandell Distribution Warehouse Building 2

597 Helman Lane
Cotati, CA

2010 USACE Jurisdictional Wetland

- Seasonal Wetland (0.88 ac)

Permanent Impacts to CTS Upland Habitat (Total - 3.02 ac; 131,569 sqft)

- Building 2 AOD (2.59 ac; 112,674 sqft)
- Bioretention Area (0.43 ac; 18,895 sqft)

Temporary Impacts to CTS Upland Habitat (Total - 0.093 ac; 4,072 sqft)

- Temporary Impacts

Other Features

- Project Study Area
- Building 1 AOD
- Stream
- Fenceline

Coordinate System: NAD 1983 UTM Zone 10N
Projection: Universal Transverse Mercator
Datum: North American 1983
Vertical Datum: NAVD88, U.S. Feet

Map created: 1/21/2022
Data: Sol Ecology Inc., Sonoma Co., Lucy Macmillan Consulting
Base: Sonoma Co.
GIS: AG2064

N
0 50 100 200
Feet
1 inch = 100 feet

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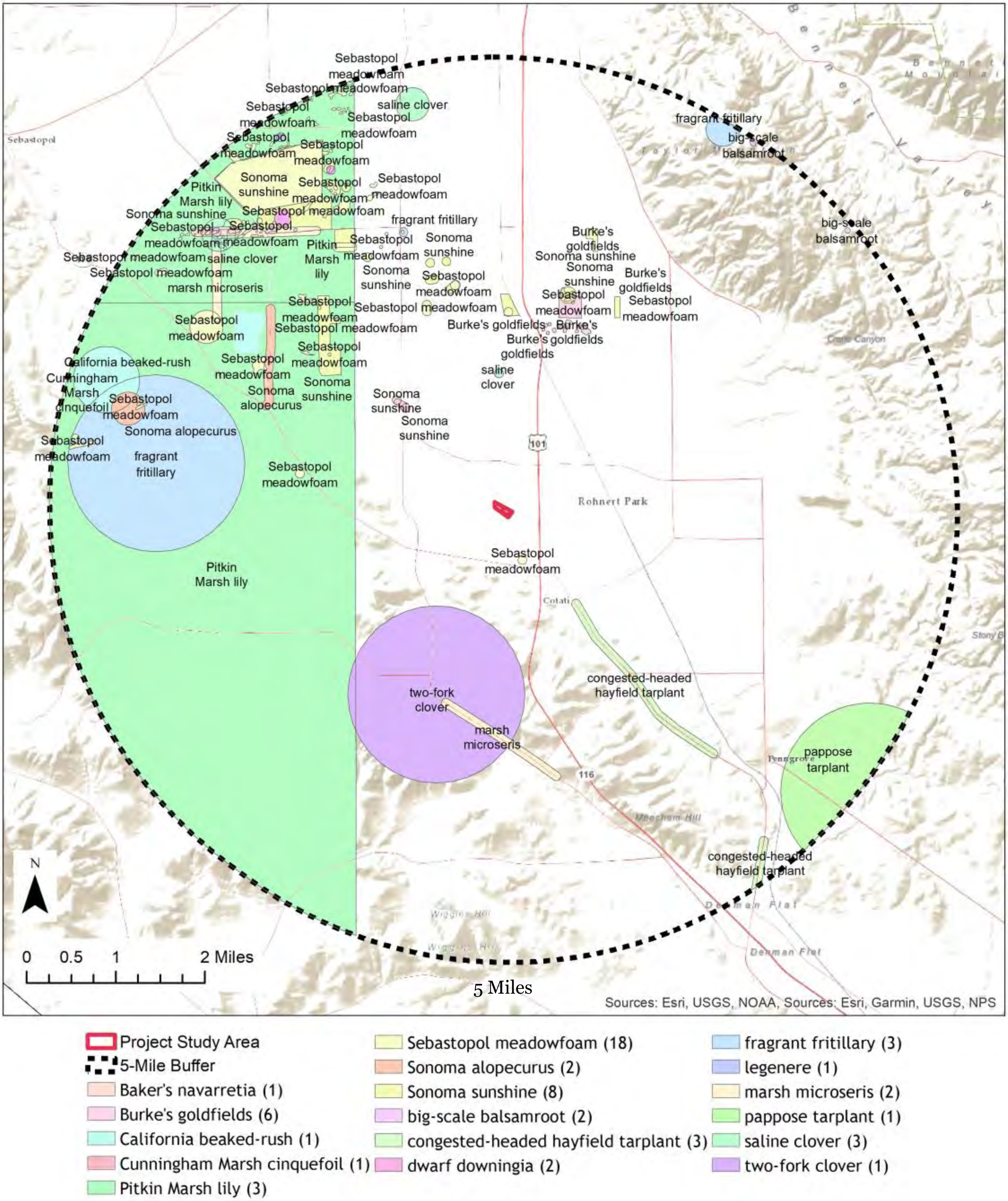
Figure 2: Special Status Plant Species within 5 Miles of the Project Site

597 Helman Lane, Cotati, CA (APN 046-073-006)



Date: 1-24-2022
Data: Sol Ecology Inc., Sonoma Co., CDFW

Base: ESRI
GIS: LM2064

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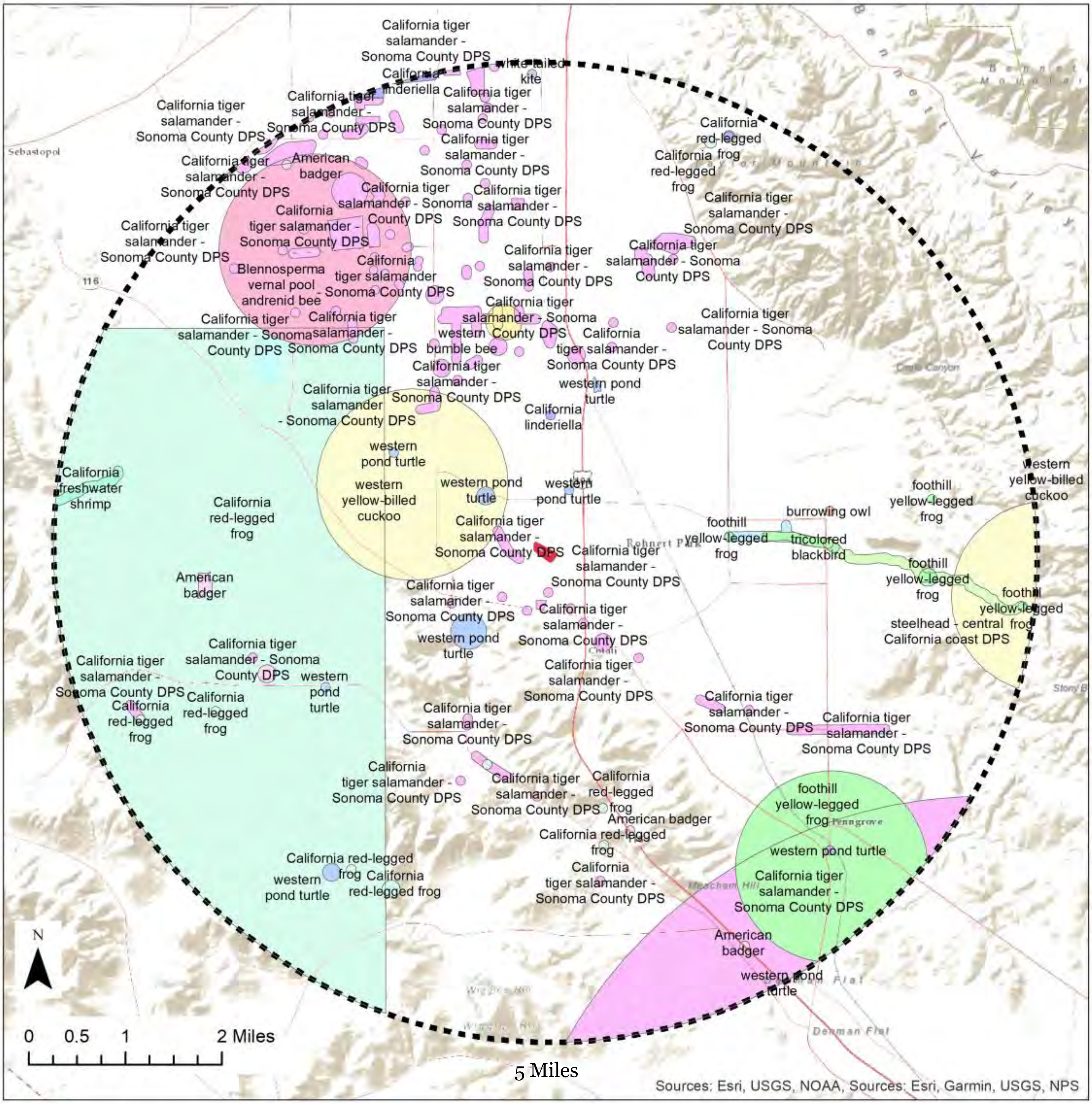
Figure 3: Special Status Animal Species within 5 Miles of the Project Site

597 Helman Lane, Cotati, CA (APN 046-073-006)



- Project Study Area
- 5-Mile Buffer
- American badger (5)
- Blennosperma vernal pool andrenid bee (1)
- California freshwater shrimp (1)
- California linderiella (4)
- California red-legged frog (9)
- California tiger salamander - Sonoma County DPS (72)
- burrowing owl (1)
- foothill yellow-legged frog (6)
- steelhead - central California coast DPS (1)
- tricolored blackbird (1)
- western bumble bee (1)
- western pond turtle (9)
- western yellow-billed cuckoo (2)
- white-tailed kite (1)

Date: 1-24-2022
Data: Sol Ecology Inc., Sonoma Co., CDFW

Base: ESRI
GIS: LM2064

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APPENDIX B

CNDDB, CNPS, AND IPAC SUMMARY TABLES

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Cotati (3812236) OR Sebastopol (3812247) OR Santa Rosa (3812246) OR Kenwood (3812245) OR Two Rock (3812237) OR Glen Ellen (3812235) OR Point Reyes NE (3812227) OR Petaluma (3812226) OR Petaluma River (3812225))
 AND Taxonomic Group IS (Dune OR Scrub OR Herbaceous OR Marsh OR Riparian OR Woodland OR Forest OR Alpine OR Inland Waters OR Marine OR Estuarine OR Riverine OR Palustrine OR Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes OR Fungi)

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Allium peninsulare var. franciscanum Franciscan onion	G5T2 S2	None None	Rare Plant Rank - 1B.2	600 600	25 S:2	0	0	0	0	0	2	2	0	2	0	0
Alopecurus aequalis var. sonomensis Sonoma alopecurus	G5T1 S1	Endangered None	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	100 1,180	21 S:6	0	0	0	1	2	3	5	1	4	2	0
Amorpha californica var. napensis Napa false indigo	G4T2 S2	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	330 900	76 S:7	1	0	1	1	0	4	2	5	7	0	0
Amsinckia lunaris bent-flowered fiddleneck	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_UCBG-UC Botanical Garden at Berkeley SB_UCSC-UC Santa Cruz	400 400	93 S:2	0	0	0	0	0	2	2	0	2	0	0
Arctostaphylos densiflora Vine Hill manzanita	G1 S1	None Endangered	Rare Plant Rank - 1B.1	200 240	2 S:2	0	0	1	1	0	0	1	1	2	0	0
Arctostaphylos stanfordiana ssp. decumbens Rincon Ridge manzanita	G3T1 S1	None None	Rare Plant Rank - 1B.1	300 800	12 S:6	0	0	2	1	1	2	4	2	5	0	1
Astragalus claranus Clara Hunt's milk-vetch	G1 S1	Endangered Threatened	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	770 1,165	6 S:2	0	1	0	0	0	1	0	2	2	0	0

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks A	B	C	D	X	U	Population Status Historic > 20 yr	Recent <= 20 yr	Presence Extant	Poss. Extirp.	Extirp.
Astragalus tener var. tener alkali milk-vetch	G2T1 S1	None None	Rare Plant Rank - 1B.2	30 30	65 S:1	0	0	0	0	1	0	1	0	0	0	1
Balsamorhiza macrolepis big-scale balsamroot	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive USFS_S-Sensitive	890 1,230	51 S:2	2	0	0	0	0	0	2	0	2	0	0
Blennosperma bakeri Sonoma sunshine	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	70 330	24 S:17	0	8	3	0	3	3	5	12	14	2	1
Brodiaea leptandra narrow-anthered brodiaea	G3? S3?	None None	Rare Plant Rank - 1B.2	650 650	39 S:4	0	1	0	0	0	3	4	0	4	0	0
Calamagrostis crassiglumis Thurber's reed grass	G3Q S2	None None	Rare Plant Rank - 2B.1	150 150	15 S:1	0	0	0	0	0	1	1	0	1	0	0
Campanula californica swamp harebell	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	150 150	155 S:2	0	0	0	0	2	0	2	0	0	1	1
Castilleja uliginosa Pitkin Marsh paintbrush	GXQ SX	None Endangered	Rare Plant Rank - 1A	150 200	2 S:2	0	0	0	0	2	0	2	0	0	2	0
Ceanothus confusus Rincon Ridge ceanothus	G1 S1	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_SBBG-Santa Barbara Botanic Garden	510 2,700	33 S:7	0	0	1	0	1	5	3	4	6	0	1
Ceanothus divergens Calistoga ceanothus	G2 S2	None None	Rare Plant Rank - 1B.2	680 1,900	26 S:9	1	1	0	2	0	5	3	6	9	0	0
Ceanothus foliosus var. vineatus Vine Hill ceanothus	G3T1 S1	None None	Rare Plant Rank - 1B.1	150 250	6 S:3	0	0	1	0	0	2	1	2	3	0	0
Ceanothus masonii Mason's ceanothus	G1 S1	None Rare	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_USDA-US Dept of Agriculture	600 900	8 S:3	0	1	0	0	0	2	2	1	3	0	0
Ceanothus purpureus holly-leaved ceanothus	G2 S2	None None	Rare Plant Rank - 1B.2 SB_SBBG-Santa Barbara Botanic Garden	475 475	43 S:2	0	0	0	0	0	2	2	0	2	0	0

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks A	B	C	D	X	U	Population Status Historic > 20 yr	Recent <= 20 yr	Presence Extant	Poss. Extirp.	Extirp.
Ceanothus sonomensis Sonoma ceanothus	G2 S2	None None	Rare Plant Rank - 1B.2 SB_SBBG-Santa Barbara Botanic Garden	475 1,900	30 S:14	2	0	0	0	0	12	11	3	14	0	0
Centromadia parryi ssp. parryi pappose tarplant	G3T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	80 80	39 S:1	0	0	0	0	0	1	1	0	1	0	0
Chloropyron maritimum ssp. palustre Point Reyes salty bird's-beak	G4?T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	2 4	80 S:2	1	0	1	0	0	0	1	1	2	0	0
Chloropyron molle ssp. molle soft salty bird's-beak	G2T1 S1	Endangered Rare	Rare Plant Rank - 1B.2	5 5	27 S:2	0	0	0	0	2	0	2	0	0	2	0
Chorizanthe valida Sonoma spineflower	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	30 150	6 S:2	0	0	0	0	2	0	2	0	0	2	0
Cirsium andrewsii Franciscan thistle	G3 S3	None None	Rare Plant Rank - 1B.2	300 300	31 S:1	0	0	0	0	0	1	1	0	1	0	0
Clarkia imbricata Vine Hill clarkia	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_UCBG-UC Botanical Garden at Berkeley	230 232	2 S:2	0	1	1	0	0	0	1	1	2	0	0
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	G3 S2.1	None None		65 65	60 S:1	0	0	0	0	0	1	1	0	1	0	0
Coastal Brackish Marsh Coastal Brackish Marsh	G2 S2.1	None None			30 S:1	0	0	0	0	0	1	1	0	1	0	0
Cuscuta obtusiflora var. glandulosa Peruvian dodder	G5T4? SH	None None	Rare Plant Rank - 2B.2		6 S:1	0	0	0	0	0	1	1	0	1	0	0
Delphinium bakeri Baker's larkspur	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_UCBG-UC Botanical Garden at Berkeley	305 705	6 S:4	0	0	0	1	0	3	0	4	4	0	0

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks A	B	C	D	X	U	Population Status Historic > 20 yr	Recent <= 20 yr	Presence Extant	Poss. Extirp.	Extirp.
Delphinium luteum golden larkspur	G1 S1	Endangered Rare	Rare Plant Rank - 1B.1 SB_UCBG-UC Botanical Garden at Berkeley	150 150	11 S:2	0	0	0	0	1	1	2	0	1	1	0
Downingia pusilla dwarf downingia	GU S2	None None	Rare Plant Rank - 2B.2	85 700	132 S:12	4	1	0	1	2	4	7	5	10	1	1
Eriogonum luteolum var. caninum Tiburon buckwheat	G5T2 S2	None None	Rare Plant Rank - 1B.2	550 550	26 S:2	1	0	0	0	0	1	0	2	2	0	0
Fritillaria lanceolata var. tristulis Marin checker lily	G5T2 S2	None None	Rare Plant Rank - 1B.1	70 70	32 S:1	0	0	0	0	0	1	0	1	1	0	0
Fritillaria liliacea fragrant fritillary	G2 S2	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden USFS_S-Sensitive	150 900	82 S:14	0	3	1	0	3	7	9	5	11	3	0
Gilia capitata ssp. tomentosa woolly-headed gilia	G5T2 S2	None None	Rare Plant Rank - 1B.1	245 245	18 S:1	0	0	0	0	0	1	0	1	1	0	0
Hemizonia congesta ssp. congesta congested-headed hayfield tarplant	G5T2 S2	None None	Rare Plant Rank - 1B.2 SB_UCBG-UC Botanical Garden at Berkeley	20 1,705	52 S:19	1	2	0	0	2	14	15	4	17	2	0
Hesperolinon congestum Marin western flax	G1 S1	Threatened Threatened	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_UCBG-UC Botanical Garden at Berkeley	200 560	27 S:4	2	1	0	0	0	1	0	4	4	0	0
Horkelia tenuiloba thin-lobed horkelia	G2 S2	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	200 250	27 S:3	0	0	0	0	0	3	3	0	3	0	0

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks A	B	C	D	X	U	Population Status Historic > 20 yr	Recent <= 20 yr	Presence Extant	Poss. Extirp.	Extirp.
Lasthenia burkei Burke's goldfields	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_UCBG-UC Botanical Garden at Berkeley	50 442	36 S:23	3	9	5	1	4	1	8	15	19	1	3
Lasthenia californica ssp. bakeri Baker's goldfields	G3T1 S1	None None	Rare Plant Rank - 1B.2	125 125	19 S:1	0	0	0	0	0	1	1	0	1	0	0
Lasthenia conjugens Contra Costa goldfields	G1 S1	Endangered None	Rare Plant Rank - 1B.1 SB_UCBG-UC Botanical Garden at Berkeley	280 280	36 S:1	0	1	0	0	0	0	0	1	1	0	0
Layia septentrionalis Colusa layia	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_UCBG-UC Botanical Garden at Berkeley		69 S:2	0	0	0	0	0	2	1	1	2	0	0
Legenere limosa legenere	G2 S2	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_UCBG-UC Botanical Garden at Berkeley	90 1,400	83 S:2	0	0	1	0	1	0	2	0	1	0	1
Leptosiphon jepsonii Jepson's leptosiphon	G2G3 S2S3	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_USDA-US Dept of Agriculture	400 1,900	51 S:8	0	0	1	0	0	7	1	7	8	0	0
Lilium pardalinum ssp. pitkinense Pitkin Marsh lily	G5T1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_BerrySB-Berry Seed Bank SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_USDA-US Dept of Agriculture	132 200	4 S:4	0	2	0	0	1	1	3	1	3	0	1

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks A	B	C	D	X	U	Population Status Historic > 20 yr	Recent <= 20 yr	Presence Extant	Poss. Extirp.	Extirp.
Limnanthes vinculans Sebastopol meadowfoam	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_UCBG-UC Botanical Garden at Berkeley	50 135	45 S:40	2	7	6	2	6	17	16	24	34	5	1
Microseris paludosa marsh microseris	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_SBBG-Santa Barbara Botanic Garden SB_UCSC-UC Santa Cruz	40 80	38 S:3	0	0	0	0	0	3	3	0	3	0	0
Navarretia leucocephala ssp. bakeri Baker's navarretia	G4T2 S2	None None	Rare Plant Rank - 1B.1	50 1,320	64 S:15	1	2	0	0	5	7	11	4	10	3	2
Northern Coastal Salt Marsh Northern Coastal Salt Marsh	G3 S3.2	None None			53 S:1	0	0	0	0	0	1	1	0	1	0	0
Northern Hardpan Vernal Pool Northern Hardpan Vernal Pool	G3 S3.1	None None		60 135	126 S:5	3	0	1	0	1	0	5	0	4	1	0
Northern Vernal Pool Northern Vernal Pool	G2 S2.1	None None		73 1,400	20 S:6	0	1	0	0	0	5	6	0	6	0	0
Penstemon newberryi var. sonomensis Sonoma beardtongue	G4T3 S3	None None	Rare Plant Rank - 1B.3 BLM_S-Sensitive	2,600 2,600	15 S:1	0	1	0	0	0	0	0	1	1	0	0
Plagiobothrys mollis var. vestitus Petaluma popcornflower	G4?TX SX	None None	Rare Plant Rank - 1A	20 20	1 S:1	0	0	0	0	1	0	1	0	0	1	0
Pleuropogon hooverianus North Coast semaphore grass	G2 S2	None Threatened	Rare Plant Rank - 1B.1 SB_BerrySB-Berry Seed Bank SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	460 780	27 S:2	1	1	0	0	0	0	0	2	2	0	0
Polygonum marinense Marin knotweed	G2Q S2	None None	Rare Plant Rank - 3.1	5 5	32 S:1	0	0	0	0	0	1	1	0	1	0	0

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks A	B	C	D	X	U	Population Status Historic > 20 yr	Recent <= 20 yr	Presence Extant	Poss. Extirp.	Extirp.
Potentilla uliginosa Cunningham Marsh cinquefoil	GX SX	None None	Rare Plant Rank - 1A	150 150	1 S:1	0	0	0	0	1	0	1	0	0	1	0
Rhynchospora alba white beaked-rush	G5 S2	None None	Rare Plant Rank - 2B.2 IUCN_LC-Least Concern	200 200	11 S:1	0	1	0	0	0	0	1	0	1	0	0
Rhynchospora californica California beaked-rush	G1 S1	None None	Rare Plant Rank - 1B.1	150 150	9 S:3	0	0	0	0	1	2	3	0	2	0	1
Rhynchospora capitellata brownish beaked-rush	G5 S1	None None	Rare Plant Rank - 2B.2 IUCN_LC-Least Concern	150 150	25 S:2	0	0	1	0	1	0	1	1	1	1	0
Rhynchospora globularis round-headed beaked-rush	G4 S1	None None	Rare Plant Rank - 2B.1	150 150	2 S:2	0	0	0	0	1	1	2	0	1	1	0
Sidalcea calycosa ssp. rhizomata Point Reyes checkerbloom	G5T2 S2	None None	Rare Plant Rank - 1B.2	30 30	34 S:1	0	0	0	0	0	1	1	0	1	0	0
Sidalcea oregana ssp. valida Kenwood Marsh checkerbloom	G5T1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_UCBG-UC Botanical Garden at Berkeley	400 400	2 S:1	0	0	1	0	0	0	0	1	1	0	0
Streptanthus anomalus Mount Burdell jewelflower	G1 S1	None None	Rare Plant Rank - 1B.1	235 535	2 S:2	0	0	0	0	0	2	0	2	2	0	0
Trifolium amoenum two-fork clover	G1 S1	Endangered None	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_UCBG-UC Botanical Garden at Berkeley SB_USDA-US Dept of Agriculture	160 300	26 S:6	0	0	0	0	0	6	6	0	6	0	0

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks A	B	C	D	X	U	Population Status Historic > 20 yr	Recent <= 20 yr	Presence Extant	Poss. Extirp.	Extirp.
Trifolium buckwestiorum Santa Cruz clover	G2 S2	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_SBBG-Santa Barbara Botanic Garden SB_UCSC-UC Santa Cruz SB_USDA-US Dept of Agriculture		64 S:2	0	0	0	0	0	2	1	1	2	0	0
Trifolium hydrophilum saline clover	G2 S2	None None	Rare Plant Rank - 1B.2	75 100	56 S:5	0	1	0	1	2	1	3	2	3	1	1
Trifolium polyodon Pacific Grove clover	G1 S1	None Rare	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_USDA-US Dept of Agriculture	20 20	21 S:1	0	0	0	0	0	1	1	0	1	0	0
Triquetrella californica coastal triquetrella	G2 S2	None None	Rare Plant Rank - 1B.2 USFS_S-Sensitive	328 328	13 S:1	0	0	0	0	0	1	0	1	1	0	0
Valley Needlegrass Grassland Valley Needlegrass Grassland	G3 S3.1	None None		835 1,200	45 S:2	0	0	0	0	0	2	2	0	2	0	0
Viburnum ellipticum oval-leaved viburnum	G4G5 S3?	None None	Rare Plant Rank - 2B.3		39 S:2	0	0	0	0	0	2	2	0	2	0	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Cotati (3812236) OR Sebastopol (3812247) OR Santa Rosa (3812246) OR Kenwood (3812245) OR Two Rock (3812237) OR Glen Ellen (3812235) OR Point Reyes NE (3812227) OR Petaluma (3812226) OR Petaluma River (3812225))
 AND Taxonomic Group IS (Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects)

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks A	B	C	D	X	U	Population Status Historic > 20 yr	Recent <= 20 yr	Presence Extant	Poss. Extirp.	Extirp.
Accipiter cooperii Cooper's hawk	G5 S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	133 133	118 S:1	0	1	0	0	0	0	0	1	1	0	0
Agelaius tricolor tricolored blackbird	G1G2 S1S2	None Threatened	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_EN-Endangered NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	106 139	955 S:2	0	0	0	0	1	1	2	0	1	1	0
Ambystoma californiense pop. 3 California tiger salamander - Sonoma County DPS	G2G3 S2	Endangered Threatened	CDFW_WL-Watch List IUCN_VU-Vulnerable	50 475	82 S:82	10	25	24	5	4	14	10	72	78	3	1
Ammodramus savannarum grasshopper sparrow	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	2,150 2,150	27 S:1	1	0	0	0	0	0	0	1	1	0	0
Andrena blennospermatis Blennosperma vernal pool andrenid bee	G2 S2	None None		90 130	15 S:2	0	0	0	0	0	2	2	0	2	0	0
Antrozous pallidus pallid bat	G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive WBWG_H-High Priority	80 730	420 S:7	0	2	0	1	2	2	6	1	5	1	1

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks A	B	C	D	X	U	Population Status Historic > 20 yr	Recent <= 20 yr	Presence Extant	Poss. Extirp.	Extirp.
Aquila chrysaetos golden eagle	G5 S3	None None	BLM_S-Sensitive CDF_S-Sensitive CDFW_FP-Fully Protected CDFW_WL-Watch List IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	1,800 1,800	324 S:1	1	0	0	0	0	0	0	1	1	0	0
Athene cunicularia burrowing owl	G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	-1 2,400	2011 S:7	0	2	4	0	0	1	0	7	7	0	0
Bombus caliginosus obscure bumble bee	G4? S1S2	None None	IUCN_VU-Vulnerable	150 300	181 S:2	0	0	0	0	0	2	2	0	2	0	0
Bombus crotchii Crotch bumble bee	G3G4 S1S2	None None		300 300	437 S:1	0	0	0	0	0	1	1	0	1	0	0
Bombus occidentalis western bumble bee	G2G3 S1	None None	USFS_S-Sensitive	0 750	306 S:8	0	0	0	0	0	8	8	0	8	0	0
Buteo regalis ferruginous hawk	G4 S3S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	2,278 2,278	107 S:1	0	1	0	0	0	0	0	1	1	0	0
Buteo swainsoni Swainson's hawk	G5 S3	None Threatened	BLM_S-Sensitive IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	120 120	2541 S:1	0	0	0	0	1	0	1	0	0	1	0
Caecidotea tomalensis Tomales isopod	G2 S2S3	None None		1,640 2,120	6 S:2	1	0	0	0	0	1	2	0	2	0	0
Calicina diminua Marin blind harvestman	G1 S1	None None		150 150	1 S:1	0	0	0	0	0	1	1	0	1	0	0

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks A	B	C	D	X	U	Population Status Historic > 20 yr	Recent <= 20 yr	Presence Extant	Poss. Extirp.	Extirp.
Coccyzus americanus occidentalis western yellow-billed cuckoo	G5T2T3 S1	Threatened Endangered	BLM_S-Sensitive NABCI_RWL-Red Watch List USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern	90 600	165 S:2	0	0	0	0	1	1	2	0	1	1	0
Corynorhinus townsendii Townsend's big-eared bat	G4 S2	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive WBWG_H-High Priority	30 120	635 S:2	1	0	0	0	0	1	2	0	2	0	0
Coturnicops noveboracensis yellow rail	G4 S1S2	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern NABCI_RWL-Red Watch List USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern	283 283	45 S:1	0	0	0	0	0	1	1	0	1	0	0
Dicamptodon ensatus California giant salamander	G3 S2S3	None None	CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened	350 2,185	234 S:9	4	2	0	0	0	3	1	8	9	0	0
Elanus leucurus white-tailed kite	G5 S3S4	None None	BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_LC-Least Concern	120 2,160	180 S:3	2	1	0	0	0	0	0	3	3	0	0
Emys marmorata western pond turtle	G3G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable USFS_S-Sensitive	12 2,240	1398 S:42	6	12	15	6	0	3	13	29	42	0	0
Eremophila alpestris actia California horned lark	G5T4Q S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	2,275 2,275	94 S:1	1	0	0	0	0	0	0	1	1	0	0
Erethizon dorsatum North American porcupine	G5 S3	None None	IUCN_LC-Least Concern	163 200	523 S:2	0	0	0	0	0	2	2	0	2	0	0

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Geothlypis trichas sinuosa saltmarsh common yellowthroat	G5T3 S3	None None	CDFW_SSC-Species of Special Concern USFWS_BCC-Birds of Conservation Concern	0 9	112 S:3	2	0	0	0	0	1	1	2	3	0	0
Hesperoleucus venustus subditus southern coastal roach	GNRTNR S2	None None	CDFW_SSC-Species of Special Concern	160 160	10 S:1	1	0	0	0	0	0	1	0	1	0	0
Hydrochara rickseckeri Ricksecker's water scavenger beetle	G2? S2?	None None		1,500 1,500	13 S:1	0	0	0	0	0	1	1	0	1	0	0
Hydroporus leechi Leech's skyline diving beetle	G1? S1?	None None		1,180 1,180	13 S:1	0	0	0	0	0	1	1	0	1	0	0
Lasiurus blossevillii western red bat	G4 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern WBWG_H-High Priority	67 67	128 S:1	0	0	0	0	0	1	0	1	1	0	0
Lasiurus cinereus hoary bat	G3G4 S4	None None	IUCN_LC-Least Concern WBWG_M-Medium Priority		238 S:1	0	0	0	0	0	1	1	0	1	0	0
Laterallus jamaicensis coturniculus California black rail	G3G4T1 S1	None Threatened	BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_NT-Near Threatened NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	0 7	303 S:7	1	5	0	0	0	1	0	7	7	0	0
Linderiella occidentalis California linderiella	G2G3 S2S3	None None	IUCN_NT-Near Threatened	90 1,693	508 S:7	0	1	0	0	0	6	5	2	7	0	0
Melospiza melodia samuelis San Pablo song sparrow	G5T2 S2	None None	CDFW_SSC-Species of Special Concern USFWS_BCC-Birds of Conservation Concern	0 9	41 S:5	2	1	0	0	0	2	2	3	5	0	0
Myotis thysanodes fringed myotis	G4 S3	None None	BLM_S-Sensitive IUCN_LC-Least Concern USFS_S-Sensitive WBWG_H-High Priority	210 210	86 S:1	0	0	0	0	0	1	1	0	1	0	0

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks A	B	C	D	X	U	Population Status Historic > 20 yr	Recent <= 20 yr	Presence Extant	Poss. Extirp.	Extirp.
Myotis volans long-legged myotis	G4G5 S3	None None	IUCN_LC-Least Concern WBWG_H-High Priority	210 210	117 S:1	0	0	0	0	1	0	1	0	0	1	0
Myotis yumanensis Yuma myotis	G5 S4	None None	BLM_S-Sensitive IUCN_LC-Least Concern WBWG_LM-Low-Medium Priority	210 210	265 S:1	0	0	0	0	0	1	1	0	1	0	0
Oncorhynchus kisutch pop. 4 coho salmon - central California coast ESU	G5T2T3Q S2	Endangered Endangered	AFS_EN-Endangered	445 445	23 S:1	0	0	0	0	0	1	0	1	1	0	0
Oncorhynchus mykiss irideus pop. 8 steelhead - central California coast DPS	G5T2T3Q S2S3	Threatened None	AFS_TH-Threatened	260 400	44 S:4	1	2	0	1	0	0	0	4	4	0	0
Pogonichthys macrolepidotus Sacramento splittail	GNR S3	None None	AFS_VU-Vulnerable CDFW_SSC-Species of Special Concern IUCN_EN-Endangered	1 1	15 S:1	0	0	0	0	0	1	1	0	1	0	0
Rallus obsoletus obsoletus California Ridgway's rail	G3T1 S1	Endangered Endangered	CDFW_FP-Fully Protected NABCI_RWL-Red Watch List	3 18	99 S:6	1	4	0	0	0	1	0	6	6	0	0
Rana boylii foothill yellow-legged frog	G3 S3	None Endangered	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened USFS_S-Sensitive	21 2,100	2476 S:28	10	6	5	2	0	5	9	19	28	0	0
Rana draytonii California red-legged frog	G2G3 S2S3	Threatened None	CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable	10 2,230	1667 S:38	7	16	12	0	0	3	5	33	38	0	0
Reithrodontomys raviventris salt-marsh harvest mouse	G1G2 S1S2	Endangered Endangered	CDFW_FP-Fully Protected IUCN_EN-Endangered	3 8	144 S:2	0	0	0	0	0	2	1	1	2	0	0
Riparia riparia bank swallow	G5 S2	None Threatened	BLM_S-Sensitive IUCN_LC-Least Concern	25 25	298 S:1	0	0	0	0	0	1	1	0	1	0	0
Spirinchus thaleichthys longfin smelt	G5 S1	Candidate Threatened		0 0	46 S:1	0	0	0	0	0	1	1	0	1	0	0
Syncaris pacifica California freshwater shrimp	G2 S2	Endangered Endangered	IUCN_EN-Endangered	120 300	20 S:5	2	2	1	0	0	0	1	4	5	0	0

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Talanites ubicki Ubick's gnaphosid spider	G1 S1	None None		150 150	1 S:1	0	0	0	0	0	1	1	0	1	0	0
Taricha rivularis red-bellied newt	G2 S2	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	20 800	136 S:3	0	0	0	0	0	3	3	0	3	0	0
Taxidea taxus American badger	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	24 2,200	594 S:12	1	4	2	2	0	3	3	9	12	0	0
Tryonia imitator mimic tryonia (=California brackishwater snail)	G2 S2	None None	IUCN_DD-Data Deficient	6 6	39 S:1	0	0	0	0	0	1	1	0	1	0	0
Vespericola marinensis Marin hesperian	G2 S2	None None		80 80	23 S:1	0	0	0	0	0	1	1	0	1	0	0

Inventory of Rare and Endangered Plants of California

California Native Plant Society

Search Results

98 matches found. Click on scientific name for details

Search Criteria: Quad is one of [**3812236:3812226:3812227:3812237:3812247:3812246:3812245:3812235:3812225**]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK
Allium peninsulare var. franciscanum	Franciscan onion	Alliaceae	perennial bulbiferous herb	(Apr)May-Jun	None	None	G5T2	S2	1B.2
Alopecurus aequalis var. sonomensis	Sonoma alopecurus	Poaceae	perennial herb	May-Jul	FE	None	G5T1	S1	1B.1
Amorpha californica var. napensis	Napa false indigo	Fabaceae	perennial deciduous shrub	Apr-Jul	None	None	G4T2	S2	1B.2
Amsinckia lunaris	bent-flowered fiddleneck	Boraginaceae	annual herb	Mar-Jun	None	None	G3	S3	1B.2
Antirrhinum virga	twig-like snapdragon	Plantaginaceae	perennial herb	Jun-Jul	None	None	G3?	S3?	4.3
Arabis blepharophylla	coast rockcress	Brassicaceae	perennial herb	Feb-May	None	None	G4	S4	4.3
Arctostaphylos densiflora	Vine Hill manzanita	Ericaceae	perennial evergreen shrub	Feb-Apr	None	CE	G1	S1	1B.1
Arctostaphylos stanfordiana ssp. decumbens	Rincon Ridge manzanita	Ericaceae	perennial evergreen shrub	Feb-Apr(May)	None	None	G3T1	S1	1B.1
Astragalus claranus	Clara Hunt's milk-vetch	Fabaceae	annual herb	Mar-May	FE	CT	G1	S1	1B.1
Astragalus tener var. tener	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	None	None	G2T1	S1	1B.2
Balsamorhiza macrolepis	big-scale balsamroot	Asteraceae	perennial herb	Mar-Jun	None	None	G2	S2	1B.2
Blennosperma bakeri	Sonoma sunshine	Asteraceae	annual herb	Mar-May	FE	CE	G1	S1	1B.1
Brodiaea leptandra	narrow-anthered brodiaea	Themidaceae	perennial bulbiferous herb	May-Jul	None	None	G3?	S3?	1B.2
Calamagrostis bolanderi	Bolander's reed grass	Poaceae	perennial rhizomatous herb	May-Aug	None	None	G4	S4	4.2
Calamagrostis crassiglumis	Thurber's reed grass	Poaceae	perennial rhizomatous herb	May-Aug	None	None	G3Q	S2	2B.1
Calamagrostis ophitidis	serpentine reed grass	Poaceae	perennial herb	Apr-Jul	None	None	G3	S3	4.3
Calandrinia breweri	Brewer's calandrinia	Montiaceae	annual herb	(Jan)Mar-Jun	None	None	G4	S4	4.2
Calochortus umbellatus	Oakland star-tulip	Liliaceae	perennial bulbiferous herb	Mar-May	None	None	G3?	S3?	4.2
Calochortus uniflorus	pink star-tulip	Liliaceae	perennial bulbiferous herb	Apr-Jun	None	None	G4	S4	4.2

Calystegia collina ssp. oxyphylla	Mt. Saint Helena morning-glory	Convolvulaceae	perennial rhizomatous herb	Apr-Jun	None	None	G4T3	S3	4.2
Campanula californica	swamp harebell	Campanulaceae	perennial rhizomatous herb	Jun-Oct	None	None	G3	S3	1B.2
Castilleja ambigua var. ambigua	johnny-nip	Orobanchaceae	annual herb (hemiparasitic)	Mar-Aug	None	None	G4T4	S3S4	4.2
Castilleja uliginosa	Pitkin Marsh paintbrush	Orobanchaceae	perennial herb (hemiparasitic)	Jun-Jul	None	CE	GXQ	SX	1A
Ceanothus confusus	Rincon Ridge ceanothus	Rhamnaceae	perennial evergreen shrub	Feb-Jun	None	None	G1	S1	1B.1
Ceanothus divergens	Calistoga ceanothus	Rhamnaceae	perennial evergreen shrub	Feb-Apr	None	None	G2	S2	1B.2
Ceanothus foliosus var. vineatus	Vine Hill ceanothus	Rhamnaceae	perennial evergreen shrub	Mar-May	None	None	G3T1	S1	1B.1
Ceanothus gloriosus var. exaltatus	glory brush	Rhamnaceae	perennial evergreen shrub	Mar-Jun(Aug)	None	None	G4T4	S4	4.3
Ceanothus masonii	Mason's ceanothus	Rhamnaceae	perennial evergreen shrub	Mar-Apr	None	CR	G1	S1	1B.2
Ceanothus purpureus	holly-leaved ceanothus	Rhamnaceae	perennial evergreen shrub	Feb-Jun	None	None	G2	S2	1B.2
Ceanothus sonomensis	Sonoma ceanothus	Rhamnaceae	perennial evergreen shrub	Feb-Apr	None	None	G2	S2	1B.2
Centromadia parryi ssp. parryi	pappose tarplant	Asteraceae	annual herb	May-Nov	None	None	G3T2	S2	1B.2
Chloropyron maritimum ssp. palustre	Point Reyes salty bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Oct	None	None	G4?T2	S2	1B.2
Chloropyron molle ssp. molle	soft salty bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Nov	FE	CR	G2T1	S1	1B.2
Chorizanthe valida	Sonoma spineflower	Polygonaceae	annual herb	Jun-Aug	FE	CE	G1	S1	1B.1
Cirsium andrewsii	Franciscan thistle	Asteraceae	perennial herb	Mar-Jul	None	None	G3	S3	1B.2
Clarkia breweri	Brewer's clarkia	Onagraceae	annual herb	Apr-Jun	None	None	G4	S4	4.2
Clarkia imbricata	Vine Hill clarkia	Onagraceae	annual herb	Jun-Aug	FE	CE	G1	S1	1B.1
Cordylanthus tenuis ssp. brunneus	serpentine bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jul-Aug	None	None	G4G5T3	S3	4.3
Cuscuta obtusiflora var. glandulosa	Peruvian dodder	Convolvulaceae	annual vine (parasitic)	Jul-Oct	None	None	G5T4?	SH	2B.2
Delphinium bakeri	Baker's larkspur	Ranunculaceae	perennial herb	Mar-May	FE	CE	G1	S1	1B.1
Delphinium luteum	golden larkspur	Ranunculaceae	perennial herb	Mar-May	FE	CR	G1	S1	1B.1
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	Mar-May	None	None	GU	S2	2B.2
Eleocharis parvula	small spikerush	Cyperaceae	perennial herb	(Apr)Jun-Aug(Sep)	None	None	G5	S3	4.3
Elymus californicus	California bottle-brush grass	Poaceae	perennial herb	May-Aug(Nov)	None	None	G4	S4	4.3
Erigeron biolettii	streamside daisy	Asteraceae	perennial herb	Jun-Oct	None	None	G3?	S3?	3

Erigeron biolettii	streamside daisy	Asteraceae	perennial herb	Jun-Oct	None	None	G3?	S3?	3
Eriogonum luteolum var. caninum	Tiburon buckwheat	Polygonaceae	annual herb	May-Sep	None	None	G5T2	S2	1B.2
Eriophorum gracile	slender cottongrass	Cyperaceae	perennial rhizomatous herb (emergent)	May-Sep	None	None	G5	S4	4.3
Fritillaria lanceolata var. tristulis	Marin checker lily	Liliaceae	perennial bulbiferous herb	Feb-May	None	None	G5T2	S2	1B.1
Fritillaria liliacea	fragrant fritillary	Liliaceae	perennial bulbiferous herb	Feb-Apr	None	None	G2	S2	1B.2
Gilia capitata ssp. tomentosa	woolly-headed gilia	Polemoniaceae	annual herb	May-Jul	None	None	G5T2	S2	1B.1
Harmonia nutans	nodding harmonia	Asteraceae	annual herb	Mar-May	None	None	G3	S3	4.3
Hemizonia congesta ssp. congesta	congested-headed hayfield tarplant	Asteraceae	annual herb	Apr-Nov	None	None	G5T2	S2	1B.2
Hesperolinon congestum	Marin western flax	Linaceae	annual herb	Apr-Jul	FT	CT	G1	S1	1B.1
Horkelia tenuiloba	thin-lobed horkelia	Rosaceae	perennial herb	May-Jul(Aug)	None	None	G2	S2	1B.2
Hosackia gracilis	harlequin lotus	Fabaceae	perennial rhizomatous herb	Mar-Jul	None	None	G3G4	S3	4.2
Iris longipetala	coast iris	Iridaceae	perennial rhizomatous herb	Mar-May(Jun)	None	None	G3	S3	4.2
Lasthenia burkei	Burke's goldfields	Asteraceae	annual herb	Apr-Jun	FE	CE	G1	S1	1B.1
Lasthenia californica ssp. bakeri	Baker's goldfields	Asteraceae	perennial herb	Apr-Oct	None	None	G3T1	S1	1B.2
Lasthenia conjugens	Contra Costa goldfields	Asteraceae	annual herb	Mar-Jun	FE	None	G1	S1	1B.1
Layia septentrionalis	Colusa layia	Asteraceae	annual herb	Apr-May	None	None	G2	S2	1B.2
Legenere limosa	legenere	Campanulaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.1
Leptosiphon acicularis	bristly leptosiphon	Polemoniaceae	annual herb	Apr-Jul	None	None	G4?	S4?	4.2
Leptosiphon jepsonii	Jepson's leptosiphon	Polemoniaceae	annual herb	Mar-May	None	None	G2G3	S2S3	1B.2
Leptosiphon latisectus	broad-lobed leptosiphon	Polemoniaceae	annual herb	Apr-Jun	None	None	G4	S4	4.3
Lessingia hololeuca	woolly-headed lessingia	Asteraceae	annual herb	Jun-Oct	None	None	G2G3	S2S3	3
Lilium pardalinum ssp. pitkinense	Pitkin Marsh lily	Liliaceae	perennial bulbiferous herb	Jun-Jul	FE	CE	G5T1	S1	1B.1
Lilium rubescens	redwood lily	Liliaceae	perennial bulbiferous herb	Apr-Aug(Sep)	None	None	G3	S3	4.2
Limnanthes vinculans	Sebastopol meadowfoam	Limnanthaceae	annual herb	Apr-May	FE	CE	G1	S1	1B.1
Lomatium repostum	Napa lomatium	Apiaceae	perennial herb	Mar-Jun	None	None	G2G3	S2S3	1B.2
Micropus amphibolus	Mt. Diablo cottonweed	Asteraceae	annual herb	Mar-May	None	None	G3G4	S3S4	3.2

Microseris paludosa	marsh microseris	Asteraceae	perennial herb	Apr-Jun(Jul)	None	None	G2	S2	1B.2
Monardella viridis	green monardella	Lamiaceae	perennial rhizomatous herb	Jun-Sep	None	None	G3	S3	4.3
Navarretia cotulifolia	cotula navarretia	Polemoniaceae	annual herb	May-Jun	None	None	G4	S4	4.2
Navarretia heterandra	Tehama navarretia	Polemoniaceae	annual herb	Apr-Jun	None	None	G4	S4	4.3
Navarretia leucocephala ssp. bakeri	Baker's navarretia	Polemoniaceae	annual herb	Apr-Jul	None	None	G4T2	S2	1B.1
Penstemon newberryi var. sonomensis	Sonoma beardtongue	Plantaginaceae	perennial herb	Apr-Aug	None	None	G4T3	S3	1B.3
Perideridia gairdneri ssp. gairdneri	Gairdner's yampah	Apiaceae	perennial herb	Jun-Oct	None	None	G5T3T4	S3S4	4.2
Plagiobothrys mollis var. vestitus	Petaluma popcornflower	Boraginaceae	perennial herb	Jun-Jul	None	None	G4?TX	SX	1A
Pleuropogon hooverianus	North Coast semaphore grass	Poaceae	perennial rhizomatous herb	Apr-Jun	None	CT	G2	S2	1B.1
Pleuropogon refractus	nodding semaphore grass	Poaceae	perennial rhizomatous herb	(Mar)Apr-Aug	None	None	G4	S4	4.2
Polygonum marinense	Marin knotweed	Polygonaceae	annual herb	(Apr)May-Aug(Oct)	None	None	G2Q	S2	3.1
Potentilla uliginosa	Cunningham Marsh cinquefoil	Rosaceae	perennial herb	May-Aug	None	None	GX	SX	1A
Ranunculus lobbii	Lobb's aquatic buttercup	Ranunculaceae	annual herb (aquatic)	Feb-May	None	None	G4	S3	4.2
Rhynchospora alba	white beaked-rush	Cyperaceae	perennial rhizomatous herb	Jun-Aug	None	None	G5	S2	2B.2
Rhynchospora californica	California beaked-rush	Cyperaceae	perennial rhizomatous herb	May-Jul	None	None	G1	S1	1B.1
Rhynchospora capitellata	brownish beaked-rush	Cyperaceae	perennial herb	Jul-Aug	None	None	G5	S1	2B.2
Rhynchospora globularis	round-headed beaked-rush	Cyperaceae	perennial rhizomatous herb	Jul-Aug	None	None	G4	S1	2B.1
Sidalcea calycosa ssp. rhizomata	Point Reyes checkerbloom	Malvaceae	perennial rhizomatous herb	Apr-Sep	None	None	G5T2	S2	1B.2
Sidalcea oregana ssp. valida	Kenwood Marsh checkerbloom	Malvaceae	perennial rhizomatous herb	Jun-Sep	FE	CE	G5T1	S1	1B.1
Streptanthus anomalus	Mount Burdell jewelflower	Brassicaceae	annual herb	May-Jun	None	None	G1	S1	1B.1
Trichostema ruygtii	Napa bluecurls	Lamiaceae	annual herb	Jun-Oct	None	None	G1G2	S1S2	1B.2
Trifolium amoenum	two-fork clover	Fabaceae	annual herb	Apr-Jun	FE	None	G1	S1	1B.1
Trifolium buckwestiorum	Santa Cruz clover	Fabaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.1
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.2
Trifolium polyodon	Pacific Grove clover	Fabaceae	annual herb	Apr-Jun(Jul)	None	CR	G1	S1	1B.1
Triquetrella californica	coastal triquetrella	Pottiaceae	moss		None	None	G2	S2	1B.2
Triteleia lugens	dark-mouthed triteleia	Themidaceae	perennial bulbiferous herb	Apr-Jun	None	None	G4?	S4?	4.3

	triteleia		bulbiferous herb						
Viburnum ellipticum	oval-leaved viburnum	Adoxaceae	perennial deciduous shrub	May-Jun	None	None	G4G5	S3?	2B.3

Showing 1 to 98 of 98 entries

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2022. Inventory of Rare and Endangered Plants of California (online edition, v9-01 1.0). Website https://www.rareplants.cnps.org [accessed 5 January 2022].

IPaC **U.S. Fish & Wildlife Service**

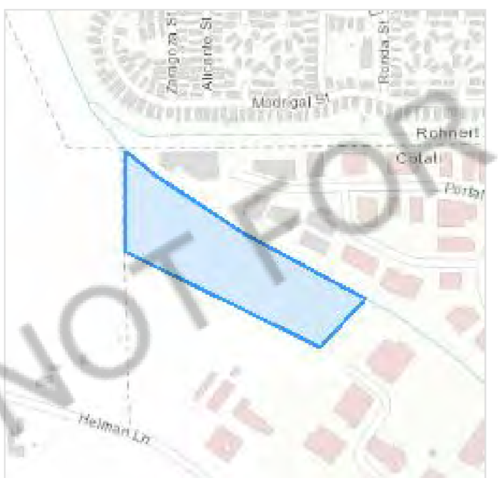
IPaC resource list

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

Sonoma County, California



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

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.

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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:

Birds

NAME	STATUS
Northern Spotted Owl Strix occidentalis caurina 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/1123	Threatened
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
Green Sea Turtle Chelonia mydas No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6199	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii 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/2891	Threatened
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/2076	Endangered

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

NAME	STATUS

California Freshwater Shrimp Syncaris pacifica — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/7903

Flowering Plants

NAME	STATUS
Burke's Goldfields Lasthenia burkei Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4338	Endangered
Sebastopol Meadowfoam Limnanthes vinculans Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/404	Endangered
Showy Indian Clover Trifolium amoenum Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6459	Endangered
Sonoma Alopecurus Alopecurus aequalis var. sonomensis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/557	Endangered
Sonoma Sunshine Blennosperma bakeri Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1260	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
California Tiger Salamander Ambystoma californiense https://ecos.fws.gov/ecp/species/2076#crithab	Final

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 http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

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 (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE

WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Allen's Hummingbird Selasphorus sasin — Breeds Feb 1 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9637

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

Marbled Godwit Limosa fedoa — 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/9481

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

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

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

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

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 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.

SPECIES

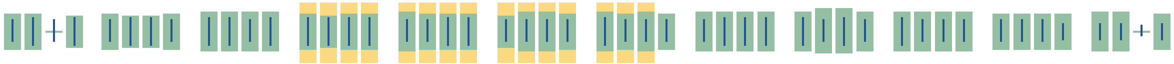
Allen's Hummingbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Common Yellowthroat
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

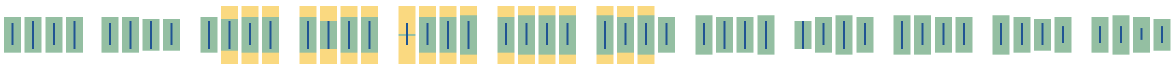
Golden Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Marbled Godwit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

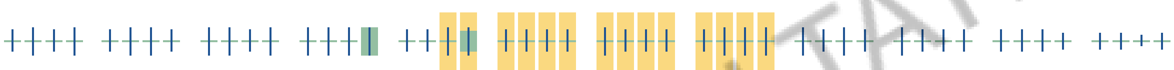
Nuttall's Woodpecker
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



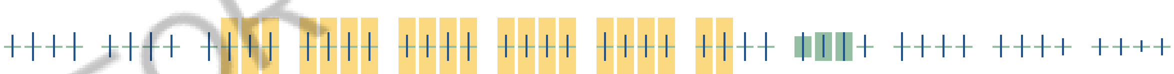
Oak Titmouse
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Olive-sided Flycatcher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Wrentit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



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. 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 migratory birds potentially occurring 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 AKN Phenology 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, migrating or present year-round in my project 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 refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. 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?

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 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.

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

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.

FIELD SURVEYOR QUALIFICATIONS

Biological Assessment

Dana Riggs, Principal Biologist for Sol Ecology received her Bachelor of Science degree in Earth Systems, Science and Policy at California State University of Monterey Bay in 2001. Prior to founding Sol Ecology, she was a principal biologist and head of the Wildlife and Fisheries Department at WRA, a mid-size environmental consulting firm in San Rafael, California. She has 20 years of experience directing a broad range of resource studies from planning level to post-construction including: biological habitat assessments and mapping, special status species surveys, corridor studies, site restoration and monitoring, federal and state regulatory permitting, local permitting, mitigation, and restoration planning for aquatic species, and NEPA and CEQA documentation for a variety of public and private sector clients. Dana has extensive experience working with species including California red-legged frog and California tiger salamander and has been approved by USFWS and CDFW to monitor for these species on projects throughout the state.

Amy May, Associate Biologist for Sol Ecology received a Bachelor of Science degree in Biological Sciences at Virginia Tech in 2006 and a dual Master of Public Affairs and Master of Science in Environmental Science at Indiana University-Bloomington in 2010. She has worked as a biologist in the public and private industry for over 10 years and specializes in special status plant and wildlife surveys, floristic inventories, wetland delineation, and vegetation community mapping with experience in the Bay Area, Mojave Desert, Shasta Cascade Region, Great Basin, and Snake River Plain.

Elspeth Mathau, Biologist for Sol Ecology received an Honors Bachelor of Science degree in Environmental Studies, Biology, and Psychology at the University of Toronto in 2016, and a Master of Science in Ethnobotany at the University of Kent in Canterbury UK with training at Kew Royal Botanical Gardens in 2018. She started working in the environmental science education field in 2009 and has experience with plant restoration projects and floristic inventories. Her master's research was on ecological change and climate adaptation in the Moroccan High Atlas Mountains with indigenous communities. She has also worked with sustainable agriculture and STEM education non-profits focused on equity and inclusion programs.

APPENDIX D

SPECIAL STATUS PLANT SURVEY REPORT

SOL ECOLOGY

P.O. Box 5214
Petaluma, CA 94955
(707) 241-7718
www.solecology.com

June 24, 2021

Bert Sandell
Sandell Holdings LLC
3348 Paradise Drive
Tiburon, CA 94920
bertsandell@gmail.com

Re: Special Status Plant Surveys 597 Helman Lane in Cotati, California

Dear Mr. Sandell,

This letter discusses the findings of protocol-level special status plant surveys at 597 Helman Lane in Cotati, California (Study Area). The purpose of the surveys was to determine the presence or absence of special status plant species and vegetation communities within the Study Area. The Study Area is within the Santa Rosa Plain and has the potential to support federally listed plant species that occur on the Santa Rosa Plain including Burke's goldfields (*Lasthenia burkei*), Sebastopol meadowfoam (*Limnanthes vinculans*), and Sonoma sunshine (*Blennosperma bakeri).* Surveys were performed on March 16, April 14, and May 13, 2021 within the Study Area in accordance with Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed Plants on the Santa Rosa Plain,[1] California Department of Fish and Wildlife (CDFW) protocol,[2] and California Native Plant Society (CNPS) protocol.[3] No special status plant species were identified during the surveys.

Project Site Description

The Study Area Work for the Sandell Warehouse project (project) is located at 597 Helman Lane in Cotati, California, accessed via Blodgett Street, off Alder Avenue (Figure 1). It is bounded by the Laguna de Santa Rosa to the north, industrial development to the east, and agricultural lands to the south and west.

1 Santa Rosa Conservation Strategy. 1996. Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed Plants on the Santa Rosa Plain. Available online at: https://www.fws.gov/sacramento/es/Recovery-Planning/Santa-Rosa/Documents/Appendix_D_%20FWS_Plant_Survey_Protocols.pdf. Accessed: May 2021.
2 CDFW. 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities. Available online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959&inline. Accessed: May 2021.
3 CNPS. 2001. CNPS Botanical Survey Guidelines. Available online at: https://cnps.org/wp-content/uploads/2018/03/cnps_survey_guidelines.pdf. Accessed: May 2021.

Clear Lake clay, sandy substratum, drained, 0 to 2 percent slopes, MLRA 14 is the primary soil map unit within the Study Area.[4] Clear Lake clay is poorly drained and occurs on basin floors. The parent material is basin alluvium derived from volcanic and sedimentary rock over fan alluvium derived from volcanic and sedimentary rock. Clear Lake clay is rated hydric. Elevation within the Study Area ranges from approximately 27 to 30 meters (91 to 99 feet) above mean sea level.

The project site is within the broad floor of the Santa Rosa Plain and consists of disturbed non-native annual grassland and seasonal wetland. The project site has been disturbed since 1993 based on Google Earth aerial images. Vegetation within the developed areas primarily consists of non-native grasses and forbs. A drainage ditch running north-south crosses the site near the west end of the parcel. The entire site, except for the drainage ditch and a small area west of it, is annually disked. A formal delineation of wetlands was conducted in 2009 by Lucy Macmillan.

Methods

Reference Sites

Reference sites were visited prior to each survey. Details regarding each reference site visit can be found in Table 1, below.

Table 1. Reference Site Observed Target Plant Species

Date	Reference Site	Species Observed[1]
March 16, 2021	Alton North Conservation Bank	BLBA, LABU
April 13, 2021	Alton North Conservation Bank	BLBA, LABU, LIVI

[1]BLBA – *Blennosperma bakeri*
LABU – *Lasthenia burkei*
LIVI – *Limnanthes vinculans*

Burke's goldfields and Sonoma sunshine were observed in bloom at the Alton North Conservation Bank in March. All three species, including Sebastopol meadowfoam, were observed in bloom at the Alton North Conservation Bank in April.

Field Surveys

Protocol-level special status plant surveys were performed within the Study Area on March 16, April 14, and May 13, 2021. Surveys were performed by walking throughout the entire Study Area. Surveys were conducted during the appropriate season and were floristic in nature. All plants encountered during the surveys were identified to the highest taxonomic level necessary to determine rarity. The *Jepson Manual* was consulted for detailed biological, distributional,

4 U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 2019. Web Soil Survey. Web application. Last updated: July 31, 2019. Available online at: https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm. Accessed: May 2021.

and phenological information, and used as a standard for nomenclature.[5] All special status plant populations and sensitive communities, if found, were mapped using a handheld Global Positioning System (GPS) unit with sub-meter accuracy.

Field Surveyor Qualifications

Andrew Georgeades, Senior Ecologist for Sol Ecology received his Bachelor of Science degree in Natural Resource Management and Conservation at San Francisco State University in 2005. Prior to co-founding Sol Ecology, Andrew worked as a natural resources' specialist for the Golden Gate National Recreation Area where he was responsible for monitoring native and rare plant populations and planning and supervising revegetation projects within the park. Andrew also previously worked for the California Native Plant Society as a vegetation project lead on the "Manual of California Vegetation, 2nd Ed." Publication. As a lead, he performed plant surveys, identified vegetation habitat types, landforms, environmental conditions, and plant species following the project protocol. Andrew currently is responsible for overseeing all floristic and focused plant surveys at Sol Ecology and maintains a CDFW scientific collecting permit.

Amy May, Associate Biologist for Sol Ecology received a Bachelor of Science degree in Biological Sciences at Virginia Tech in 2006 and a dual Master of Public Affairs and Master of Science in Environmental Science at Indiana University-Bloomington in 2010. She has worked as a biologist in the public and private industry for over 10 years and specializes in special status plant surveys, floristic inventories, and vegetation community mapping with experience in the Bay Area, Mojave Desert, Shasta Cascade Region, Great Basin, and Snake River Plain.

Elspeth Mathau, Biologist for Sol Ecology received a Bachelor of Science in Environmental Studies, Biology, and Psychology at the University of Toronto in 2016 and a Master of Science in Ethnobotany at the University of Kent in Canterbury UK with training at Kew Royal Botanical Gardens in 2018. She started working in the environmental science education field in 2009 and has experience with plant restoration projects and floristic inventories. Her master's research was on ecological change and climate adaptation in the Moroccan High Atlas Mountains with indigenous communities. She has also worked with sustainable agriculture and STEM education non-profits focused on equity and inclusion programs. Elspeth specializes in special status wildlife surveys.

Results

No special status plant species were observed during the 2021 special status plant surveys within the Study Area. Table 2 lists all the plant species observed within the Study Area during 2021 special status plant surveys.

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5 Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. The Jepson manual: vascular plants of California, second edition. University of California Press, Berkeley.

Discussion

Adverse conditions from yearly weather patterns, as well as disease, drought, fire, herbivory, predation, or other disturbances may preclude the presence of certain plants in a given year. No evidence of disease, fire, herbivory, predation, or other disturbances were observed within the Study Area. Plant species in the developed areas and drainage ditches were evident and easily identifiable.

Weather patterns, including both precipitation and temperature, can influence the likelihood that herbaceous annuals will germinate in a given year. Spring 2021 was a relatively dry season in the Bay Area and the second consecutive year of drought conditions. Based on data from the National Oceanic and Atmospheric Administration (NOAA) California Nevada River Forecast Center (Napa State Hospital), the Study Area vicinity received 39% of the normal precipitation for the water year to date. The water year starts on October 1 and the most current data are based on the months of October 2020 through March 2021.[6] Although there was not much precipitation in Spring 2021, the 3 target special status plant species were easily identifiable at the Alton North Conservation Bank throughout a two-month period. Average temperatures were mild enough to trigger germination.[7]

The reference site is composed of upland grassland and seasonal wetlands that occur almost entirely in swales or shallow headwater depressions. The dominant species within the seasonal wetlands include California oatgrass (*Danthonia californica*), curly dock (*Rumex crispus*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), rye grass (*Festuca perennis*), and soft chess (*Bromus hordeaceus*). The reference site is associated with Huichica loam soil series [8]. The Study Area is disturbed, mainly through regular disking. The grassland community consists primarily of non-native (invasive) annual grasses and non-native forbs including oats (*Avena* sp.), rye grass (*Festuca perennis*), and soft chess (*Bromus hordeaceus*), bristly ox-tongue (*Helminthotheca echioides*), carrot (*Daucus carota*), and radish (*Raphanus sativus*). The seasonal wetlands were dominated by hydrophytic vegetation including buttercup (*Ranunculus muricatus*), rye grass, semaphore grass (*Pleuropogon californicus*), and soft chess. The Study Area is associated with Clear Lake clay soil series. Although the Study Area is not similar to Alton North Conservation Bank, the elevation, soils, and hydrology observed in the drainage

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6 National Oceanic and Atmospheric Administration (NOAA). 2021. California Nevada River Forecast Center, Monthly Precipitation Summary Water Year 2021, NSHC1 Napa State Hospital, CA. Last updated: April 21, 2021. Available online at: https://www.cnrfc.noaa.gov/monthly_precip.php. Accessed: April 2021.
7 USDA, NRCS. 2021. Climatic Data, Agricultural Applied Climate Information System (AgACIS), Napa County, Napa County State Hospital, Monthly summarized data, Variable Average Temperature. Available online at: https://efotg.sc.egov.usda.gov/#/details. Accessed: May 2021.
8 Ted Winfield and Associates. 2008. Long-term Monitoring and Management Plan for the Alton South Conservation Bank, Sonoma County, CA.

ditches within the Study Area do provide suitable potential habitat for the target special status plant species.[9]

Two consecutive years with rare plant surveys 3 times each year were conducted in 2008, 2009, with additional rare plant surveys in 2018. Sol Ecology has performed 3 rare plant surveys in 2021 in total. There is no need to perform additional surveys as no rare plants have been observed during the 4 survey years within a 13-year period, therefore it can be assumed there are no rare plants on site or within the seedbank. Should you have any questions or concerns, please feel free to contact me.

Sincerely,

Andrew Georgeades
Principal Plant Ecologist

Attachment A

Figure 1. Study Area
Table 2. Observed Plant Species Table

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9 USFWS. 2016. Recovery Plan for the Santa Rosa Plain. Available online at: https://ecos.fws.gov/docs/recovery_plan/06012016_Final%20Santa%20Rosa_RP_signed_1.pdf. Accessed: May 2021.

Figure 1. Project Location & CTS Habitat Map

Preliminary Wetland Map
597 Helman Lane
Cotati, CA

Legend

Waters of the U.S.

Seasonal Wetland (0.88 ac)

Other Features

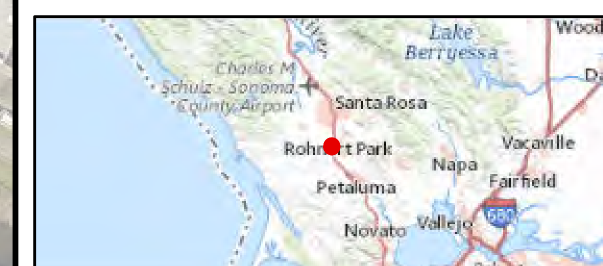
Proposed Wareouse Footprint (3.34 ac)

Parcel Boundary

30' Setback from Wetland 'SWA' & 'SWB'

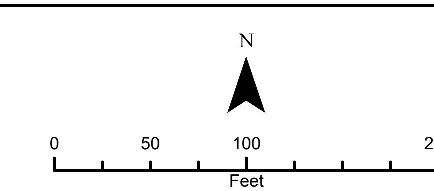
50' Setback from Wetland 'SWC'

CTS Upland Habitat (4.9 ac)



Coordinate System: NAD 1983 UTM Zone 10N
Projection: Universal Transverse Mercator
Datum: North American 1983
Vertical Datum: NAVD88, U.S. Feet

Delineated by: A. May
Map created: 1/28/2021
Data: Sol Ecology Inc., Sonoma Co.,
Lucy Macmillan Consulting
Base: Sonoma Co.
GIS: AG2064



1 inch = 100 feet

SOL ECOLOGY
solecology.com

Table 2. Observed Plant Species Table

SCIENTIFIC NAME	COMMON NAME	LIFE FORM	ORIGIN	CAL-IPC
ANGIOSPERMS				
Dicots				
Brassica nigra	black mustard	annual herb	non-native	moderate
Cichorium intybus	chicory	perennial herb	non-native	--
Cirsium vulgare	bull thistle	perennial herb	non-native	moderate
Convolvulus arvensis	field bindweed	perennial herb or vine	non-native	--
Daucus carota	Queen Anne’s lace, wild carrot	perennial herb	non-native	--
Epilobium brachycarpum	panicled willow herb	annual herb	native	-
Foeniculum vulgare	fennel	perennial herb	non-native	moderate
Geranium dissectum	cranesbill, cut leaved geranium	annual herb	native	-
Helminthotheca echioides	bristly ox-tongue	annual or perennial herb	non-native	limited
Hirschfeldia incana	summer mustard, wild mustard	perennial herb	non-native	moderate
Lupinus bicolor	miniature lupine	perennial herb	native	--
Ranunculus californicus	California buttercup	perennial herb	native	--
Raphanus sativus	radish	annual herb	non-native	limited
Rubus armeniacus	Himalayan blackberry	Shrub	non-native	high
Rumex crispus	curly dock	perennial herb	non-native	limited
Scandix pecten-veneris	Shepherd's needle	annual herb or vine	non-native	--
Tragopogon porrifolius	purple salsify	perennial herb	non-native	--
Torilis arvensis	field hedge parsley	annual herb	non-native	moderate
Trifolium dubium	shamrock clover	perennial herb	non-native	--
Vicia sativa	spring vetch	annual herb	non-native	--
Monocots				
Avena barbata	slender wild oat	annual grass	non-native	moderate

SCIENTIFIC NAME	COMMON NAME	LIFE FORM	ORIGIN	CAL-IPC
Bromus hordeaceus	soft chess	annual grass	non-native	limited
Cyperus eragrostis	flatsedge	perennial grasslike herb	native	--
Distichlis spicata	salt grass	perennial grasslike herb	native	--
Elymus triticoides	beardless wild-rye	perennial grasslike herb	native	--
Festuca perennis	Italian rye grass, rye grass	perennial grass	non-native	moderate
Juncus sp.	rush	annual grasslike herb	native	--
Phalaris aquatica	Harding grass	perennial grass	non-native	moderate

SITE PHOTOGRAPHS

Photo 1. California annual grassland habitat within the Project Study Area, facing southeast.

Photo 2. Southern boundary of the parcel, facing northwest.

Photo 3. Seasonal wetland within the Project Study Area, facing south.

Photo 4. Seasonal wetland within the Project Study Area, facing south.

ARCHAEOLOGICAL RESOURCES STUDY OF 597 HELMAN LANE (APN 046-073-006), COTATI, SONOMA COUNTY, CALIFORNIA

Prepared for

Bert Sandell

June 2021

ASC
ANTHROPOLOGICAL STUDIES CENTER
SONOMA STATE UNIVERSITY

ARCHAEOLOGICAL RESOURCES STUDY OF 597 HELMAN LANE (APN 046-073-006), COTATI, SONOMA COUNTY, CALIFORNIA

Prepared for

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Prepared by

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June 2021
NT235 ASC2016

This project was completed under the supervision of Dr. Thomas Whitley (Registered Professional Archaeologist), Director, Anthropological Studies Center.

CONTENTS

Appendix

Figures

Tables

INTRODUCTION AND SUMMARY

At the request of Bert Sandell of Sandell Holdings LLC, the Anthropological Studies Center (ASC) of Sonoma State University conducted an archaeological resources study of an 8.23-acre parcel at 597 Helman Lane, Cotati, Sonoma County. It was completed as part of the environmental review documentation required by the City of Cotati pursuant to the California Environmental Quality Act of 1970 (CEQA), as amended. The proposed project includes the construction of a 50,000 square foot warehouse on approximately 3.4 acres of the parcel.

The archaeological resources study comprised four main parts: a records and literature search at the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS), administered by the California Office of Historic Preservation (OHP); a further literature review of publications, files, and maps at ASC and online for ethnographic, historic-era, and prehistoric resources and background information; communication with the Native American Heritage Commission (NAHC) to request a review of the Sacred Lands File and contact information for the appropriate Tribal communities, who ASC then contacted regarding the project; and a pedestrian archaeological survey of the parcel. Based on the results of this study, this report concludes with an assessment of the potential for surficial and buried archaeological resources in the project area.

ASC Archaeological Technician Sydni Kitchel conducted the records and literature search at the NWIC on 9 June 2021, supplemented by further literature review at ASC and online. ASC Staff Archaeologist Scott McGaughey handled the NAHC contacts and carried out the pedestrian archaeological field survey of the parcel on 11 June 2021.

The records search found no previously recorded cultural resources on the parcel, and that a small portion of the parcel had been previously studied. No previously recorded cultural resources were identified within 0.25-miles of the parcel. The parcel's sensitivity for buried archaeological resources is moderate. The parcel's sensitivity for unrecognized surficial archaeological resources is also moderate. The pedestrian archaeological survey identified no archaeological resources on the property.

Field survey, report preparation, and administration were done by the following ASC personnel:

- Principal investigator: Dr. Thomas Whitley, Registered Professional Archaeologist (RPA), Director of the Anthropological Studies Center, Sonoma State University.
- Staff Archaeologist: Scott McGaughey, M.A., RPA, with 9 years of experience in California prehistoric and historical archaeology.
- Archaeological Technician: Sydni Kitchel, M.A., with 10 years of experience in California prehistoric and historical archaeology.

REGULATORY CONTEXT

The California Environmental Quality Act (CEQA) regulates projects proposed to be carried out or approved by public agencies of the state of California or political subdivisions of the state, whether directly undertaken by the agency, undertaken by a person supported, in whole or in part, by the agency; or involving the issuance of a lease, permit, license, certificate, or other entitlement for use by the agency, which may directly or indirectly cause a physical change in the environment (California Public Resources Code (PRC), Division 13, §21063, §21065, and §21080). A project "that may cause a substantial adverse change in the significance of an historical resource" is considered one that "may have a significant effect on the environment" (California Code of Regulations [CCR] Title 14, Chapter 3, §15064.5[b]).

A historical resource under CEQA (also called a cultural resource [14 CCR Appendix A]) is "any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California . . . Generally, a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing on the California Register of Historical Resources [CRHR]" (CCR §15064.5[a][3]). The eligibility criteria for listing cultural resources, both archaeological and historical, in the CRHR are defined in CRHR publications (California Office of Historic Preservation 1998) and in the CEQA guidelines (CCR §15064.5).

Any resource that is eligible for listing in the California Register must be given consideration under the CEQA process (PRC §21084.1; CCR §15064.5; CCR §15021); adverse effects to cultural resources eligible for listing on the CRHR must be avoided or the effect must be mitigated where feasible (CCR §15021).

The first step in satisfying these regulations is to ascertain whether any historical resource might be affected by the activity. The present archaeological resources study is intended to facilitate compliance with this requirement by identifying any previously recorded or currently observable archaeological resources that might be affected, and by assessing the likelihood of encountering currently unknown resources in the course of the activity.

PROJECT AREA AND STUDY AREA

The Project Area (Figure 1) is an approximately 3.4-acre area within an 8.23-acre parcel at 597 Helman Drive, Cotati. The Assessor's Parcel Number is 046-073-006. It lies within an unsectioned portion of the Cotate land grant as depicted on the United States Geological Survey (USGS) Cotati, California 7.5-minute topographic quadrangle map (USGS 1980). The Project Area is projected to lie in Sections 26 and 27 of Township 6 North, Range 8 West, Mt. Diablo Base and Meridian. The Project Area is on a flat landform overlooking the Copeland Creek, at an elevation at approximately 100 feet above mean sea level.

The Study Area (Figure 1) comprises the Project Area and a 0.25-mile buffer surrounding it, deemed sufficient to capture any recorded resources likely to be affected by the project, to provide contextual background, and to indicate the potential for unknown resources in the Project Area.

GEOLOGICAL AND ECOLOGICAL SETTING

The Project Area and Study Area rests entirely on Holocene alluvial fan deposits (Knudsen et al. 2000; Witter et al. 2006). The soils are Clear lake clay, a poorly-drained soil typically found on basin floors. The Clear Lake series consists of very deep soils formed in fine textured alluvium derived from mixed rock sources. The slope for this soil profile is flat, ranging from 0 to 5 percent (United States Department of Agriculture 2021).

The natural vegetation in the Study Area in historical times is the Coastal Prairie Scrub Mosaic. The Coastal Prairie Scrub Mosaic, a complex mosaic where coastal prairie is distinguished from coastal scrub. The coastal scrub disappears farther inland and only the prairie prevails. The Coastal prairie is a dense community of perennial bunchgrasses, about 50 cm in height, with a lower layer of annual and perennial forbs. Coverage is typically 100 percent. Dominant species include oatgrass (*Danthonia californica*) and red fescue (*Festuca rubra*) (Küchler 1977).

Current vegetation in the Project Area is consistent with historical times. The Project Area consists entirely of various native and non-native grasses dominated by oatgrass.

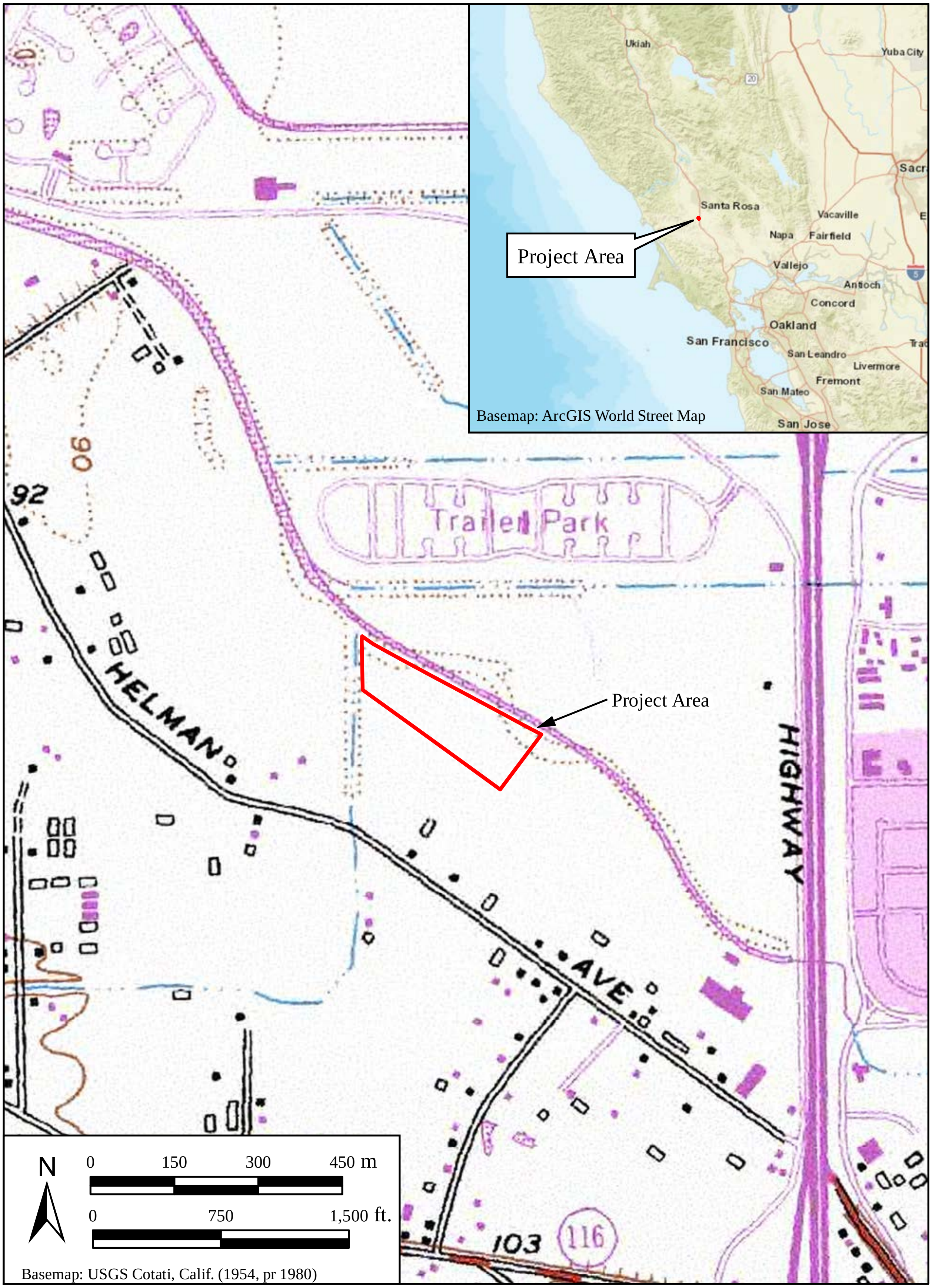

Figure 1. Project vicinity and location

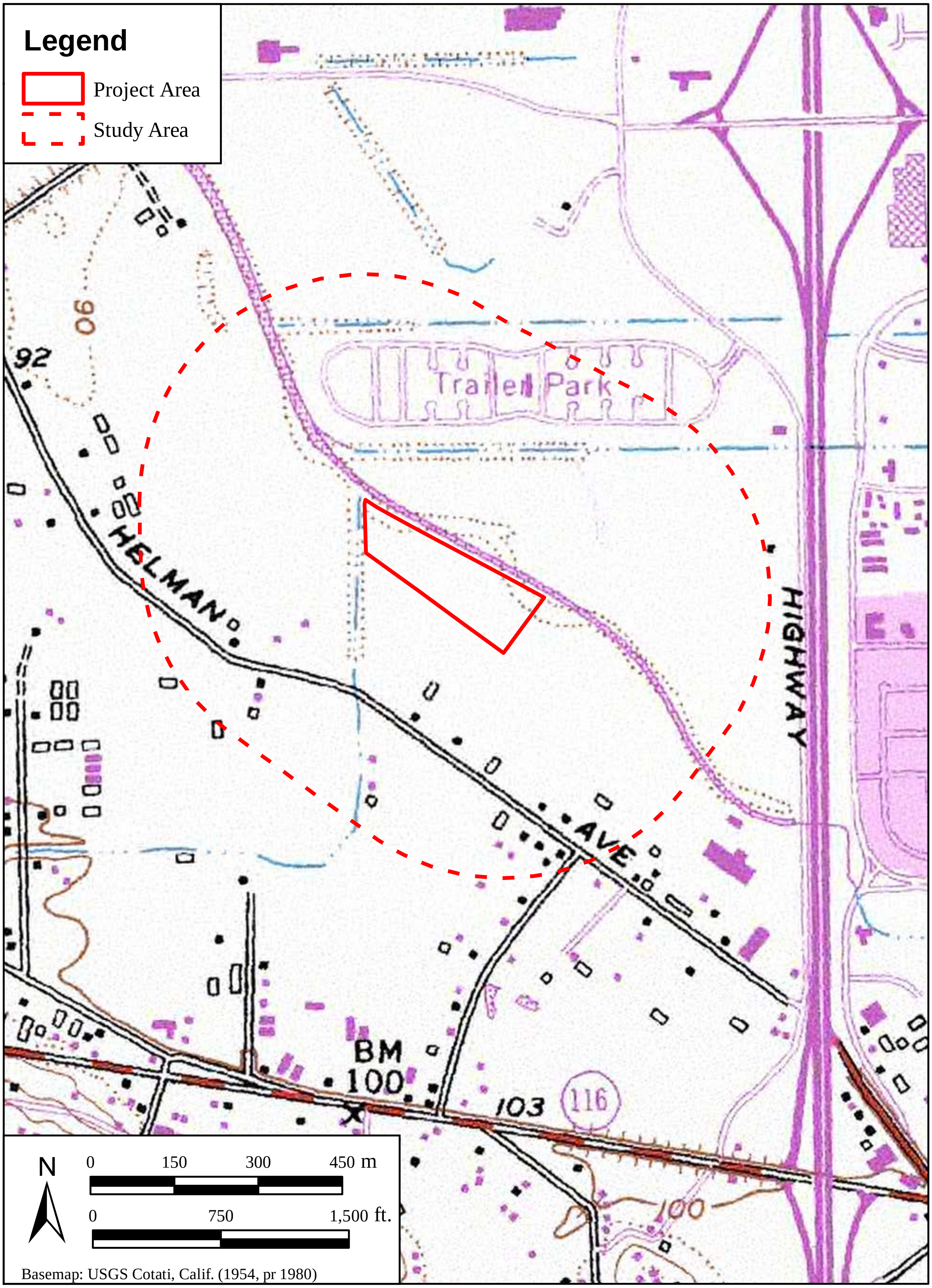

Figure 2. Project Area and Study Area

RECORDS SEARCH AND LITERATURE REVIEW

This study began with a records search and literature review to (1) determine whether archaeological or other cultural resources had been recorded within or near the Project Area; (2) assess the likelihood of unrecorded resources existing in the Project Area, based on archaeological, ethnographic, and historical documents and literature, and on the distribution and environmental settings of nearby sites; and (3) develop regional background and context information to aid in identifying resources and making preliminary assessments of them.

METHODS

Prior to the pedestrian archaeological survey, the author conducted a records search and literature review on 9 June 2021 at the NWIC. The NWIC, at Sonoma State University in Rohnert Park, California, is administered by the State of California Office of Historic Preservation (OHP) as one of the centers that maintain the California Historical Resources Information System (CHRIS), the official state repository for records and reports on historical resources, including archaeological resources. The NWIC's records cover an 18-county area that includes Sonoma County. Additional research was conducted using maps, files, reports, and publications at ASC and online.

The records search and literature review examined the following documents:

- NWIC maps (USGS 7.5-minute topographic maps with NWIC annotations), to identify recorded archaeological sites, recorded archaeological surveys, and recorded historic-era resources of the built environment (buildings, structures, and objects) within the Study Area.
- Site records and study reports on file at the NWIC corresponding to those marked on the NWIC maps within the Study Area.
- The California Department of Parks and Recreation's (1976) *California Inventory of Historic Resources* and the OHP's (2019) *Built Environment Resource Directory* (BERD, December 2019), to identify California Historical Landmarks, California Points of Historic Interest, and California historic properties that are listed in, or determined eligible for listing in, the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR) located within the Study Area.
- Historic-era maps (*diseños*, General Land Office maps, and 19th- and early-20th-century USGS 15- and 7.5-minute topographic maps), to identify additional historic-era buildings, structures, objects, and areas of archaeological sensitivity located in or near the Study Area.
- *Handbook of North American Indians, Volume 8: California* (Heizer 1978) to identify ethnographic village locations in or near the Study Area.

- Online resources including historical map collections, the United States Department of Agriculture (USDA) Web Soil Survey website, United States Geological Survey online map and geological information, websites of local historical museums and societies, Tribal websites, and subject-specific search results.

RESULTS OF RECORDS SEARCH

The records search identified no previously recorded cultural resources in both the Project Area and the Study Area.

Recorded Cultural Resources in the Project Area

The records search identified no previously recorded cultural resources in the Project Area.

Recorded Cultural Resources in the Study Area

The records search identified no previously recorded cultural resources in the Study Area.

Recorded Cultural Resources Studies in the Project Area

The records search identified one recorded cultural resources studies that included part Project Area (Table 1).

Table 1. Recorded Cultural Resources Studies in the Project Area

Study No.	Date	Author	Relation to Project Area	Findings
S-2896	1982	Rippey	Partially overlaps Project Area	None

Recorded Cultural Resources Studies in the Study Area

The records search identified nine recorded cultural resources studies outside the Project Area but that included part of the 0.25-mile buffer of the Study Area (Table 2).

Table 2. Recorded Cultural Resources Studies in the Study Area

Study No.	Date	Author	Findings
S-842	1974	Wilson	None
S-862	1978	Rumph	None
S-10167	1988	Origer	Identified CA-SON-447; 1063; and 1702, all of which are located outside of the Project Area and Study Area of this project
S-13749	1992	Beard and Solari	Identified but did not record a residence building, barn, and non-native vegetation
S-20240	1998	Beard	Identified a residence building
S-22848	2000	Quinn and Origer	None
S-44535	2013	Parus Consulting	None
S-51712	2000	Billat	None
S-51743	2017	Noble	None

RESULTS OF LITERATURE REVIEW

The literature review provides context for cultural resources in the region.

Prehistoric Overview

Fredrickson (1974a) outlined an analytical framework for interpreting the prehistory of the San Francisco Bay area and the North Coast Ranges that divides human history in California into three broad periods: the Paleoindian period, the Archaic period, and the Emergent period. It differentiates between cultural units based on sociopolitical complexity, trade networks, population, and the introduction and variations of artifact types. The scientific significance of prehistoric sites rests partly on their ability to help archaeologists explain the reasons for these changes in different places and at different times in prehistory. With minor revisions (Fredrickson 1994), this scheme remains the dominant framework for prehistoric archaeological research in the region.

The earliest archaeologically documented human occupation in California, the Paleoindian period (ca. 10,000-6000 B.C.), was a time of variable climate, rising sea levels, and other broad-scale environmental change. People lived in small, highly mobile groups, moving through broad geographic areas and leaving relatively sparse archaeological remains.

With the more stable climate of the long Archaic period (6000 B.C. to A.D. 1000), new groups entered the area, and regional distinctions developed. Some groups may have remained mobile, while others began to establish longer-term base camps in places from which a more diverse range of resources could be exploited. The Archaic period has been subdivided into three sub-periods (Lower Archaic, 6000 to 3000 B.C.; Middle Archaic, 3000 B.C. to 500 B.C.; and Upper Archaic, 500 B.C. to A.D. 1000), based on changes in sociopolitical complexity, trade networks, populations, and the introduction of new artifact types (Fredrickson 1974, 1994). Many of the archaeological sites in the North Coast Ranges were first used in the Middle and Upper Archaic, when populations were increasing and groups moved into new areas to exploit a more diverse range of resources, suggested by sites in a wider range of environments and the addition of new tool types such as milling tools and concave-base projectile points of obsidian and chert. By the Upper Archaic, mobility was being replaced by a more sedentary adaptation that included a reliance on intensive acorn processing and storage. With the development of numerous small villages, the beginnings of a more complex society and economy began to emerge.

During the Emergent, or Late, period (ca. A.D. 1000 to the historic era), social complexity developed toward the contact-era settlement pattern of large, central villages where political leaders resided, with associated hamlets and specialized activity sites. Innovations associated with this period include the bow and arrow, small corner-notched projectile points, and a diversity of beads and ornaments. Archaeological sites dating to this period are common throughout the North Coast Ranges. Site types include places of ritual significance, such as rock rock-art locations. Other sites are small resource-processing areas marked by flaked-stone tools or milling equipment such as mortars and pestles, and by debris (debitage) from manufacturing and using stone tools. Still others are moderate- to large-sized occupation sites marked by midden soils, dietary bone and shell, and a diversity of artifacts.

Ethnographic Overview

The lifeways of the people who inhabited the region encompassing the Study Area were also recorded through intensive ethnographic research efforts during the early-to-middle 20th century. Ethnographic literature indicates that at the time of historic contact, the Study Area lay within the traditional territory of the Coast Miwok, centered in present-day Marin and adjacent Sonoma counties (Kelly 1978:414–415; Kroeber 1925:272). The people collectively called the Coast Miwok by ethnographers were actually several distinct sociopolitical groups who spoke dialects of the same Penutian language. They have been referred to as three separate tribes: the Olamentko of Bodega Bay, the Lekahtewut between Petaluma and Freestone, and the Hookooeko Tribe in Marin County (Kroeber 1925:273). The primary sociopolitical unit was the village community, which was overseen by one or more chiefs.

The Project Area is located near the ethnographic village Kōta'tī, situated where the city of Cotati now stands (Barrett 1908:311).

The Coast Miwok economy was based on hunting, fishing, and gathering. The territory held by local groups would have included open valley environments containing a wide variety of resources, including grass seeds, acorns, bulbs and tubers, deer, elk, antelope, a variety of bird species, and rabbit and other small mammals, along with bay resources such as shellfish, marine mammals, and fish. The Coast Miwok acknowledged private ownership of goods and songs, and village ownership of rights to land and/or natural resources. They appear to have aggressively protected their village territories, requiring monetary payment for access rights in the form of clamshell beads, and even shooting trespassers if caught.

After European contact, Coast Miwok society was severely disrupted by missionization, disease, and displacement. Coast Miwok population numbers diminished dramatically during the mission era, and they dropped further following secularization in the early 1830s. Kroeber (1925:275) estimated that the population of the Coast Miwok in 1908 was 1,500 people. Indigenous people were employed as farm workers and commercial fishers in Marin and Sonoma counties (Federated Indians of Graton Rancheria [FIGR] 2021).

The Coast and Bay Miwok as a cultural group were landless until 1920, when the federal government established a 15.1-acre Rancheria near Graton for Bay and Coast Miwok and local Southern Pomo families. The federal government terminated the Rancheria in 1958 and dispersed the lands to three families. After a long legal battle, federal recognition was restored in 2000, and the multi-cultural native organization became the Federated Indians of Graton Rancheria (FIGR 2021).

Historic-era Overview

The historic era began at different times in different parts of California, as Euro-Americans moved into regions where indigenous populations had been reduced or eliminated completely by waves of Old World diseases that preceded them. Subsequent government policies and ad-hoc vigilante efforts by settlers led to forced removals and violence towards local indigenous communities, resulting in new, mostly immigrant communities embedded in the new economies of ranching, timber harvesting, and farming.

The Project Area is located within the Cotate Rancho. The Cotate Rancho is over 17,000 acres in size, and encompasses the modern cities of Cotati, Rohnert Park, and Penngrove (Hoover et al. 1990:482). The name "Cotati" originated from that of a nearby Coast Miwok ethnographic village. Captain Juan Castañeda was the recipient of the land grant in 1844 (Durham 1998:620; Hoover et al. 1990:482). Castañeda sold the land to Thomas Larkin, who later sold the land to Joseph Ruckle. By 1849, Ruckle sold the land to Dr. Thomas Stokes Page, whose family would own most of the area for the next 80 years (Hoover et al. 1990:482). The land was primarily used for sheep and cattle ranching, and by 1870 a railroad line was constructed through the property. By the 1890s, the Page family began to parcel out and sell the land holding, and the Downtown Cotati Plaza hexagonal hub was laid out (Hoover et al. 1990:482).

Development of Cotati continued through the early-20th century with many small farms on the outskirts of town, and hotels, churches, houses, schools, parks, and businesses were being constructed around the Plaza. The area remained primarily agrarian through the 1930s and 1940s. Commercial and residential development picked up after WWII, and by the 1950s Highway 101 was constructed, allowing Cotati to become connected to San Francisco.

AGENCY AND TRIBAL COMMUNICATION

ASC contacted the Native American Heritage Commission (NAHC) on 7 June 2021, requesting a review of the Sacred Lands File for information on Native American cultural resources in the Project Area. On 17 June 2021, the NAHC responded with a list of groups and individuals who may be able to provide information on cultural resources in the Project Area. On 18 June 2021, Scott McGaughey sent letters to the listed individuals requesting additional information. On 29 June 2021, a response was received from Federated Indians of Graton Rancheria THPO Administrative Assistant Hector Garcia Cabrales on behalf of Tribal Heritage Preservation Officer (THPO) Buffy McQuillen, indicating that the Project Area is located within the Tribe's ancestral territory and that there may be tribal cultural resource impacts. The Tribe has requested the results of ASC's research efforts and recommendations. On 6 July 2021, a copy of this report was transmitted to THPO Administrative Assistant Cabrales and THPO McQuillen. Copies of this correspondence are provided in the Appendix.

SENSITIVITY FOR BURIED ARCHAEOLOGICAL RESOURCES

The likelihood that an area includes surface or buried archaeological remains is referred to as its archaeological sensitivity. Landform and physical processes play fundamental roles in the creation, preservation, burial, and eventual discovery of archaeological sites in much of California (Meyer and Rosenthal 1997; Rosenthal and Meyer 2004). Archaeological sites may be buried by natural processes, such as flood sediments, or by artificial fill. While much of California's landscape has remained relatively stable during human occupation, many portions have not. This means that the present landscape may not reflect the environment used by people in the past. Some landforms once used by humans have been buried, disturbed, or destroyed by these processes and, as a result, the archaeological resources on them have been, as well.

Although the presence of known archaeological sites is an indicator of the sensitivity of the general landscape, the results of the records search and NAHC review of the Sacred Lands File reflect only available information on resources that have already been documented. To account for the entire archaeological record, we must also examine landscape evolution to assess the potential of the Project Area to contain buried archaeological deposits. Predictions of an area's sensitivity are based on additional factors, including geological and soil conditions determined from maps, distance to streams or former water sources identified from maps, and environmental factors based on terrain surface modeling (Meyer, Kaijankoski, and Rosenthal 2011:126).

The age and composition of deposits affects their potential to contain prehistoric buried sites. Landforms that developed before the Quaternary Period have little potential for buried archaeological remains, as the surface formed prior to human occupation in the region (Meyer and Rosenthal 2007:15). Landforms that developed in the Holocene, however, may contain buried archaeological remains, as they formed during the time that humans were present. Studies have shown that known prehistoric sites tend to be located within 200 meters of a water source (Rosenthal and Meyer 2004). Thus, Holocene-aged deposits within 200 meters of a possible Holocene water source are considered to have an elevated potential to contain buried sites.

The Project Area lies on Holocene alluvial deposits (Knudsen et al. 2000; Witter et al. 2006), so the soils in the Project Area date to the Holocene and therefore contain an elevated sensitivity for buried archaeological remains.

In summary, the sensitivity of the Project Area for buried archaeological resources is moderate.

POTENTIAL FOR ARCHAEOLOGICAL RESOURCES

As discussed above, the sensitivity of the Project Area for buried archaeological resources is moderate. No records of prehistoric or historic-era archaeological resources have been recorded within 0.25-miles of the Project Area, however, a number of previously recorded archaeological and/or cultural resources have been recorded within the vicinity of the Project Area, there the sensitivity of surficial cultural resources in the Project Area is moderate.

PEDESTRIAN ARCHAEOLOGICAL SURVEY

Following the records search and literature review, ASC staff conducted a pedestrian archaeological survey of the Project Area to (1) identify prehistoric and historic-era archaeological resources visible on the surface, and (2) assess the likelihood that additional resources not currently visible on the surface exist in the Project Area.

METHODS

ASC Staff Archaeologist Scott McGaughey conducted a pedestrian archaeological survey of the entire 8.23-acre Project Area on 11 June 2021 (Figure 3). He walked parallel linear transects separated by 5 to 10 m, examining the ground surface for archaeological artifacts and features. Ground visibility was poor (approximately 10%) due to dense coverage by native and non-native grasses. To offset the poor visibility, sections of vegetation was cleared with hand tools at varying distances along the transects to expose the ground surface and inspect it for indicators of archaeological deposits. Soil brought to the surface by burrowing animals and other natural processes was also inspected. In addition, the surveyor was prepared to note non-archaeological cultural resources of the built environment at a basic level as appropriate.

RESULTS OF PEDESTRIAN SURVEY

The pedestrian archaeological survey found no archaeological resources. Because of the poor visibility, however, the existence of buried or hidden cultural resources cannot be entirely ruled out.

Figure 3. Survey coverage

CONCLUSIONS

The records search and literature review identified no previously recorded cultural resources in the Project Area or Study Area, and that a portion of the Project Area had been previously studied. Background research indicates a moderate sensitivity for small prehistoric archaeological resources on the surface and a moderate sensitivity for historic-era archaeological resources on the surface within the Project Area. The area's sensitivity for buried prehistoric archaeological resources is also moderate. Federated Indians of Graton Rancheria THPO Administrative Assistant Hector Garcia Cabrales on behalf of Tribal Heritage Preservation Officer (THPO) Buffy McQuillen, has indicated that the Project Area is located within the Tribe's ancestral territory and that there may be tribal cultural resource impacts. The Tribe has requested the results of ASC's research efforts and recommendations. On 6 July 2021, a copy of this report was transmitted to THPO Administrative Assistant Cabrales and THPO McQuillen. The pedestrian archaeological survey located no archaeological resources in the Project Area.

ENCOUNTERING UNRECORDED ARCHAEOLOGICAL RESOURCES

There is a possibility that unrecognized surficial resources or subsurface archaeological deposits are present within the Project Area. Prehistoric and historic-era resources may be obscured by colluvium, alluvium, vegetation, or other factors.

If concentrations of prehistoric or historic-era materials are encountered during project activities, it is recommended that all work in the immediate vicinity stop until a qualified archaeologist can evaluate the finds and make recommendations.

Prehistoric materials might include obsidian and/or chert flaked-stone tools such as projectile points, knives, or scrapers; the debris from making, sharpening, and using them ("debitage"); culturally darkened soil containing shell, dietary bone, heat-affected rock, and carbonized plant material ("midden"); or stone milling equipment such as mortars, pestles, handstones, or milling slabs.

Historic-era materials might include adobe, stone, brick, or concrete footings or walls; buildings or other remains with cut nails; filled privies or wells; or deposits of metal, glass, and/or ceramic artifacts.

ENCOUNTERING HUMAN REMAINS

While there is no indication of human remains within the Project Area, the possibility of encountering archaeological resources that contain human remains cannot be discounted. Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial. If human remains are encountered, work must halt in the vicinity and, as required by law, the County Coroner must be notified immediately. At the same time, an archaeologist should be contacted to evaluate the situation.

If human remains are suspected to be of Native American origin, the Coroner must notify the Native American Heritage Commission within 24 hours of that determination. The Commission then notifies the Most Likely Descendant, who has 48 hours to make recommendations to the landowner for the disposition of the remains.

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APPENDIX

NAHC/Organizational Correspondence

Sacred Lands File & Native American Contacts List Request

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
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: Archaeological Resources Study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California.

County: Sonoma

USGS Quadrangle Name: USGS Cotati (1954, pr 1980)

Township: 6N **Range:** 8W **Section(s):** Unsectioned portion of Cotate land grant Projected Sections 26 and 27

Company/Firm/Agency: Anthropological Studies Center, Sonoma State University

Street Address: 1801 E. Cotati Ave., Bldg. 29

City: Rohnert Park **Zip:** 94928

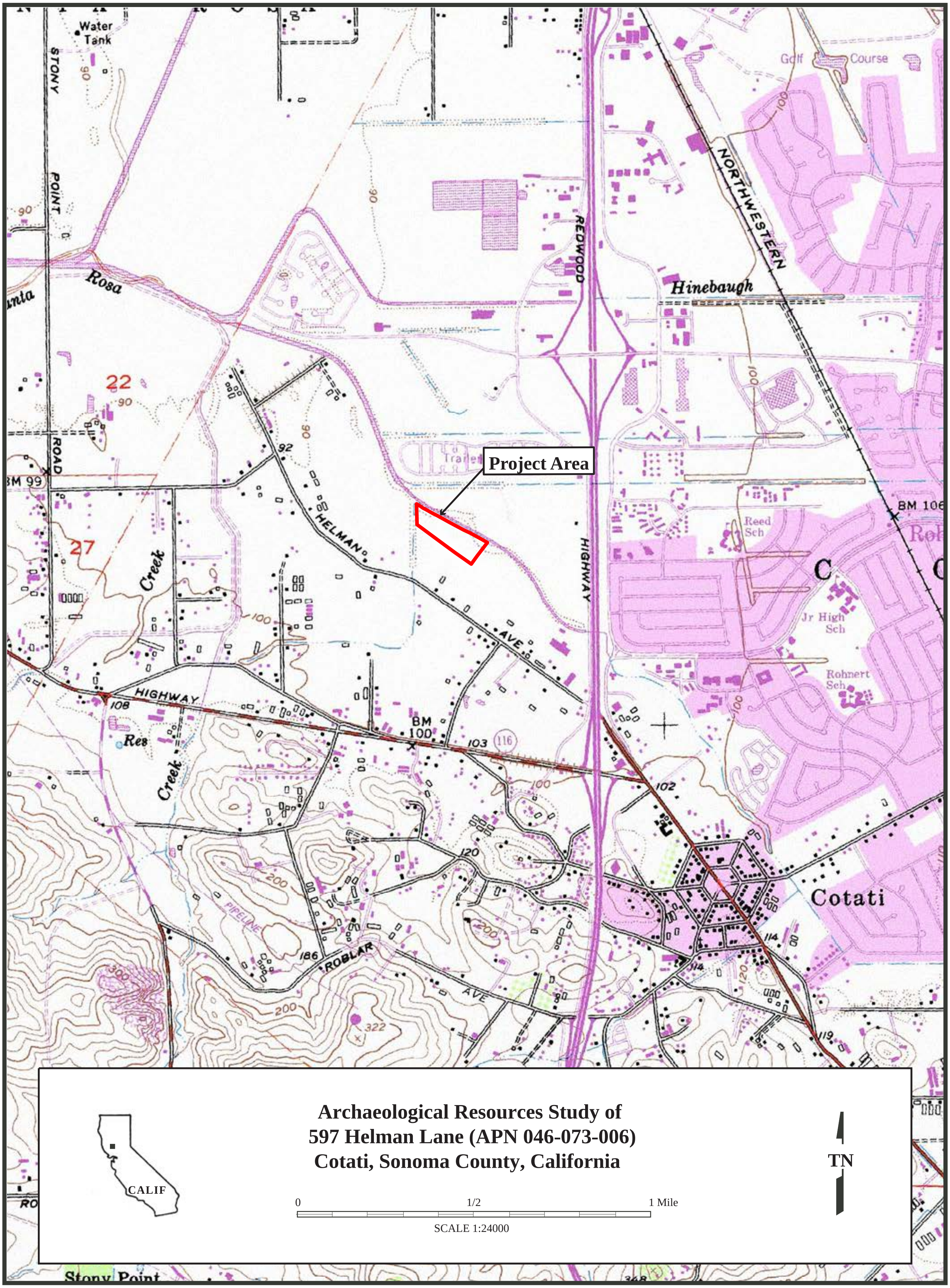
Phone: 707-664-2381

Fax: 707-664-4155

Email: mcgaughe@sonoma.edu

Project Description:

The Anthropological Studies Center at Sonoma State University is conducting an archaeological resources study at 597 Helman Lane, Cotati, Sonoma County, California. The client, Sandell Holdings LLC, proposes to construct a 50,000 square foot warehouse over 3.4 acres of the 8.5-acre parcel. An archaeological resources study is being required by the City of Cotati for permitting purposes.



USGS Cotati, Calif. (1954, pr 1980)

STATE OF CALIFORNIA Gavin Newsom, *Governor*

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

June 17, 2021

Scott McGaughey, MA, RPA, Staff Archaeologist
Sonoma State University, Anthropological Studies Center

Via Email to: mcgaughe@sonoma.edu

Re: Archaeological Resources Study of 597 Helman Lane, Cotati Project, Sonoma County

Dear Mr. McGaughey:

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: Sarah.Fonseca@nahc.ca.gov.

Sincerely,

Sarah Fonseca
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Sonoma County
6/17/2021

Cloverdale Rancheria of Pomo Indians Patricia Hermosillo, Chairperson 555 S. Cloverdale Blvd., Suite A Cloverdale, CA, 95425 Phone: (707) 894 - 5775 Fax: (707) 894-5727 info@cloverdalerancheria.com	Pomo
Dry Creek Rancheria of Pomo Indians Chris Wright, Chairperson P.O. Box 607 Geyserville, CA, 95441 Phone: (707) 814 - 4150 lynnl@drycreekrancheria.com	Pomo
Federated Indians of Graton Rancheria Gene Buvelot, 6400 Redwood Drive, Suite 300 Rohnert Park, CA, 94928 Phone: (707) 566 - 2288 Fax: (415) 279-4844 gbuvelot@gratonrancheria.com	Coast Miwok Pomo
Federated Indians of Graton Rancheria Greg Sarris, Chairperson 6400 Redwood Drive, Ste 300 Rohnert Park, CA, 94928 Phone: (707) 566 - 2288 Fax: (707) 566-2291 gbuvelot@gratonrancheria.com	Coast Miwok Pomo
Guidiville Indian Rancheria Donald Duncan, Chairperson P.O. Box 339 Talmage, CA, 95481 Phone: (707) 462 - 3682 Fax: (707) 462-9183 admin@guidiville.net	Pomo
Lytton Rancheria Marjorie Mejia, Chairperson 437 Aviation Boulevard Santa Rosa, CA, 95403 Phone: (707) 575 - 5917 Fax: (707) 575-6974 margiemejia@aol.com	Pomo
Middletown Rancheria of Pomo Indians Jose Simon, Chairperson P.O. Box 1035 Middletown, CA, 95461 Phone: (707) 987 - 3670 Fax: (707) 987-9091 sshope@middletownrancheria.com	Lake Miwok Pomo
Middletown Rancheria Sally Peterson, THPO P.O. Box 1658 Middletown, CA, 95461 Phone: (707) 987 - 3670 THPO@middletownrancheria.com	Lake Miwok Pomo
Mishewal-Wappo Tribe of Alexander Valley Scott Gabaldon, Chairperson 2275 Silk Road Windsor, CA, 95492 Phone: (707) 494 - 9159 scottg@mishewalwappotribe.com	Wappo
Pinoleville Pomo Nation Erica Carson, Tribal Historic Preservation Officer 500 B Pinoleville Drive Ukiah, CA, 95482 Phone: (707) 463 - 1454 Fax: (707) 463-6601	Pomo
Pinoleville Pomo Nation Leona Willams, Chairperson 500 B Pinoleville Drive Ukiah, CA, 95482 Phone: (707) 463 - 1454 Fax: (707) 463-6601	Pomo

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 Archaeological Resources Study of 597 Helman Lane, Cotati Project, Sonoma County.

SONOMA
STATE UNIVERSITY
1801 East Cotati Avenue
Rohnert Park, CA 94928-3609

ANTHROPOLOGICAL STUDIES CENTER
707.664.2381 • Fax 707.664.4155
www.sonoma.edu/asc

Marjorie Mejia, Chairperson
Lytton Rancheria
437 Aviation Blvd.
Santa Rosa, CA 95403

18 June 2021

Re: Archaeological Resources Study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California.

Dear Chairperson Mejia,

The Anthropological Studies Center (ASC) is conducting an archaeological resources study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California. The project area is located within the Cotate landgrant in Township 6N, Range 8W, Sections 26 and 27, Mount Diablo Base and Meridian, as depicted on the USGS Cotati, Calif. Quadrangle map.

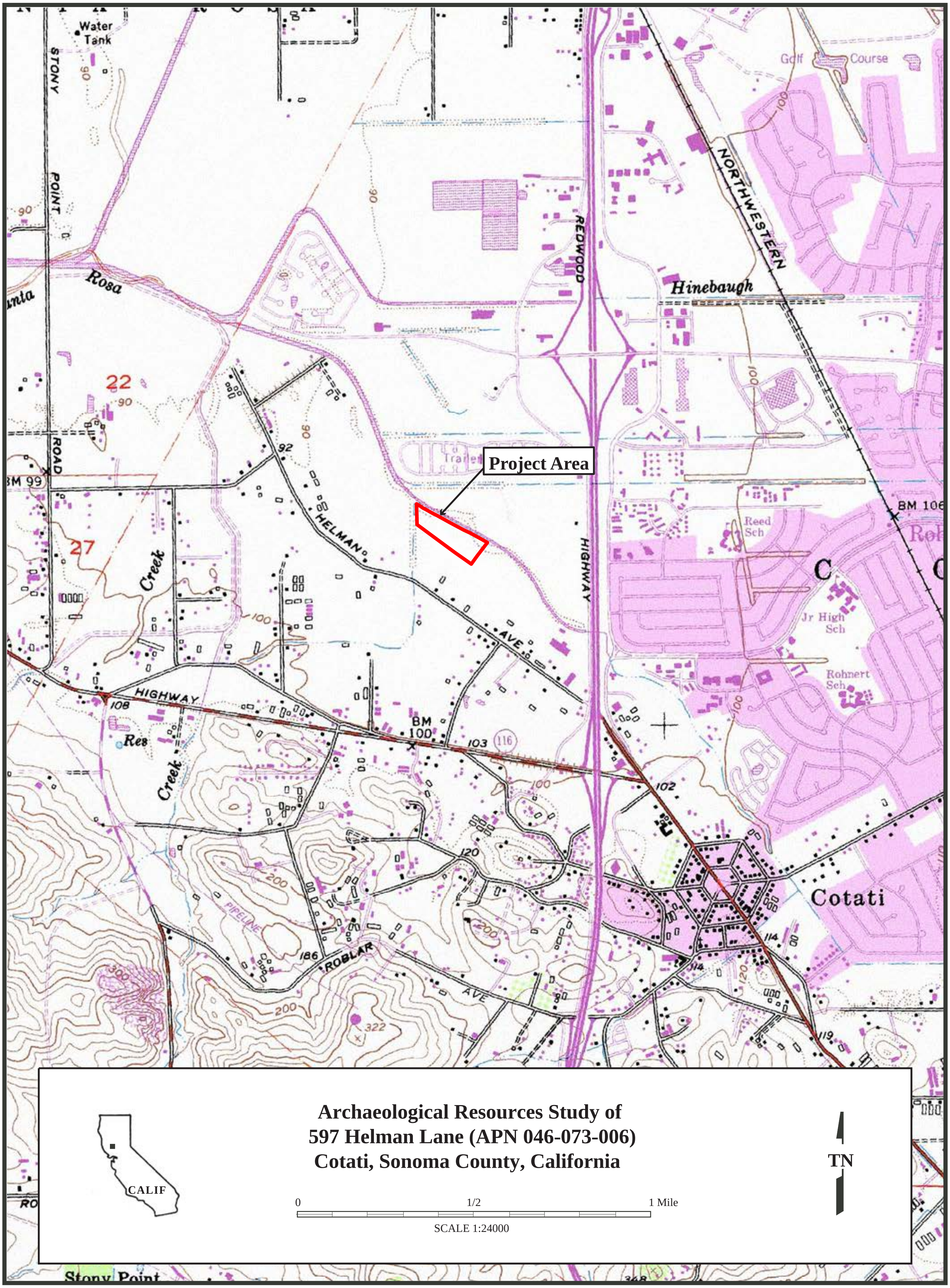
The client intends to construct a 50,000 square foot warehouse within approximately 3.5 acres of the 8-acre parcel. The archaeological resources study is being conducted to support CEQA documentation required by the City of Cotati.

The Native American Heritage Commission conducted a search of the Sacred Lands File for the project area. The results of the search was negative. A records search was conducted for the project area at the NWIC. The results of the records search was negative. A pedestrian archaeological field survey of the project areas was conducted. No archaeological resources were identified during the field survey.

We respectfully request any information or concerns that you or your organization may wish to share regarding cultural resources within or in the vicinity of the project area. If you have concerns or questions, please do not hesitate to give me a call at (707) 664-2381 or contact me via email at mcgaughe@sonoma.edu. We look forward to hearing from you.

Sincerely,

Scott McGaughey, M.A., RPA
Staff Archaeologist



USGS Cotati, Calif. (1954, pr 1980)

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ANTHROPOLOGICAL STUDIES CENTER
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www.sonoma.edu/asc

18 June 2021

Greg Sarris, Chairperson
Federated Indians of Graton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928

Re: Archaeological Resources Study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California.

Dear Chairperson Sarris,

The Anthropological Studies Center (ASC) is conducting an archaeological resources study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California. The project area is located within the Cotate landgrant in Township 6N, Range 8W, Sections 26 and 27, Mount Diablo Base and Meridian, as depicted on the USGS Cotati, Calif. Quadrangle map.

The client intends to construct a 50,000 square foot warehouse within approximately 3.5 acres of the 8-acre parcel. The archaeological resources study is being conducted to support CEQA documentation required by the City of Cotati.

The Native American Heritage Commission conducted a search of the Sacred Lands File for the project area. The results of the search was negative. A records search was conducted for the project area at the NWIC. The results of the records search was negative. A pedestrian archaeological field survey of the project areas was conducted. No archaeological resources were identified during the field survey.

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Sincerely,

Scott McGaughey, M.A., RPA
Staff Archaeologist

SONOMA
STATE UNIVERSITY
1801 East Cotati Avenue
Rohnert Park, CA 94928-3609

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www.sonoma.edu/asc

Chris Wright, Chairperson
Dry Creek Rancheria of Pomo Indians
P.O. Box 607
Geyserville, CA 95441

18 June 2021

Re: Archaeological Resources Study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California.

Dear Chairperson Wright,

The Anthropological Studies Center (ASC) is conducting an archaeological resources study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California. The project area is located within the Cotate landgrant in Township 6N, Range 8W, Sections 26 and 27, Mount Diablo Base and Meridian, as depicted on the USGS Cotati, Calif. Quadrangle map.

The client intends to construct a 50,000 square foot warehouse within approximately 3.5 acres of the 8-acre parcel. The archaeological resources study is being conducted to support CEQA documentation required by the City of Cotati.

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Sincerely,

Scott McGaughey, M.A., RPA
Staff Archaeologist

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STATE UNIVERSITY
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Rohnert Park, CA 94928-3609

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www.sonoma.edu/asc

Leona Williams, Chairperson
Pinoleville Pomo Nation
500 B Pinoleville Drive
Ukiah, CA 95482

18 June 2021

Re: Archaeological Resources Study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California.

Dear Chairperson Williams,

The Anthropological Studies Center (ASC) is conducting an archaeological resources study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California. The project area is located within the Cotate landgrant in Township 6N, Range 8W, Sections 26 and 27, Mount Diablo Base and Meridian, as depicted on the USGS Cotati, Calif. Quadrangle map.

The client intends to construct a 50,000 square foot warehouse within approximately 3.5 acres of the 8-acre parcel. The archaeological resources study is being conducted to support CEQA documentation required by the City of Cotati.

The Native American Heritage Commission conducted a search of the Sacred Lands File for the project area. The results of the search was negative. A records search was conducted for the project area at the NWIC. The results of the records search was negative. A pedestrian archaeological field survey of the project areas was conducted. No archaeological resources were identified during the field survey.

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Sincerely,

Scott McGaughey, M.A., RPA
Staff Archaeologist

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Jose Simon, Chairperson
Middletown Rancheria of Pomo Indians
P.O. Box 1035
Middletown, CA 95461

18 June 2021

Re: Archaeological Resources Study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California.

Dear Chairperson Simon,

The Anthropological Studies Center (ASC) is conducting an archaeological resources study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California. The project area is located within the Cotate landgrant in Township 6N, Range 8W, Sections 26 and 27, Mount Diablo Base and Meridian, as depicted on the USGS Cotati, Calif. Quadrangle map.

The client intends to construct a 50,000 square foot warehouse within approximately 3.5 acres of the 8-acre parcel. The archaeological resources study is being conducted to support CEQA documentation required by the City of Cotati.

The Native American Heritage Commission conducted a search of the Sacred Lands File for the project area. The results of the search was negative. A records search was conducted for the project area at the NWIC. The results of the records search was negative. A pedestrian archaeological field survey of the project areas was conducted. No archaeological resources were identified during the field survey.

We respectfully request any information or concerns that you or your organization may wish to share regarding cultural resources within or in the vicinity of the project area. If you have concerns or questions, please do not hesitate to give me a call at (707) 664-2381 or contact me via email at mcgaughe@sonoma.edu. We look forward to hearing from you.

Sincerely,

Scott McGaughey, M.A., RPA
Project Manager

SONOMA STATE UNIVERSITY
1801 East Cotati Avenue
Rohnert Park, CA 94928-3609

ANTHROPOLOGICAL STUDIES CENTER
707.664.2381 • Fax 707.664.4155
www.sonoma.edu/asc

Sally Peterson, Tribal Historic Preservation Officer
Middletown Rancheria
P.O. Box 1658
Middletown, CA 95461

18 June 2021

Re: Archaeological Resources Study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California.

Dear THPO Peterson,

The Anthropological Studies Center (ASC) is conducting an archaeological resources study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California. The project area is located within the Cotate landgrant in Township 6N, Range 8W, Sections 26 and 27, Mount Diablo Base and Meridian, as depicted on the USGS Cotati, Calif. Quadrangle map.

The client intends to construct a 50,000 square foot warehouse within approximately 3.5 acres of the 8-acre parcel. The archaeological resources study is being conducted to support CEQA documentation required by the City of Cotati.

The Native American Heritage Commission conducted a search of the Sacred Lands File for the project area. The results of the search was negative. A records search was conducted for the project area at the NWIC. The results of the records search was negative. A pedestrian archaeological field survey of the project areas was conducted. No archaeological resources were identified during the field survey.

We respectfully request any information or concerns that you or your organization may wish to share regarding cultural resources within or in the vicinity of the project area. If you have concerns or questions, please do not hesitate to give me a call at (707) 664-2381 or contact me via email at mcgaughe@sonoma.edu. We look forward to hearing from you.

Sincerely,

Scott McGaughey, M.A., RPA
Staff Archaeologist

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18 June 2021

Gene Buvelot,
Federated Indians of Graton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928

Re: Archaeological Resources Study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California.

Dear Mr. Buvelot,

The Anthropological Studies Center (ASC) is conducting an archaeological resources study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California. The project area is located within the Cotate landgrant in Township 6N, Range 8W, Sections 26 and 27, Mount Diablo Base and Meridian, as depicted on the USGS Cotati, Calif. Quadrangle map.

The client intends to construct a 50,000 square foot warehouse within approximately 3.5 acres of the 8-acre parcel. The archaeological resources study is being conducted to support CEQA documentation required by the City of Cotati.

The Native American Heritage Commission conducted a search of the Sacred Lands File for the project area. The results of the search was negative. A records search was conducted for the project area at the NWIC. The results of the records search was negative. A pedestrian archaeological field survey of the project areas was conducted. No archaeological resources were identified during the field survey.

We respectfully request any information or concerns that you or your organization may wish to share regarding cultural resources within or in the vicinity of the project area. If you have concerns or questions, please do not hesitate to give me a call at (707) 664-2381 or contact me via email at mcgaughe@sonoma.edu. We look forward to hearing from you.

Sincerely,

Scott McGaughey, M.A., RPA
Staff Archaeologist

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STATE UNIVERSITY
1801 East Cotati Avenue
Rohnert Park, CA 94928-3609

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Patricia Hermosillo, Chairperson
Cloverdale Rancheria of Pomo Indians
555 S. Cloverdale Blvd., Suite A
Cloverdale, CA 95425

18 June 2021

Re: Archaeological Resources Study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California.

Dear Chairperson Hermosillo,

The Anthropological Studies Center (ASC) is conducting an archaeological resources study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California. The project area is located within the Cotate landgrant in Township 6N, Range 8W, Sections 26 and 27, Mount Diablo Base and Meridian, as depicted on the USGS Cotati, Calif. Quadrangle map.

The client intends to construct a 50,000 square foot warehouse within approximately 3.5 acres of the 8-acre parcel. The archaeological resources study is being conducted to support CEQA documentation required by the City of Cotati.

The Native American Heritage Commission conducted a search of the Sacred Lands File for the project area. The results of the search was negative. A records search was conducted for the project area at the NWIC. The results of the records search was negative. A pedestrian archaeological field survey of the project areas was conducted. No archaeological resources were identified during the field survey.

We respectfully request any information or concerns that you or your organization may wish to share regarding cultural resources within or in the vicinity of the project area. If you have concerns or questions, please do not hesitate to give me a call at (707) 664-2381 or contact me via email at mcgaughe@sonoma.edu. We look forward to hearing from you.

Sincerely,

Scott McGaughey, M.A., RPA
Staff Archaeologist

SONOMA STATE UNIVERSITY
1801 East Cotati Avenue
Rohnert Park, CA 94928-3609

ANTHROPOLOGICAL STUDIES CENTER
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www.sonoma.edu/asc

Scott Gabaldon, Chairperson
Mishewal-Wappo Tribe of Alexander Valley
2275 Silk Road
Windsor, CA 95492

18 June 2021

Re: Archaeological Resources Study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California.

Dear Chairperson Gabaldon,

The Anthropological Studies Center (ASC) is conducting an archaeological resources study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California. The project area is located within the Cotate landgrant in Township 6N, Range 8W, Sections 26 and 27, Mount Diablo Base and Meridian, as depicted on the USGS Cotati, Calif. Quadrangle map.

The client intends to construct a 50,000 square foot warehouse within approximately 3.5 acres of the 8-acre parcel. The archaeological resources study is being conducted to support CEQA documentation required by the City of Cotati.

The Native American Heritage Commission conducted a search of the Sacred Lands File for the project area. The results of the search was negative. A records search was conducted for the project area at the NWIC. The results of the records search was negative. A pedestrian archaeological field survey of the project areas was conducted. No archaeological resources were identified during the field survey.

We respectfully request any information or concerns that you or your organization may wish to share regarding cultural resources within or in the vicinity of the project area. If you have concerns or questions, please do not hesitate to give me a call at (707) 664-2381 or contact me via email at mcgaughe@sonoma.edu. We look forward to hearing from you.

Sincerely,

Scott McGaughey, M.A., RPA
Staff Archaeologist

SONOMA
STATE UNIVERSITY
1801 East Cotati Avenue
Rohnert Park, CA 94928-3609

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www.sonoma.edu/asc

18 June 2021

Donald Duncan, Chairperson
Guidiville Indian Rancheria
P.O. Box 339
Talmage, CA 95481

Re: Archaeological Resources Study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California.

Dear Chairperson Duncan,

The Anthropological Studies Center (ASC) is conducting an archaeological resources study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California. The project area is located within the Cotate landgrant in Township 6N, Range 8W, Sections 26 and 27, Mount Diablo Base and Meridian, as depicted on the USGS Cotati, Calif. Quadrangle map.

The client intends to construct a 50,000 square foot warehouse within approximately 3.5 acres of the 8-acre parcel. The archaeological resources study is being conducted to support CEQA documentation required by the City of Cotati.

The Native American Heritage Commission conducted a search of the Sacred Lands File for the project area. The results of the search was negative. A records search was conducted for the project area at the NWIC. The results of the records search was negative. A pedestrian archaeological field survey of the project areas was conducted. No archaeological resources were identified during the field survey.

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Sincerely,

Scott McGaughey, M.A., RPA
Staff Archaeologist

SONOMA STATE UNIVERSITY
1801 East Cotati Avenue
Rohnert Park, CA 94928-3609

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Erica Carson, Tribal Historic Preservation Officer
Pinoleville Pomo Nation
500 B Pinoleville Drive
Ukiah, CA 95482

18 June 2021

Re: Archaeological Resources Study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California.

Dear THPO Carson,

The Anthropological Studies Center (ASC) is conducting an archaeological resources study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California. The project area is located within the Cotate landgrant in Township 6N, Range 8W, Sections 26 and 27, Mount Diablo Base and Meridian, as depicted on the USGS Cotati, Calif. Quadrangle map.

The client intends to construct a 50,000 square foot warehouse within approximately 3.5 acres of the 8-acre parcel. The archaeological resources study is being conducted to support CEQA documentation required by the City of Cotati.

The Native American Heritage Commission conducted a search of the Sacred Lands File for the project area. The results of the search was negative. A records search was conducted for the project area at the NWIC. The results of the records search was negative. A pedestrian archaeological field survey of the project areas was conducted. No archaeological resources were identified during the field survey.

We respectfully request any information or concerns that you or your organization may wish to share regarding cultural resources within or in the vicinity of the project area. If you have concerns or questions, please do not hesitate to give me a call at (707) 664-2381 or contact me via email at mcgaughe@sonoma.edu. We look forward to hearing from you.

Sincerely,

Scott McGaughey, M.A., RPA
Staff Archaeologist

SONOMA
STATE UNIVERSITY
1801 East Cotati Avenue
Rohnert Park, CA 94928-3609

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18 June 2021

Buffy McQuillen
Tribal Heritage Preservation Officer (THPO)
Federated Indians of Graton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928

Re: Archaeological Resources Study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California.

Dear THPO McQuillen,

The Anthropological Studies Center (ASC) is conducting an archaeological resources study of 597 Helman Lane (APN 046-073-006), Cotati, Sonoma County, California. The project area is located within the Cotate landgrant in Township 6N, Range 8W, Sections 26 and 27, Mount Diablo Base and Meridian, as depicted on the USGS Cotati, Calif. Quadrangle map.

The client intends to construct a 50,000 square foot warehouse within approximately 3.5 acres of the 8-acre parcel. The archaeological resources study is being conducted to support CEQA documentation required by the City of Cotati.

The Native American Heritage Commission conducted a search of the Sacred Lands File for the project area. The results of the search was negative. A records search was conducted for the project area at the NWIC. The results of the records search was negative. A pedestrian archaeological field survey of the project areas was conducted. No archaeological resources were identified during the field survey.

We respectfully request any information or concerns that you or your organization may wish to share regarding cultural resources within or in the vicinity of the project area. If you have concerns or questions, please do not hesitate to give me a call at (707) 664-2381 or contact me via email at mcgaughe@sonoma.edu. We look forward to hearing from you.

Sincerely,

Scott McGaughey

Scott McGaughey, M.A., RPA
Staff Archaeologist

Scott McGaughey <mcgaughe@sonoma.edu>

597 Helman Lane (APN 046-073-006), Cotati

1 message

THPO@gratonrancheria.com <THPO@gratonrancheria.com> Tue, Jun 29, 2021 at 11:41 AM
To: Scott McGaughey <mcgaughe@sonoma.edu>

Dear Mr. McGaughey,

Thank you for your outreach and request for identification of cultural resources from the Federated Indians of Graton Rancheria. The project area identified in your correspondence is within the Tribe's ancestral territory and there may be tribal cultural resource impacts. Please provide the Tribe with the results of your research efforts and recommendations. The information can be emailed or mailed to the following address.

Buffy McQuillen

Tribal Heritage Preservation Officer (THPO)

Native American Graves Protection and Repatriation Act (NAGPRA)

Office: 707.566.2288; ext. 137

Cell: 707.318.0485

FAX: 707.566.2291

Hector Garcia Cabrales

THPO Administrative Assistant II

Federated Indians of Graton Rancheria

6400 Redwood Drive, Suite 300

Rohnert Park, CA 94928

Office: 707.566.2288, ext. 138

Fax: 707.588-9809

Email: hgarcia@gratonrancheria.com

www.gratonrancheria.com

-

REESE CONSULTING GEOTECHNICAL
& ASSOCIATES ENGINEERS
134 LYSTRA COURT
TELEPHONE (707) 528-3078
REESE@REESEANDASSOC.COM
SANTA ROSA, CA 95403
FACSIMILE (707) 528-2837

Report
Soil Investigation
Sandell Warehouse
597 Helman Lane
Cotati, California

Prepared for
Sandell Holdings, LLC
3348 Paradise Drive
Tiburon, CA 94920

By

REESE & ASSOCIATES
Consulting Geotechnical Engineers

Joseph M. Mauney
Civil Engineer No. 85560

REGISTERED PROFESSIONAL ENGINEER
JOSEPH MARTIS MAUNEY
No. C85560
EXP. 09-30-22
CIVIL
STATE OF CALIFORNIA

Jeffrey K. Reese
Civil Engineer No. 47753

REGISTERED PROFESSIONAL ENGINEER
JEFFREY KENT REESE
No. C 47753
EXP. 12-31-21
STATE OF CALIFORNIA

Job No. 2266.1.1
March 26, 2021

134 LYSTRA COURT
TELEPHONE (707) 528-3078

REESE & ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS
REESE@REESEANDASSOC.COM

SANTA ROSA, CA 95403
FACSIMILE (707) 528-2837

INTRODUCTION

This report presents the results of our soil investigation for the proposed new warehouse building to be located at 597 Helman Lane in Cotati, California. We understand that the proposed building will be approximately 50,000 square feet in size and will consist of tall, one-story, steel-frame structure with a concrete slab-on-grade floor. The building will be served by asphalt-paved driveway and parking areas with underground utilities. Foundation and floor loads are not known at this time but are expected to be normal for the type of construction proposed.

The object of our investigation, as outlined in our proposal dated January 6, 2021, was to review selected geologic references in our files, explore subsurface conditions, measure depth to groundwater, if encountered, and determine physical properties of the soils sampled. We then performed engineering analyses to develop conclusions and recommendations concerning:

1. Proximity of the site to active faults.
2. Site preparation and grading.
3. Foundation support and design criteria.
4. Support of concrete slab-on-grade floors.
5. Loading dock and retaining wall design criteria.
6. Preliminary flexible pavement thicknesses based on our experience with similar projects and soils.
7. Soil engineering drainage.
8. Supplemental soil engineering services.

WORK PERFORMED

We reviewed selected, published geologic information in our files including:

1. The Cotati Quadrangle Sheet of the Alquist-Priolo Earthquake Fault Zone maps, California Division of Mines and Geology (CDMG), 1983.

2. "Geologic Map of the Cotati 7.5' Quadrangle, Sonoma County, California: A Digital Database,", by M. T. Mascorro & E. W. Ford, California Geological Survey (CGS), 2003.

3. "Geology for Planning in Sonoma County," Special Report 120, M. E. Huffman & C.F. Armstrong, CDMG, 1980.

4. "Liquefaction Susceptibility Map," R.C. Witter et al., United States Geologic Survey (USGS) in cooperation with CGS, 2006, accessed January 5, 2021 as a Google Earth file: https://earthquake.usgs.gov/education/geologicmaps/kml/liquefaction.kmz

On January 20 and March 6, 2021, we were at the site to observe surface features exposed and explore subsurface conditions to the extent of five test borings and two test probes at the approximate locations indicated on Plate 1. The borings were drilled to depths ranging from about 11½ to 31½ feet with track-mounted, auger equipment. The probes were drilled in planned paved areas and extended to depths of about 4 and 9 feet. Our project engineer and staff geologist located the borings/probes, observed the drilling, logged the conditions encountered, and obtained samples for visual classification and laboratory testing. Intact soil samples were obtained with a 2½-inch (inside-diameter) split-spoon sampler driven with a 140-pound drop hammer. A 2-inch (outside-diameter), Standard Penetration, split-spoon sampler was used at selected depths where granular materials were encountered. The stroke during driving was about

30 inches. The blows required to drive the samplers were recorded and converted to equivalent Standard Penetration blow counts for correlation with empirical data. Logs of the borings and probes, showing soil classifications, sample depths, and converted blow counts, are presented on Plates 2 through 8. The soils are classified in accordance with the Unified Soil Classification System explained on Plate 9.

Selected samples were tested in our laboratory to determine moisture content, dry density, strength characteristics, and classification (percent passing the No. 200 sieve, percent free swell, Atterberg Limits, Texture Analysis, Sieve Analysis, and Hydrometer). The laboratory results for the samples tested are shown on the logs. The strength data shown on the boring logs are described by the Key to Test Data on Plate 9. Detailed results of the Atterberg Limits tests are presented on Plate 10. The results of the Texture Analysis are presented on Plate 11. The Sieve Analysis and Hydrometer test results are presented on Plate 12.

The boring locations shown on Plate 1 were determined by visually estimating from existing surface features. The locations should be considered no more accurate than implied by the methods used to establish the data. At the completion of the exploration, the boreholes less than 15 feet were backfilled with soil cuttings, and the deep boring was backfilled with cement slurry.

SURFACE AND SUBSURFACE CONDITIONS

The approximately 8½-acre project site is a vacant lot located within very gently sloping terrain in northwest Cotati, California. The site is located at the terminus of Blodgett Street and is bordered by Laguna de Santa Rosa to the north, light industrial/manufacturing properties to the east, a government/public use parcel to the south, and an easement along Washoe Creek to the north. The proposed warehouse building will be located in the eastern portion of the parcel, about 150 feet into the property from Blodgett Street. In this area, the ground surface slopes very gently downward to the south and east, with a difference in elevation across the planned structure of about 1 to 2 feet. At the time of our exploration, the ground surface was covered with a moderate growth of grass and weeds.

The test borings and laboratory tests indicate that the site is underlain by layers of natural clays and sands. The surface soils generally consisted of a layer of soft, porous sandy clay of moderate expansion potential. That is, the soils would tend to undergo moderate strength and volume changes with seasonal variations in moisture content. The weak surface layer extended to depths of about 1 to 2 feet. Highly expansive, plastic clayey soils, locally termed *adobe*, were observed underlying the surface layer to depths of about 3 to 4½ feet. In general, the adobe clays are underlain by stiff to hard sandy clays of moderate expansion potential and medium dense to very dense clayey and silty sands of low expansion potential.

Groundwater was not encountered in the test borings during our exploration. However, saturated soils were noted at a depth of about 15 feet in our deep test boring. The groundwater, if present, was likely sealed-off from the borehole by the clay cuttings. Groundwater levels can vary seasonally and can rise and fall several feet annually, depending on seasonal climatic conditions. Determination of precise depth to groundwater, extent of seasonal water level fluctuations, or the existence of perched groundwater conditions is beyond the scope of this investigation.

CONCLUSIONS

Based on the results of our field exploration, laboratory testing, engineering analyses, and experience on nearby projects, we conclude that, from a soil engineering standpoint, the site can be used for the proposed construction. The most significant soil engineering factors that must be considered in design and construction are the presence of weak, compressible upper soils and near-surface highly expansive clays.

Our experience indicates that weak, porous soils, such as those encountered to depths of about 1 to 2 feet in the borings, can undergo considerable strength loss and settlement when loaded while in a saturated condition. Where evaporation is inhibited by footings, slabs, or fill, eventual saturation of the underlying soils can occur. Therefore, we conclude that the weak, compressible upper soils should be removed and replaced with properly compacted fill.

Highly expansive soils shrink and swell with seasonal changes in moisture content and can heave and/or distress lightly loaded footings or slabs. Our experience indicates that the depth of significant seasonal moisture change is typically in the range of about 2 to 3 feet. However, depending on factors such as seasonal rainfall totals, summer weather conditions, drought, and surface treatments, significant moisture variations in the adobe clays can occur to substantially deeper depths. The risk of future building damage caused by shrinking and swelling of the expansive adobe clays can be significantly reduced by initially moisture conditioning the soils to cause preswelling, then covering the soils with a sufficient depth of a moisture confining and protecting blanket of imported nonexpansive fill. As an alternative to the use of imported fill, the on-site soils could be treated with lime. The actual percentage of lime used would need to be determined with additional laboratory testing. We can provide specific recommendations for such an alternative, if requested.

Most of the buildings with slab-on-grade floors in the site vicinity have been underlain by about 24 to 30 inches of imported fill and are performing satisfactorily. Some structures in the area have been built with as little as 12 inches of imported fill beneath floor slabs. However, our experience indicates that with this lesser amount of imported fill, the risk of future heave and resultant slab cracking and displacement is significant. For an imported fill thickness of 12 inches, 1 to 2 inches of future heave of the slab could occur. Therefore, we conclude that to adequately reduce the risk of future heaving and resultant cracking, a nonexpansive fill blanket at least 30 inches thick will be needed.

In driveway and parking areas, we believe that pavements consisting of asphalt concrete, aggregate base, and possibly subbase can be placed directly on properly prepared expansive soils. However, the pavement can be damaged where the expansive soils experience volume changes with seasonal changes in moisture content (i.e., shrink/swell). Periodic maintenance, including repair of edge cracking, will likely be needed. Future maintenance of paved areas could be significantly reduced by underlying the aggregate baserock with imported, nonexpansive fill and/or by providing a moisture cutoff barrier at pavement edges.

Liquefaction is a phenomenon in which loose, saturated, granular soils experience a loss in shear strength when subjected to seismic shaking. Densification occurs when a loose, granular soil, saturated or dry, experiences a reduction in void ratio during shaking. Both phenomena can result in unacceptable total and/or differential settlements of overlying structures. Whether such phenomena will occur, and to what extent, depends on complex factors such as earthquake depth and intensity, duration of earthquake shaking, and the underlying soil and groundwater conditions. We have analyzed the soil data from our borings in accordance with the *Simplified Procedure for Evaluating Soil Liquefaction Potential* by H. B. Seed and I. M. Idriss, dated September 1971, and more recent procedure updates published by H. B. Seed et al. in 1985, T. L. Youd and I. M. Idriss in 2001, and I. M. Idriss and R. W. Boulanger in 2008 and 2014. Our analysis indicates that the sandy soils encountered in the test borings are sufficiently dense, contain a sufficient amount of clayey fines, or are overlain by a sufficiently thick surface layer of non-liquefiable soils such that the risk of building distress due to liquefaction and/or densification would be considered low.

Provided the site is prepared as subsequently recommended, we judge that minimum depth footings and conventional slab-on-grade floors supported on properly compacted fill could be used. For site preparation and building foundation design and installation in accordance with our recommendations, we judge that total settlements would be about 1-inch, or less. Post-construction settlements should be about 1/2-inch, or less.

SEISMIC DESIGN

The geologic maps reviewed did not indicate the presence of active faults at the site, and the parcel is not located within a presently designated Alquist-Priolo Earthquake Fault Zone. Therefore, we judge that there is little risk of fault-related ground rupture at the site during earthquakes. In a seismically active region such as Northern California, there is always some possibility for future faulting at any site. However, historical occurrences of surface faulting have generally closely followed the trace of the more recently active faults. Because of the proximity of active faults in the region and the potential for strong ground shaking, it will be necessary to design and construct the project in strict accordance with current standards for earthquake-resistant construction.

We have determined the site-specific seismic ground motion values in accordance with procedures outlined in Section 1613 of the 2019 California Building Code (CBC) and Chapter 21 of the American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI) Standard ASCE/SEI 7-16. Based on our field and laboratory testing, we judge that the site can be classified as Site Class D. Initially, mapped acceleration parameters, S_S and S_1, were obtained by inputting the approximate site location (38.34068840°N, 122.71953940°W) into seismic design mapping tools provided by the Structural Engineers Association of California/California's Office of Statewide Health Planning and Development (SEAOC/OSHPD). A probabilistic response spectrum with 1 percent probability of collapse within a 50-year period (ASCE/SEI 7-16 Section 21.2.1.2 Method 2) was obtained utilizing USGS's Uniform Hazard Tool and Risk-Targeted Ground Motion Calculator. An 84th-percentile deterministic response spectrum was obtained utilizing attenuation relationships compiled in the Pacific Earthquake Engineering Research Center's (PEER) NGA-West 2 spectrum model. The probabilistic and deterministic spectra were then scaled to the maximum direction in accordance with PEER Report 2013/15 by Shahi and Baker. The lesser of the probabilistic and deterministic ground motions at each period were chosen for the site-specific response spectrum, which was then scaled by two-thirds to generate the design response spectra per ASCE/SEI 7-16 Section 21.3. Detailed results of our site-specific ground motion analysis are presented on the attached Plate 13. Pertinent accelerations for use in design are present below.

2019 CBC Site-Specific Ground Motion Parameters

Site Class	D
Mapped Spectral Response Accelerations:	
S_S	1.583 g
S_1	0.600g
Design Spectral Response Accelerations:	
S_{DS}	1.245 g
S_{D1}	1.233 g

RECOMMENDATIONS

Site Grading

Areas to be developed should be cleared of debris and dense growths of grass and vegetation. The ground surface should then be stripped of the upper soils containing root growth and organic matter. We anticipate that the depth of stripping needed will average about 3 inches. The strippings should be removed from the site, stockpiled for reuse as topsoil, or be mixed with at least five parts of soil and used as fill at least 10 feet away from structures, walkways, and paved areas.

Wells, septic tanks, or other underground obstructions encountered during grading should be removed or abandoned in-place. The resultant voids should be capped with concrete or backfilled with soil or granular material, as determined by the appropriate regulatory agency or the soil engineer.

After stripping, excavations should be performed, as necessary. Within the planned building and adjacent concrete walkway areas, and extending to at least 5 and 3 feet, respectively, beyond their perimeter, the weak upper soils should be excavated for their full depth (about 1 to 2 feet based on the test borings). The depth of the overexcavation should then be adjusted, as needed, to provide space for a blanket of at least 30 inches of imported, nonexpansive fill over the highly expansive adobe clays. Furthermore, the overexcavation should be deepened, as necessary, to provide for at least 12 inches of imported nonexpansive fill below the bottom of all footings.

The surfaces exposed by overexcavation should be scarified at least 6 inches deep, moisture conditioned to at least 4 percentage points above optimum moisture content, and compacted to at least 87 percent relative compaction.[1] The moisture conditioning should be sufficient to close all shrinkage cracks for their full depth. Approved, imported, nonexpansive fill should then be placed in layers no greater than 8 inches in loose thickness, moisture conditioned to near optimum moisture content, and similarly compacted to at least 90 percent.

Imported fill should be nonexpansive and have a Plasticity Index of 15 or less. The imported fill material should be free of organic material and rocks or hard fragments larger than 4 inches in diameter. The imported fill should be tested and approved by the soil engineer prior to importation to the site.

For grading performed in the driest time of the year, especially after winters of significantly less than normal total or springtime rainfall, shrinkage cracks in the near-surface expansive soils may be deep. Prolonged watering or controlled flooding with the possible use of wetting agents may be necessary to moisture condition the expansive soils to the high initial moisture content needed to close shrinkage cracks for their full depth. As a construction expediency, the grading contractor could elect to overexcavate a portion of the expansive soils to reduce the amount of moisture conditioning time needed. The overexcavated soils could be

1 Relative compaction refers to the in-place dry density of fill expressed as a percentage of maximum dry density of the same material determined in accordance with the American Society for Testing and Materials (ASTM) Standard ASTM D1557 laboratory compaction test procedure. Optimum moisture content refers to the moisture content at maximum dry density.

moisture conditioned and then replaced as properly compacted fill beneath the recommended imported, nonexpansive fill blanket.

For grading performed in the rainy season (late fall, winter, early spring), the soils may become fully expanded naturally and not require increased moisture conditioning. However, with winter grading, there are risks that include: 1) the site becoming too wet and soft to support construction equipment; 2) normally suitable imported fill becoming too wet to compact (requiring more expensive rocky fill); 3) excavation bottoms becoming unstable requiring overexcavation and/or use of geotextile fabrics or placement of granular working pads; and 4) procedures being required to eliminate the possibility of tracking mud onto adjacent public streets. Accordingly, we suggest that the contract documents contain provisions to account for such possible additional costs.

Foundation Support

Provided the site is prepared as recommended above, spread footings should be underlain by at least 12 inches of properly compacted, imported fill of low expansion potential. Footings should be at least 12 inches wide and bottomed at least 12 inches below lowest adjacent pad grade.

Spread footings can be designed to impose dead plus code live load and total design load (including wind or seismic forces) bearing pressures of 2,000 and 3,000 pounds per square foot (psf), respectively. Resistance to lateral loads can be obtained from a combination of passive earth pressures and soil friction. We recommend the following criteria for design:

Passive Earth Pressure	=	300 pounds per cubic foot (pcf) equivalent fluid, neglect the upper 1-foot, unless confined by pavement or slab
Soil Friction Factor	=	0.30

Slab-on-Grade

Provided the site is prepared as recommended above, the building floor slabs should be underlain by at least 30 inches of properly compacted, imported fill of low expansion potential. The slab should be at least 4 inches thick and reinforced with bars to reduce cracking and help keep closed those cracks that do appear. The actual slab thickness and amount of reinforcing used should be determined by the structural design engineer. Slab-on-grade subgrade should not be allowed to dry prior to concrete placement. The slab should be underlain by a capillary moisture break and cushion layer consisting of at least 4 inches of free-draining, crushed rock or gravel (i.e., drainrock) at least 1/4-inch and no larger than 3/4-inch in size. Crushed rock should be used where the slab will be subjected to heavy vehicular traffic, such as forklifts or delivery trucks.

Moisture vapor will condense on the underside of slabs. Where migration of moisture vapor through slabs would be detrimental, a vapor retarder should be provided between the supporting base material and the slab. Two inches of moist, clean sand could be placed on top of the membrane to aid in curing and to help provide puncture protection. However, the actual use of sand should be determined by the architect or design engineer. The use of a less permeable and stronger membrane should be considered if sand is not to be placed for puncture protection, or where the flooring manufacturer requires a vapor barrier. Concrete design and curing specifications should recognize the potential adverse effects associated with placement of concrete directly on the membrane.

In general, where less than 30 inches of imported fill is used, floor slabs should be carefully separated from foundations. Positive, low friction separations, such as felt paper or expansion joint material, should be provided between the slab and foundations. Frequent joints should be provided in the slabs to permit movements to occur without distressing the slabs. Where at least 30 inches of imported nonexpansive fill is used, floor slabs could be tied to the foundation. To reduce possible slab cracking resulting from minor heave or settlement, closure pours should be considered adjacent to continuous and column footings after the footings have been fully loaded.

Loading Docks

Retaining walls may be needed for the loading dock. Prior to construction of the walls, the wall footings area and the area behind the wall that will have a concrete slab-on-grade should be prepared as recommended above for those areas. Where the walls can tilt slightly, active pressures can be developed and the walls should be designed for an equivalent fluid pressure of 40 pcf. If the tops of the walls are constrained from tilting, the pressures are higher and 60 pcf should be used.

Where retaining walls would be subject to heavy storage and/or vehicular loads, the walls should be designed to resist an added surcharge pressure equivalent to 2½ feet of additional backfill. Where an imaginary 2:1 line projected down from adjacent foundations intersects retaining walls, the portion of retaining walls below the intersection should be designed for an additional horizontal surcharge load of 100 psf. Wall foundations can be supported on spread footings using the criteria discussed above.

Retaining walls should be fully backdrained. The backdrains should consist of 4-inch-diameter, perforated, rigid plastic pipe (SDR-35 or equivalent) sloped to drain to outlets by gravity and clean, free-draining crushed rock or gravel (i.e., drainrock). The drainrock should conform to the quality requirements for Class 2 Permeable Materials in accordance with the latest edition of the Caltrans Standard Specifications. As an alternative, any clean, washed durable rock product could be used if separated from the adjacent soil and covered by a nonwoven, geotextile fabric weighing at least 4 ounces per square yard (such as Mirafi 140N or equivalent). The drainrock should extend to within 12 inches of the finished surface, with the upper 12 inches backfilled with compacted soil to inhibit surface water infiltration, unless capped by a concrete slab. Where migration of moisture through retaining walls would be detrimental, the walls should be waterproofed.

Flexible Pavements

For planning purposes, based on our experience with similar projects and soils, we recommend the following minimum pavement sections for driveways and parking areas:

Material	Parking Areas	Driveway Areas
Class II Aggregate Base	6"	8"
Asphalt Concrete	2½"	2½"

Such pavements should be suitable for auto and light pickup truck traffic. Where heavier loads are anticipated, the pavement thickness should be increased to at least 3 inches of asphalt and about 10 to 16 inches of aggregate base, depending on anticipated loading. We can provide specific recommendations, if desired. The flexible pavement materials and methods used should conform to the quality requirements of the Caltrans Standard Specifications and the requirements of the City of Cotati.

Prior to subgrade preparation, all underground utilities in the paved areas should be installed and properly backfilled. Subgrade soils in highly expansive material areas should be uniformly moisture conditioned to at least 3 percent above optimum, compacted to at least 93 percent relative compaction, and provide a firm and nonyielding surface. The moisture conditioning should be sufficient to close any shrinkage cracks for their full depth. Scarifying and recompacting and/or overexcavation and replacement to achieve uniformity and proper moisture conditioning may be needed. The aggregate base materials should be placed in layers, moisture conditioned, and similarly compacted to at least 95 percent. The aggregate base should also be firm and nonyielding.

Future wetting and drying of the on-site expansive soils along pavement edges can occur. Pavement maintenance, especially repair of edge cracking, should be anticipated. Increased pavement performance and reduced future maintenance could be accomplished by underlying asphalt-paved areas with at least 12 inches of imported fill of low expansion potential or lime-treated on-site soil. Such materials, if used, should extend at least 3 feet beyond pavement edges, where attainable.

Conventional curb and sidewalk and/or adjacent landscaping with an automatic sprinkler system that provides an ample, fairly uniform distribution of water can also provide some benefit in reducing future maintenance. Where sidewalks or concrete driveway aprons are not immediately adjacent to the edge of pavement, a moisture cutoff barrier approximately 3 feet deep could be constructed behind the pavement edge. A typical cross-section of a moisture cutoff barrier is presented on Plate 14. Prior to the installation of moisture cutoff barriers, if used, on-site highly expansive soils adjacent to and within 3 feet of the pavement edges should be fully preswelled so as to close all shrinkage cracks for their full depth, as previously discussed.

Soil Engineering Drainage

Based on the results of our test borings and laboratory tests, we judge that the site soils can be classified into the following hydrologic soil groups[2] for use in storm water infiltration determination:

2 Per the United States Department of Agriculture

Average Depth (ft.)	Soil Description	Hydrologic Soil Group
0 to 1½	Clay Loam (CH)	C
1½ to 3½	Clay (CH)	D
3½ to 10	Sandy Loam (SM)	B

Ponding water will cause swelling of the site soils and would be detrimental to foundations. It is important that the area adjacent to the buildings be sloped to drain away from foundations. Positive surface drainage away from the buildings consisting of at least 1/4-inch per foot extending at least 4 feet out should be provided. The ground surface around the perimeter of the structures should be sloped to provide positive lateral drainage. The roof should be provided with gutters, and the downspouts should discharge onto paved areas or splash blocks draining at least 30 inches away from foundations or be connected to rigid plastic pipelines that discharge by gravity into planned storm drain facilities.

To help provide an outlet for water that could accumulate beneath the concrete floor slabs, perforated plastic pipes could be embedded in the grade below the slabs. The underslab subdrain system, if installed, should be configured so as to drain each bay created by interior and/or perimeter foundations. The underslab subdrain system should be connected to a nonperforated outlet pipe that extends through or beneath the perimeter foundation to a suitable discharge point. A typical cross-section of our recommended underslab subdrain is shown on Plate 15. We could provide additional consultation concerning the configuration and location of underslab subdrain systems during final design once foundation plans have been prepared. Roof downspouts and surface drains must be maintained entirely separate from underslab subdrains.

Where irrigated landscape areas abut the buildings, excess water can be trapped in soil layers along the edge of the buildings, increasing the risk of potential heave of the floor slab. We believe that the installation of the recommended compacted fill pad that extends to at least 5 feet beyond the building perimeter should provide an effective barrier to the infiltration of excess water from landscape areas. It should be recognized that concrete curbs and sidewalks, mowing strips, header boards, and raised berms can impede the flow of the surface water away from buildings, promote soil saturation, and contribute to seepage of water into underfloor areas. Where such landscaping elements are planned, surface and subsurface drainage features may need to be incorporated into the plans. We can provide specific recommendations, if desired. In addition, to further reduce the risk of moisture migration beneath floor slabs, any below grade cold joints in the perimeter foundations should be hot-mopped or waterproofed on the exterior side in some manner.

We have observed that the planting of trees close to foundations can result in significant loss of moisture in the soils adjacent to and beneath foundations from moisture uptake by the tree roots. Such loss of moisture can result in drying and shrinkage of the clayey soils and increase the risk of future distress to the building. Therefore, we recommend that, in general, trees be planted no closer to building foundations than one-half their maximum mature height. Studies have shown that some trees can remove moisture in the soils at even greater distances. Therefore, depending on the type of tree proposed, additional setbacks may be needed. We, along with a consulting arborist, can provide specific recommendations for planting of trees near the buildings, if desired.

Supplemental Geotechnical Services

We should review final grading and foundation plans for conformance with the intent of our recommendations. During site grading and foundation excavation operations, the soil engineer should provide intermittent observation and testing. The soil engineer should observe the conditions encountered, confirm needed overexcavation depths, and modify our recommendations, if warranted. Field and laboratory tests should be performed to ascertain that the recommended moisture contents and degrees of compaction are being attained. Concrete placement and reinforcing should be checked as stipulated on the project plans or as required by the Building Department. It is our understanding that approval from the Building Department must be obtained prior to the placement of concrete in foundation elements.

LIMITATIONS

We have performed the investigation and prepared this report in accordance with generally accepted standards of the soil engineering profession. No warranty, either express or implied, is given. It should be understood that our services were limited to the scope of work outlined above and specifically excluded other services including, but not limited to, an evaluation or analysis of soil chemistry, corrosion potential, mold, and soil/groundwater contamination.

Subsurface conditions are complex and may differ from those indicated by surface features or encountered at test boring locations. Therefore, variations in subsurface conditions not indicated on the logs could be encountered. If the project is revised, or if conditions different from those described in this report are encountered during construction, we should be notified immediately so that we can take timely action to modify our recommendations, if warranted.

Supplemental services as recommended herein are in addition to this investigation and are charged for on an hourly basis in accordance with our Standard Schedule of Charges. Such supplemental services are performed on an as-requested basis, and we can accept no responsibility for items we are not notified to check, nor for use or interpretation by others of information contained herein.

Site conditions and standards of practice change. Therefore, we should be notified to update this report if construction is not performed within 24 months.

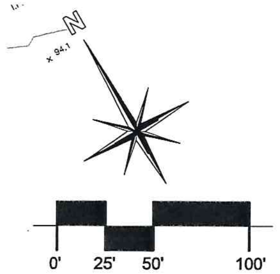
LIST OF PLATES

DISTRIBUTION

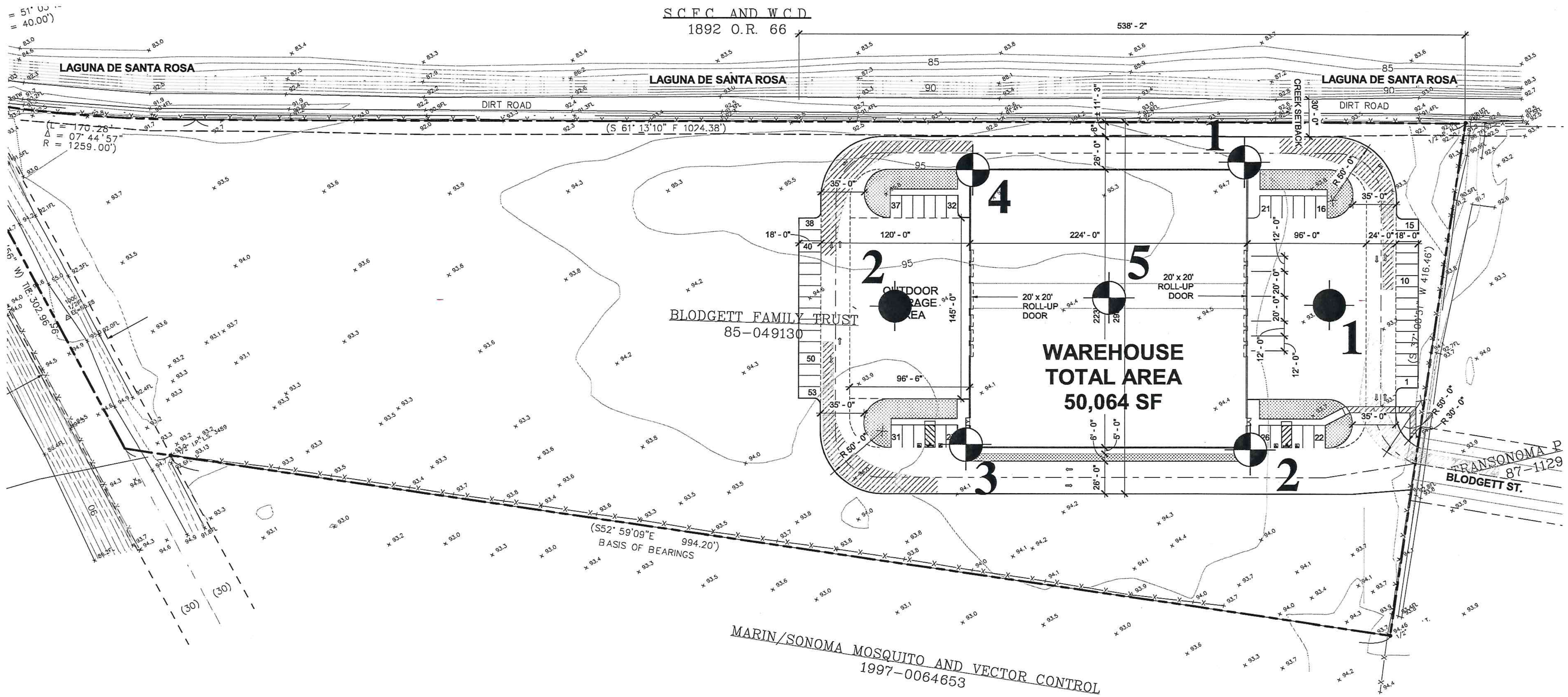
Copies submitted: 5

Sandell Holdings LLC
3348 Paradise Drive
Tiburon, CA 94920
Attention: Calvin Sandell
calvinsandell@gmail.com
bertsandell@gmail.com

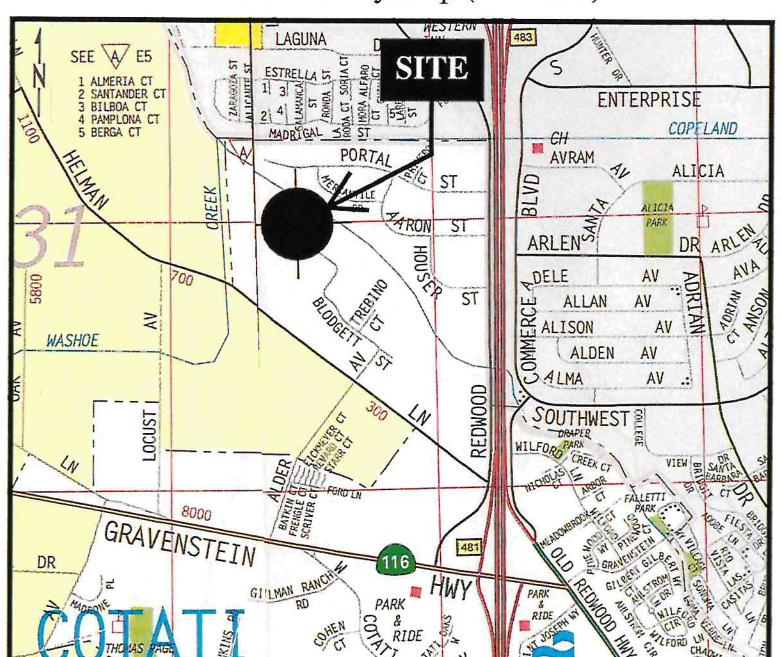
JM/JKR: nay/ra/Job No. 2266.1.1



Scale: 1 INCH = 100 FEET



Site Vicinity Map (No Scale)



KEY

= Approximate Test Boring Location

= Approximate Test Probe Location

REESE & ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS	Job No: 2266.1.1 Date: 03-19-21 Appr: JM	TEST BORING LOCATION PLAN AND SITE VICINITY MAP SANDELL WAREHOUSE COTATI, CALIFORNIA	PLATE 1

LOG OF BORING 1

Equipment: 6" FLIGHT AUGER

Elevation: ______ Date: 1-20-21

Laboratory Test Results or Remarks	Blows/foot *	Moisture Content (%)	Dry Density(pcf)	Depth (ft)	Description
				0	MOTTLED DARK GRAY AND DARK BROWN SANDY CLAY (CL), stiff to very stiff, moist, with pockets of plastic clay (CH)
LL = 47, PL = 20, PI = 27		17.2	107		
Percent Free Swell = 70 Percent Free Swell = 65	37	16.3	112		
				2	DARK GRAY SANDY CLAY (CH), stiff, moist, plastic
UC(P) = 4500+ Percent Free Swell = 80 Percent Free Swell = 45	50+	32.7	79		
					GRAY-BROWN FINE SANDY CLAY (CL), hard, wet
				4	
Percent Passing No. 200 Sieve = 65.9	50+	25.2	97		
				6	
				8	
		28.0	96		
Percent Passing No. 200 Sieve = 34.8	19				GRAY-BROWN VERY CLAYEY SAND (SC), medium dense, wet
				10	
UC(P) = 1250					BLUE-GRAY SANDY CLAY (CL), very stiff, wet, slightly plastic
UC(P) = 1750	23			12	
					(No free water encountered)

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CONSULTING GEOTECHNICAL ENGINEERS

Job No: 2266.1.1

Date: 3-19-21

Appr: Jm

LOG OF BORING 1

SANDELL WAREHOUSE
COTATI, CALIFORNIA

PLATE 2

*Converted to Standard Penetration Blow Counts

LOG OF BORING 2

Equipment: 6" FLIGHT AUGER

Elevation: ______ Date: 1-20-21

Laboratory Test Results or Remarks	Blows/foot *	Moisture Content (%)	Dry Density(pcf)
	29		
Percent Free Swell = 80	50	21.9	103
TxUU = 4640 (500)	50+	18.8	107
		15.3	102
TxUU = 2410 (1500)	40	13.8	109
UC(P) = 3250 Percent Free Swell = 95	30	32.2	91

Depth (ft): 0, 2, 4, 6, 8, 10, 12

Sample

MOTTLED DARK GRAY AND DARK BROWN SANDY CLAY (CL), soft to medium dense, moist to wet, with roots

DARK GRAY SANDY CLAY (CH), very stiff, moist

GRAY-BROWN SILTY FINE SAND (SM), very dense, moist

GRAY-BROWN CLAYEY SAND (SC), medium dense, moist to wet

DARK BLUE-GRAY SANDY CLAY (CL), medium stiff, wet

(No free water encountered)

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Job No: 2266.1.1

Date: 3-19-21

Appr: Jm

LOG OF BORING 2

SANDELL WAREHOUSE
COTATI, CALIFORNIA

PLATE

3

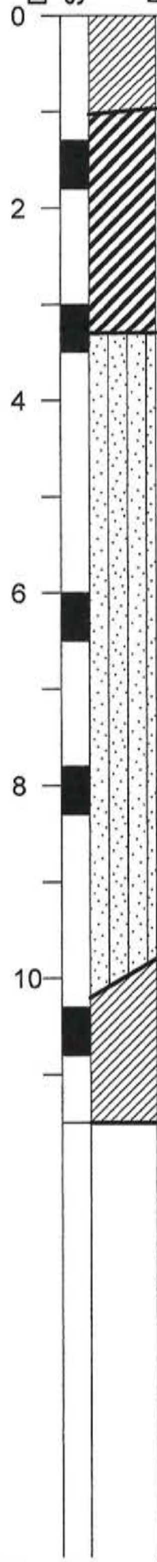
*Converted to Standard Penetration Blow Counts

LOG OF BORING 3

Equipment 6" FLIGHT AUGER

Elevation ______ Date 1-20-21

Laboratory Test Results or Remarks	Blows/foot *	Moisture Content (%)	Dry Density(pcf)	Depth (ft)
LL = 55, PL = 19, PI = 36 Percent Free Swell = 90	25	20.0	102	
Percent Free Swell = 75	50+	13.0	112	
	50+	15.9	112	6
Texture Analysis	40			8
UC(P) = 1250 Sieve Analysis	13	23.9	101	



DARK BROWN SANDY CLAY (CL), soft, moist to wet, with roots

VERY DARK GRAY SANDY CLAY (CH), very stiff, moist

YELLOW-BROWN SILTY SAND (SM), very dense, dry

OLIVE-BROWN SANDY CLAY (CL), stiff, wet

(No free water encountered)

REESE & ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS	Job No: 2266.1.1 Date: 3-19-21 Appr: Jm	LOG OF BORING 3 SANDELL WAREHOUSE COTATI, CALIFORNIA	PLATE 4

*Converted to Standard Penetration Blow Counts

LOG OF BORING 4

Equipment: 6" FLIGHT AUGER

Elevation: ________ Date: 1-20-21

Laboratory Test Results or Remarks	Blows/foot *	Moisture Content (%)	Dry Density(pcf)	Depth (ft)	Description
				0	DARK GRAY SANDY CLAY (CL), soft, wet, with roots
Texture Analysis	43				
				2	VERY DARK GRAY SANDY CLAY (CH), hard, wet
				4	
LL = 55, PL = 27, PI = 28 Percent Free Swell = 70	50+	27.3	87		GRAY-BROWN SANDY CLAY (CL), hard, wet
	50+			6	
UC(P) = 3500	48				
				8	
				10	
		21.0	105		
Percent Passing No. 200 Sieve = 30.7	24	18.3	110		GRAY-BROWN CLAYEY SAND (SC), medium dense, wet
					(No free water encountered)

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Job No: 2266.1.1

Date: 3-19-21

Appr: Jm

LOG OF BORING 4

SANDELL WAREHOUSE
COTATI, CALIFORNIA

PLATE
5

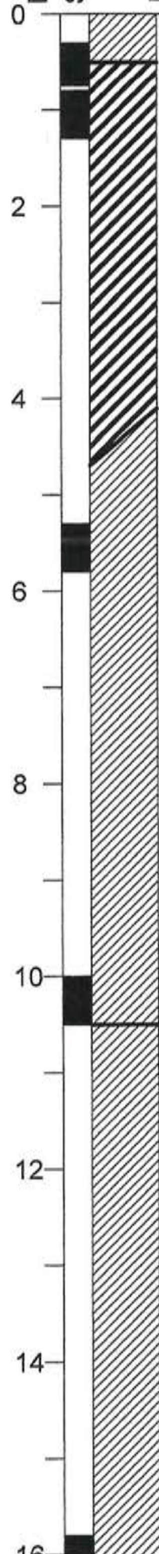
*Converted to Standard Penetration Blow Counts

LOG OF BORING 5

Equipment: 8" HOLLOW-STEM AUGER

Elevation: ______ Date: 3-6-21

Laboratory Test Results or Remarks	Blows/foot *	Moisture Content (%)	Dry Density(pcf)	Depth (ft)	Description
				0	MOTTLED DARK GRAY AND DARK BROWN SANDY CLAY (CL), soft, saturated, porous, with fine roots
UC(P) = 1750 Percent Free Swell = 70		23.5	95		
UC(P) = 2000 Percent Free Swell = 85	2	24.6	93		DARK GRAY SANDY CLAY (CH), soft, saturated, plastic
				2	
				4	GRAY-BROWN SANDY CLAY (CL), medium stiff, saturated
Percent Passing No. 200 Sieve = 68.8	4	26.0	91		
				6	becomes slightly plastic
				8	
Percent Passing No. 200 Sieve = 55.1	7	21.7		10	BLUE-GRAY SANDY CLAY (CL), medium stiff to stiff, wet, slightly plastic
				12	
				14	
				16	



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Job No: 2266.1.1

Date: 3-19-21

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LOG OF BORING 5

SANDELL WAREHOUSE
COTATI, CALIFORNIA

PLATE **6a**

*Converted to Standard Penetration Blow Counts

LOG OF BORING 5

Equipment 8" HOLLOW-STEM AUGER

Elevation ______ Date 3-6-21

Laboratory Test Results or Remarks	Blows/foot *	Moisture Content (%)	Dry Density(pcf)	Depth (ft)	Description
UC(P) = 2250	6	33.2	89	16	
					increased drilling difficulty per driller
				18	
				20	
UC(P) = 2500	10				
				22	
				24	
UC(P) = 1500	8				
				26	
				28	
				30	
Percent Free Swell = 60	11	29.2			
					(No free water encountered)

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Job No: 2266.1.1

Date: 3-19-21

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LOG OF BORING 5

SANDELL WAREHOUSE
COTATI, CALIFORNIA

PLATE **6b**

*Converted to Standard Penetration Blow Counts

LOG OF PROBE 1

Equipment: 6" FLIGHT AUGER

Elevation: ______ Date: 1-20-21

Laboratory Test Results or Remarks	Blows/foot *	Moisture Content (%)	Dry Density(pcf)	Depth (ft)	Sample	Description
				0		DARK BROWN SANDY CLAY (CL), soft, wet
UC(P) = 3500						DARK GRAY SANDY CLAY (CH), medium stiff, moist
UC(P) = 4500+ Percent Free Swell = 90	35	15.7	113	2		
						YELLOW-BROWN SILTY SAND (SM), dense, moist
				4		
						(No free water encountered)

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CONSULTING GEOTECHNICAL ENGINEERS

Job No: 2266.1.1

Date: 3-19-21

Appr: [signature]

LOG OF PROBE 1

SANDELL WAREHOUSE
COTATI, CALIFORNIA

PLATE 7

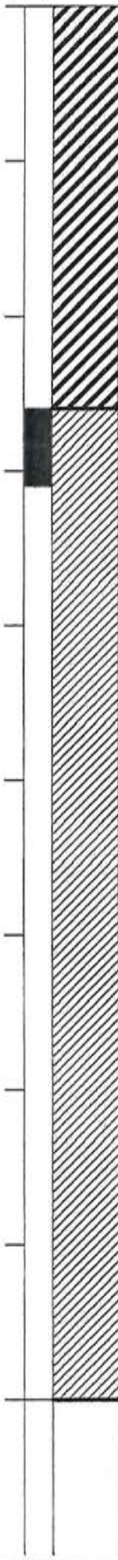
*Converted to Standard Penetration Blow Counts

LOG OF PROBE 2

Equipment: 6" FLIGHT AUGER

Elevation: ______ Date: 1-20-21

Laboratory Test Results or Remarks	Blows/foot *	Moisture Content (%)	Dry Density(pcf)	Depth (ft)	Sample	Description
				0		DARK GRAY SANDY CLAY (CH), soft, wet, with roots
				2		
Percent Free Swell = 75	50+	26.5	84		■	BROWN SANDY CLAY (CL), hard, wet, with pockets of plastic clay
				4		
				6		
				8		becomes saturated
						(No free water encountered)



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CONSULTING GEOTECHNICAL ENGINEERS

Job No: 2266.1.1

Date: 3-19-21

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LOG OF PROBE 2

SANDELL WAREHOUSE
COTATI, CALIFORNIA

PLATE **8**

*Converted to Standard Penetration Blow Counts

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			TYPICAL NAMES	
COARSE GRAINED SOILS MORE THAN HALF IS LARGER THAN No. 200 SIEVE	GRAVEL MORE THAN HALF OF COARSE FRACTION IS LARGER THAN No. 4 SIEVE SIZE	CLEAN GRAVEL WITH LESS THAN 5% FINES	GW	WELL GRADED GRAVEL, GRAVEL-SAND MIXTURE
			GP	POORLY GRADED GRAVEL, GRAVEL-SAND MIXTURE
		GRAVEL WITH OVER 12% FINES	GM	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURE
			GC	CLAYEY GRAVEL, GRAVEL-SAND-CLAY MIXTURE
	SAND MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN No. 4 SIEVE SIZE	CLEAN SAND WITH LESS THAN 5% FINES	SW	WELL GRADED SAND, GRAVELLY SAND
			SP	POORLY GRADED SAND, GRAVELLY SAND
		SAND WITH OVER 12% FINES	SM	SILTY SAND, GRAVEL-SAND-SILT MIXTURE
			SC	CLAYEY SAND, GRAVEL-SAND-CLAY MIXTURE
FINE GRAINED SOILS MORE THAN HALF IS SMALLER THAN No. 200 SIEVE	SILT AND CLAY LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILT, ROCK FLOUR, SANDY OR CLAYEY SILT WITH LOW PLASTICITY
			CL	INORGANIC CLAY OF LOW TO MEDIUM PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAY (LEAN)
			OL	ORGANIC CLAY AND ORGANIC SILTY CLAY OF LOW PLASTICITY
	SILT AND CLAY LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOIL, ELASTIC SILT
			CH	INORGANIC CLAY OF HIGH PLASTICITY, GRAVELLY, SANDY OR SILTY CLAY (FAT)
			OH	ORGANIC CLAY OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILT
HIGHLY ORGANIC SOILS			PT	PEAT AND OTHER HIGHLY ORGANIC SOILS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

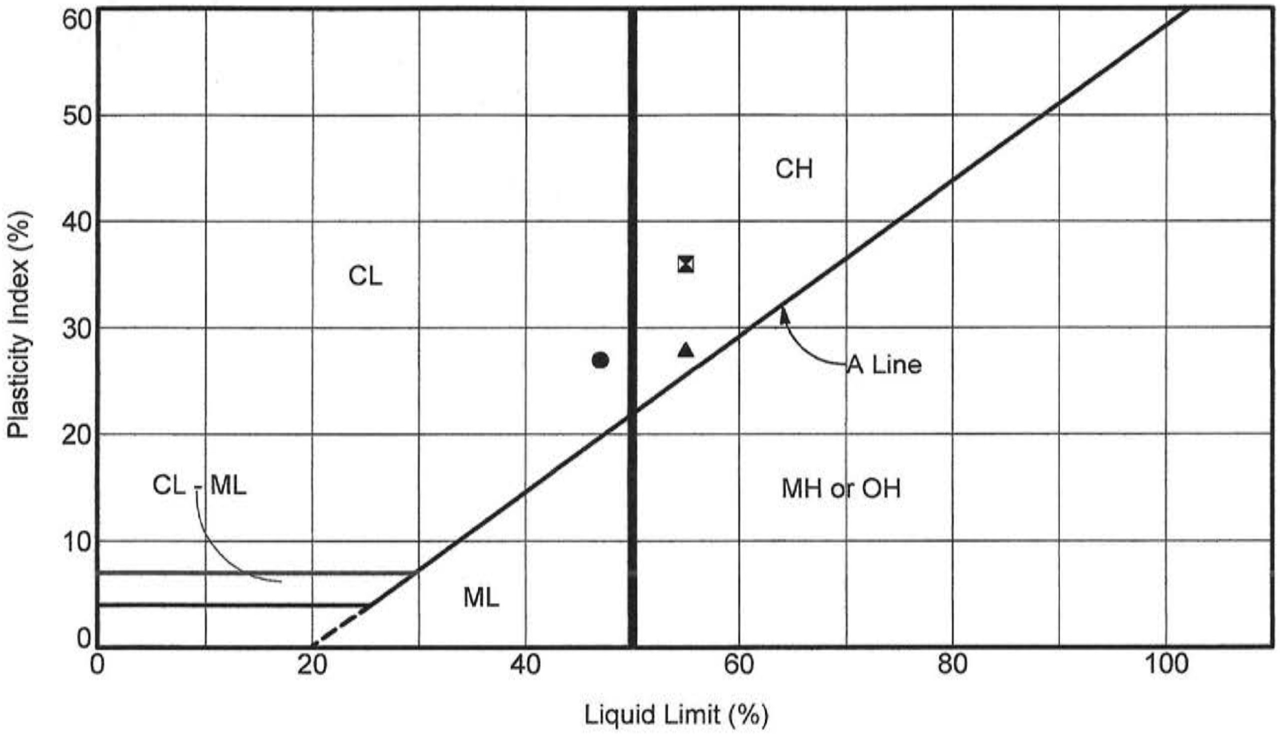
KEY TO TEST DATA

						Shear Strength, psf	Confining Pressure, psf
EI	–	Expansion Index	TxUU	–	Unconsolidated Undrained Triaxial	320	(2600)
Consol	–	Consolidation	TxCU	–	Consolidated Undrained Triaxial	320	(2600)
LL	–	Liquid Limit (in %)	DSCD	–	Consolidated Drained Direct Shear	2750	(2000)
PL	–	Plastic Limit (in %)	FVS	–	Field Vane Shear	470	
PI	–	Plasticity Index	LVS	–	Laboratory Vane Shear	700	
SA	–	Sieve Analysis	UC	–	Unconfined Compression	2000	*
G_s	–	Specific Gravity	UC(P)	–	Laboratory Penetrometer	700	*
■		"Undisturbed" Sample					
□		Bulk Sample					

Notes: (1) All strength tests on 2.8" or 2.4" diameter samples unless otherwise indicated.

* Compressive Strength

REESE & ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS	Job No: 2266.1.1 Date: 3-19-21 Appr: JM	SOIL CLASSIFICATION CHART AND KEY TO TEST DATA SANDELL WAREHOUSE COTATI, CALIFORNIA	PLATE 9



ASTM D 4318-98

Symbol	Classification and Source	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Free Swell (%)
●	**MOTTLED DARK GRAY AND DARK BROWN SANDY CLAY (CL)** **Test Boring 1 at 1.0 feet**	**47**	**20**	**27**	**70**
⧗	**VERY DARK GRAY SANDY CLAY (CH)** **Test Boring 3 at 1.3 feet**	**55**	**19**	**36**	**90**
▲	**VERY DARK GRAY SANDY CLAY (CH)** **Test Boring 4 at 4.3 feet**	**55**	**27**	**28**	**70**

REESE & ASSOCIATES
CONSULTING GEOTECHNICAL ENGINEERS

Job No: 2266.1.1

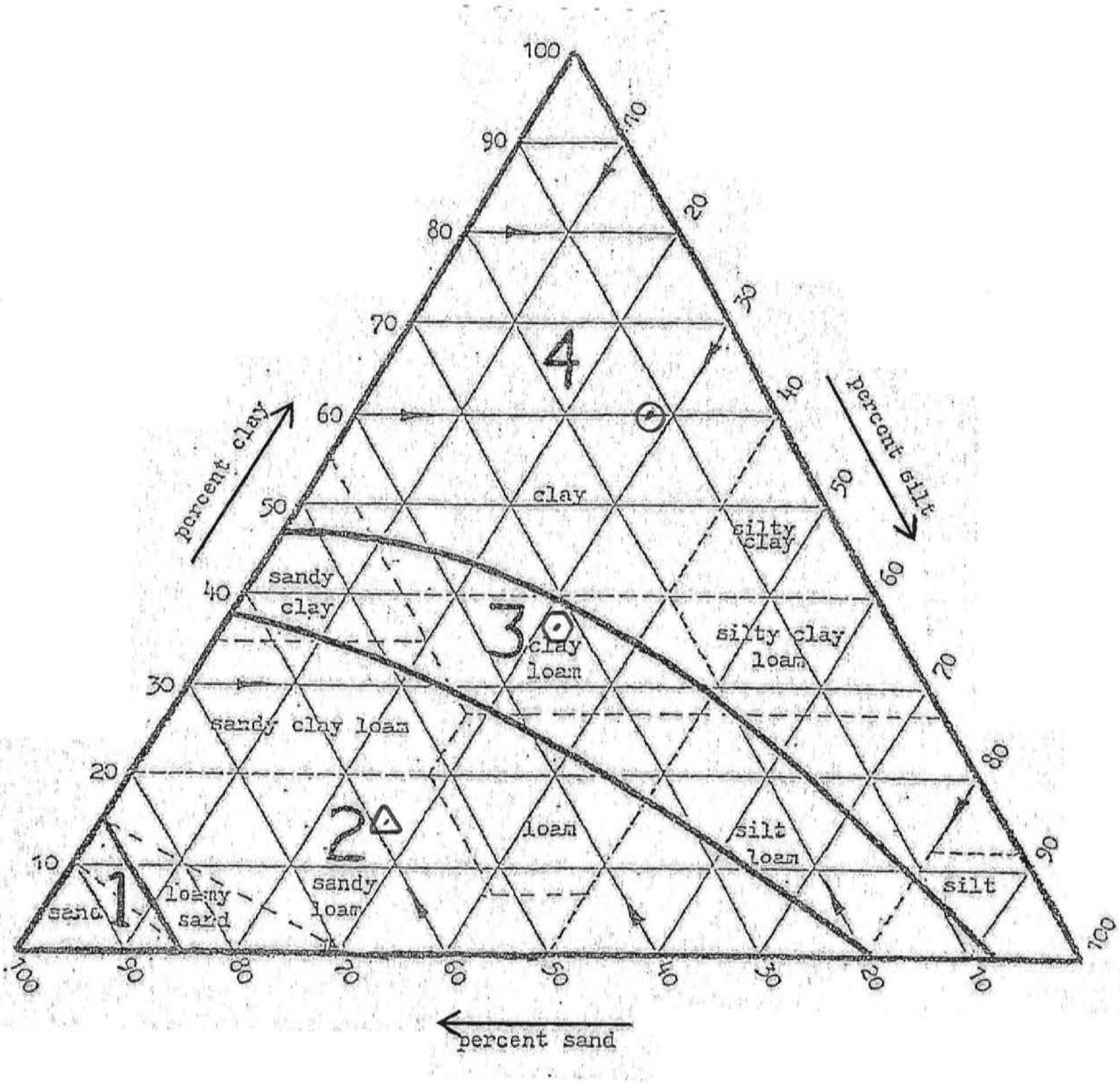
Date: 3-19-21

Appr: Jm

ATTERBERG LIMITS TEST RESULTS

SANDELL WAREHOUSE
COTATI, CALIFORNIA

PLATE
10



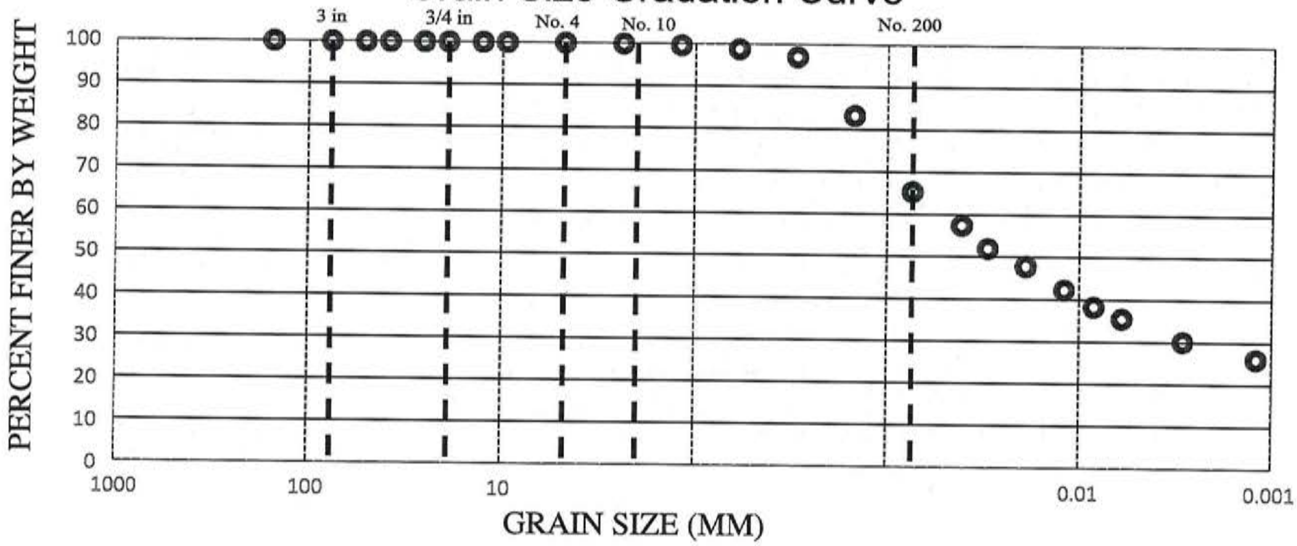
Symbol	Sample Source	Soil Description	Percolation Suitability Zone	Hydrologic Soil Group
⊙	Boring 2 at 1.3 feet	VERY DARK BROWN SANDY CLAY (CH)	4	D
△	Boring 3 at 7.8 feet	ORANGE-BROWN SILTY SAND (SM)	2	B
⬡	Boring 4 at 1.0 feet	VERY DARK BROWN SANDY CLAY (CH)	3	C

REESE & ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS	Job No: 2266.11 Date: 03-23-21 Appr: Jm	TEXTURE ANALYSIS TEST RESULTS SANDELL WAREHOUSE COTATI, CALIFORNIA	PLATE 11

Sample Source: Test Boring 3 at 10.3 feet   Tested By: CME   Date: 02-08-21

Classification: OLIVE-BROWN SANDY CLAY (CL)

Grain Size Gradation Curve



Gravel % 0.0		Sand % 34.7		Fines % 65.3
Sieve Size	Percent Passing Through Sieve	Sieve Size	Percent Passing Through Sieve	Percentage of Material Passing Through No. 200 Sieve
6"	100	No. 8	99.9	
3"	100	No. 10	N/A	
2"	100	No. 16	99.6	
1½"	100	No. 20	N/A	
1"	100	No. 30	98.8	
¾"	100.0	No. 40	N/A	
½"	100.0	No. 50	97.0	
⅜"	100.0	No. 100	83.2	
No. 4	100.0	No. 200	65.3	

REESE & ASSOCIATES
CONSULTING GEOTECHNICAL ENGINEERS

Job No: 2266.1.1

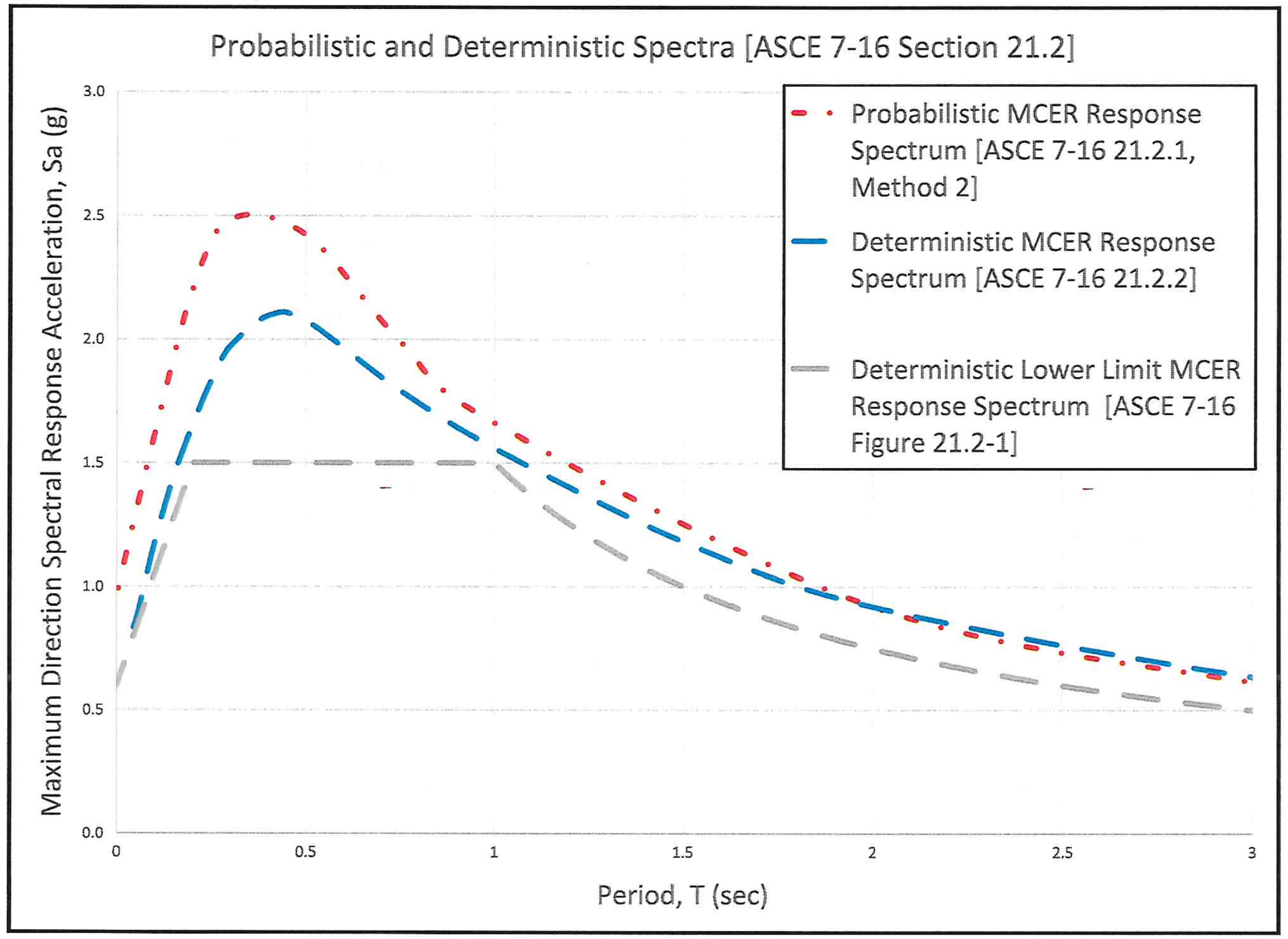
Date: 03-19-21

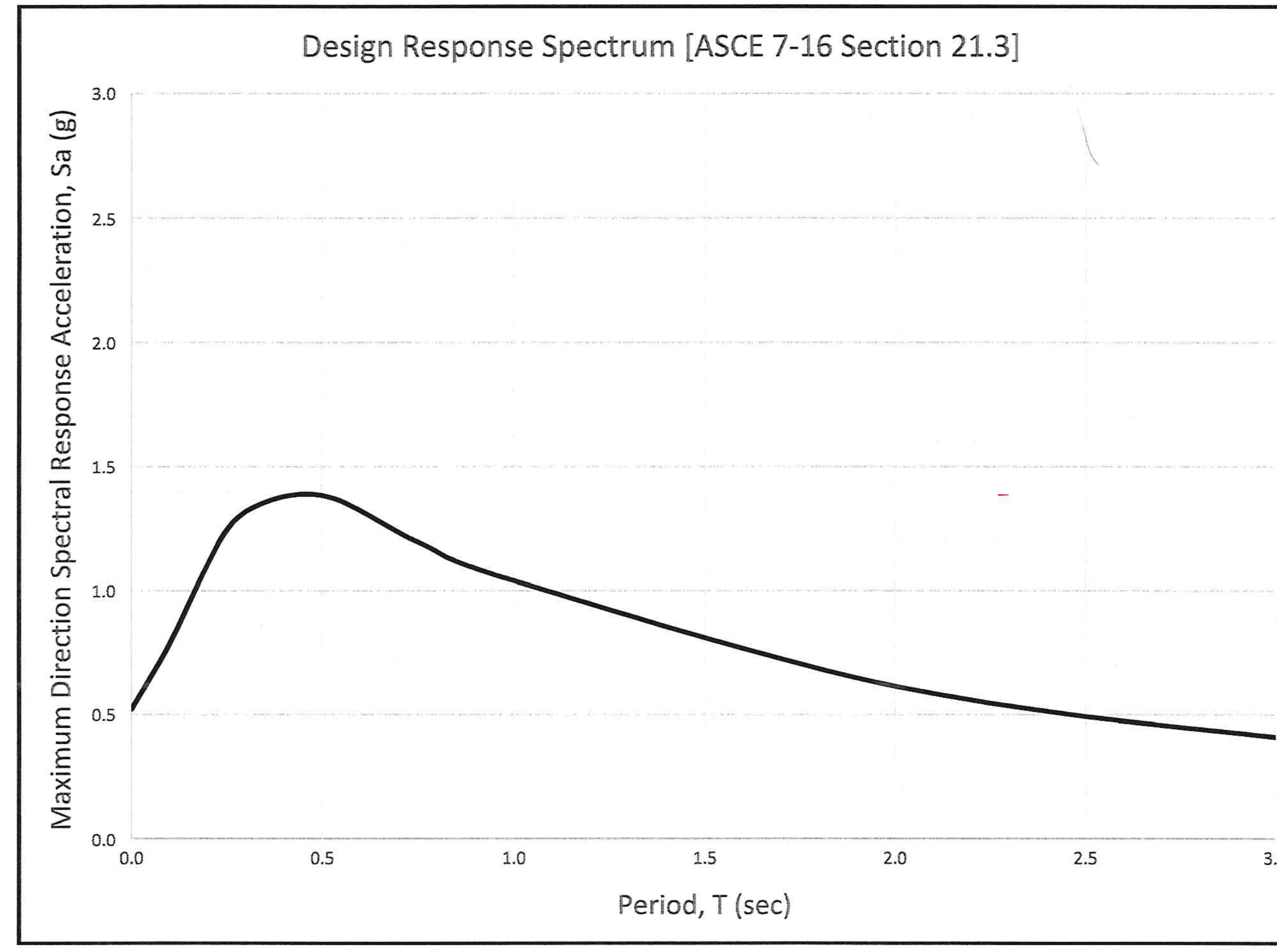
Appr: Jm

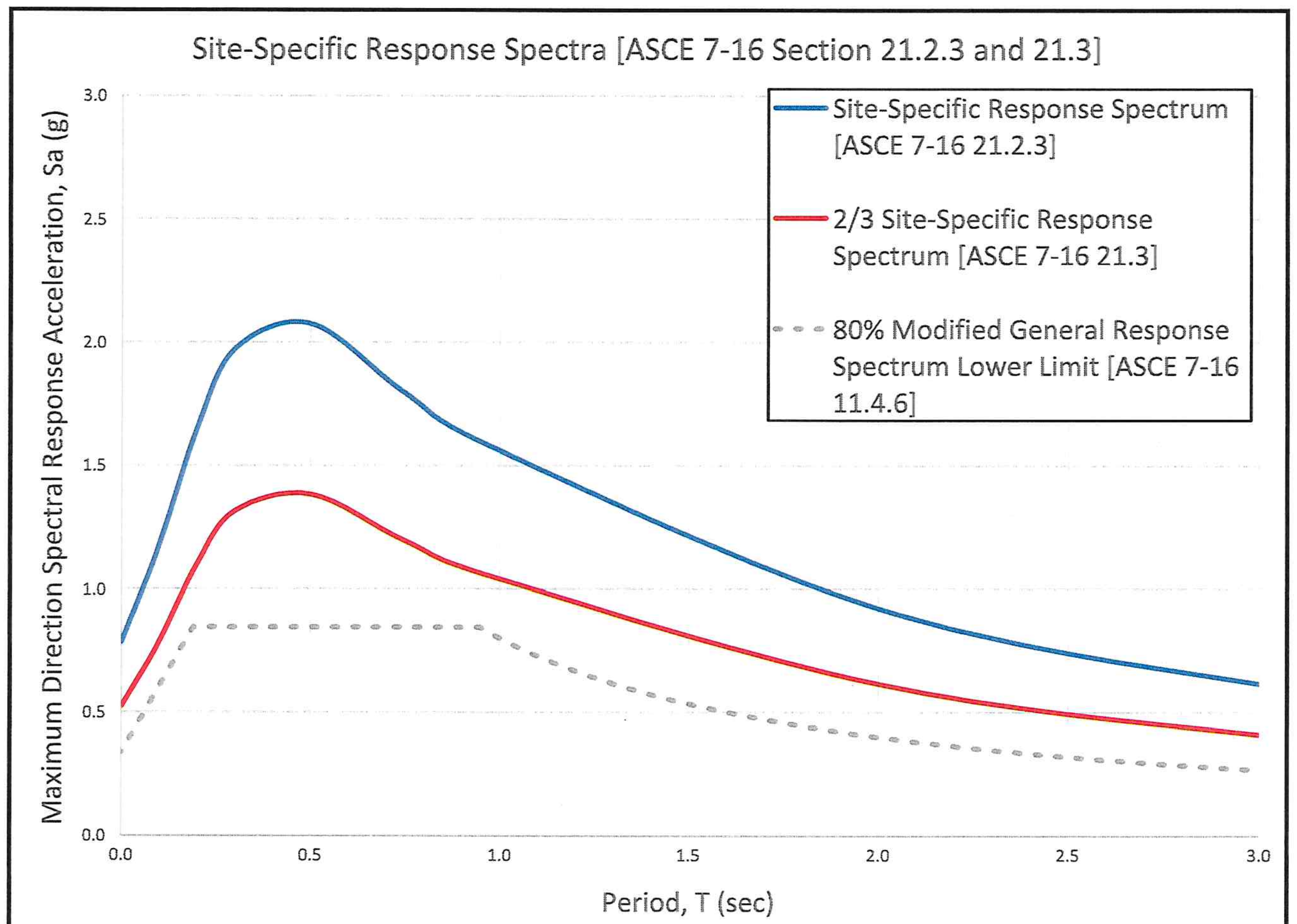
SIEVE ANALYSIS AND HYDROMETER TEST RESULTS

SANDELL WAREHOUSE
COTATI, CALIFORNIA

PLATE 12







SUMMARY OF SITE-SPECIFIC GROUND MOTION HAZARD ANALYSIS

Period [sec]	1% Collapse-in-50-years Probabilistic Spectrum [g]	Max Direction Scaled Probabilistic MCE_R Spectrum [g]	84th-Percentile Deterministic Spectrum [g]	Max Direction Scaled Deterministic MCE_R Spectrum [g]	Site-Specific MCE_R Spectrum [g]	80% Modified General Response Spectrum [g]	Design Response Spectrum [g]
0	0.809	0.963	0.659	0.784	0.784	0.338	0.523
0.1	1.358	1.616	0.992	1.180	1.180	0.605	0.787
0.2	1.824	2.207	1.370	1.657	1.657	0.844	1.105
0.3	2.038	2.486	1.619	1.975	1.975	0.844	1.317
0.5	1.969	2.422	1.687	2.075	2.075	0.844	1.383
0.75	1.606	1.991	1.446	1.793	1.793	0.844	1.195
1	1.339	1.660	1.258	1.560	1.560	0.800	1.040
2	0.743	0.921	0.743	0.921	0.921	0.400	0.614
3	0.493	0.616	0.509	0.637	0.616	0.267	0.411
4	0.353	0.445	0.361	0.455	0.445	0.200	0.297
5	0.268	0.338	0.265	0.334	0.334	0.160	0.223

S_S= 1.583 g		S_1= 0.600 g	T_S= 0.990
S_{DS}= 1.245 g		S_{D1}= 1.233 g	

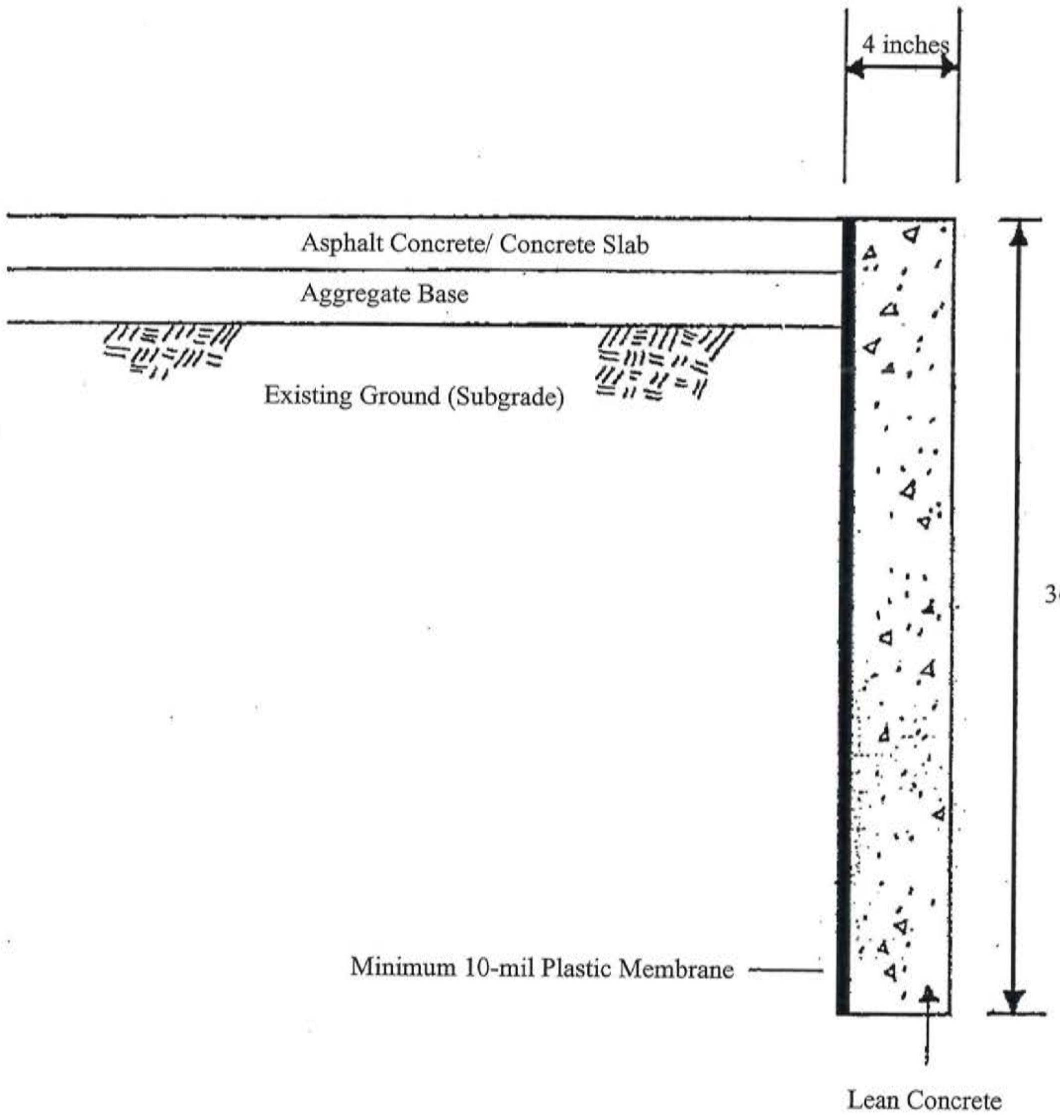
Latitude, Longitude: 38.34068840, -122.7195394

REESE & ASSOCIATES
CONSULTING GEOTECHNICAL ENGINEERS

Job No: 2266.1.1
Date: 03-19-21
Appr: Jm

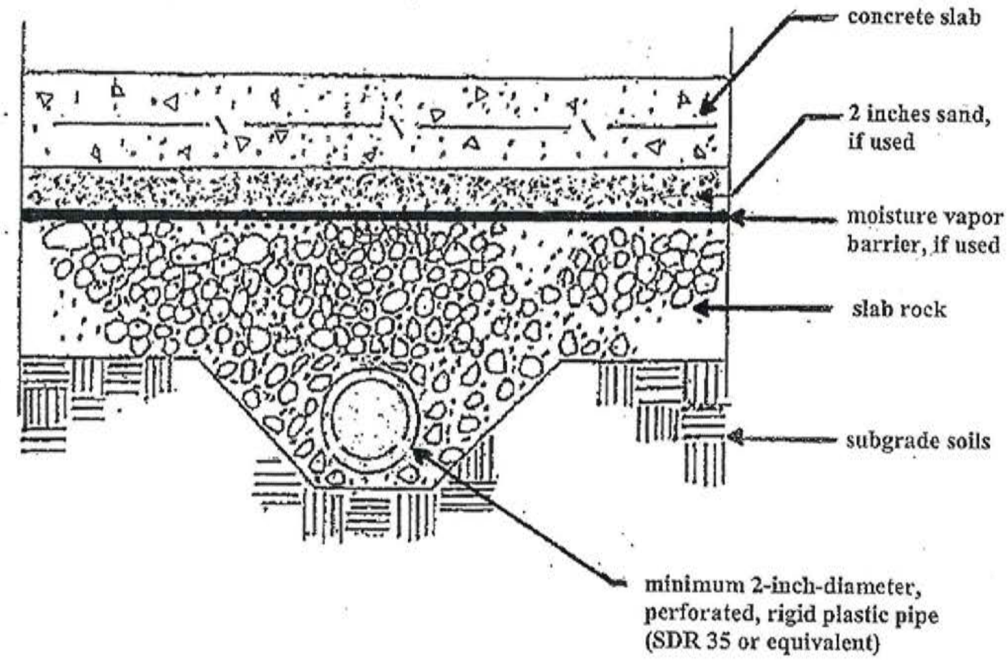
SITE-SPECIFIC GROUND MOTION HAZARD ANALYSIS
SANDELL WAREHOUSE
COTATI, CALIFORNIA

PLATE 13



Not to Scale

REESE & ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS	Job No: 2266.1.1 Date: 03-22-21 Appr: Jm	TYPICAL CROSS-SECTION MOISTURE CUTOFF BARRIER SANDELL WAREHOUSE COTATI, CALIFORNIA	PLATE 14



REESE & ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS	Job No: 2266.1.1 Date: 03-22-21 Appr: Jm	TYPICAL CROSS-SECTION UNDERSLAB SUBDRAIN SANDELL WAREHOUSE COTATI, CALIFORNIA	PLATE 15

Gmail **Bert Sandell <bertsandell@gmail.com>**

RE: Cotati - Building 2

Reese Associates <reese@reeseandassoc.com> Wed, Dec 22, 2021 at 3:06 PM
To: Bert Sandell <bertsandell@gmail.com>
Cc: Calvin Sandell <calvinsandell@gmail.com>

Hello Bert,

Thank you for reaching out. For the second phase of the project, based on the conditions exposed during recent grading and our knowledge of the subsurface conditions on the property, we conclude that the recommendations in our soil report dated March 26, 2021 would still be applicable to the proposed construction. Please see attached for a copy of the soil report and a soil engineering consultation report with lime treatment criteria dated September 13, 2021 (Revised October 25, 2021). We anticipate that these will fulfill the requirements of a preliminary soil report.

As discussed with you, we will be retained by you to perform additional subsurface exploration work for Building 2 via test pits once the weather allows your contractor to provide the needed equipment. The intent of these test pits would be to establish depths of overexcavation in the building area and allow for more accurate grading estimates. After the test pits, we can provide you with a formal letter that will serve as the soil report for Building 2.

Please call if you have questions.

Thanks,

Joe Mauney, P.E.

Project Engineer

Reese and Associates

Consulting Geotechnical Engineers

134 Lystra Court, Suite C

Santa Rosa, CA 95403

Tel: 707-528-3078

Fax: 707-528-2837

reese@reeseandassoc.com

reeseandassoc.com

From: Bert Sandell <bertsandell@gmail.com>
Sent: Wednesday, December 22, 2021 2:51 PM
To: Reese Associates <reese@reeseandassoc.com>
Cc: Calvin Sandell <calvinsandell@gmail.com>
Subject: Cotati - Building 2

Joe,

Thanks for all your help thus far with our 380 Blodgett Street (formerly 597 Helman Lane), Cotati, CA project (Building 1). We know that we have a lot more work to do. In related business, on or about January 5, 2022, we intend to submit a Planning Application to the City of Cotati for a Building 2 to be located to the west of Building 1. Please see the attached diagram that shows the general site plan for Building 2. We would very much like to work with you, Jeff and the rest of your team on this expansion, and we will need a preliminary soils report prepared.

Thanks & Best Regards,

Bert

2 attachments

sandell warehouse 2266.1.13 sec lime treat revised 10-25-21.pdf
1053K

sandell warehouse 2266.1.1 si.pdf
15021K

REESE CONSULTING GEOTECHNICAL
& ASSOCIATES ENGINEERS

134 LYSTRA COURT
TELEPHONE (707) 528-3078

REESE@REESEANDASSOC.COM

SANTA ROSA, CA 95403
FACSIMILE (707) 528-2837

September 13, 2021
(Revised October 25, 2021)

Job No. 2266.1.13

Sandell Holdings LLC
3348 Paradise Drive
Tiburon, CA 94920
Attention: Calvin Sandell
calvinsandell@gmail.com

Report
Soil Engineering Consultation
Lime-Treated Soils
Sandell Warehouse
Cotati, California

As requested, this report summarizes the results of our soil engineering consultation concerning the use of lime-treated on-site soils at the planned warehouse building at 597 Helman Lane in Cotati, California. We performed a soil investigation for the project, and the results were presented in our report dated March 26, 2021. In that report, we provided recommendations for site grading that included providing a 30-inch-thick moisture confining layer of properly compacted, imported, nonexpansive fill over the highly expansive on-site soils. We understand that lime treatment of the on-site soils is being considered in lieu of off hauling the excavated soils and importing nonexpansive fill.

CONSULTATION

We judge that on-site soils treated with high calcium lime could be used in the upper 30 inches of the building pad as an alternative to imported fill. For estimating purposes, based on our experience on nearby sites, we judge that the percentage of lime needed to reduce the expansion potential of the on-site expansive upper clays would be about 6 percent by dry weight. However, if lime-treated fill is the desired option, laboratory testing should be performed to confirm the actual percentage of lime required.

For paved areas, 12 inches of subgrade could be lime treated with a similar percentage of lime to reduce the planned pavement section. Based on the California Test 301 procedure, we have calculated the following pavement sections for natural soil subgrade and lime-treated subgrade at several traffic indexes (T.I.). For design, we assumed a laboratory stabilometer Resistance (R-value) of 5 for the on-site soil subgrade. The results of previous R-value tests on local sites with similar soils indicate that adding 6 percent by dry weight of hydrated lime raises their R-Value above 40.

		Thickness (inches)		
General Area	Assumed T.I.	Asphalt Concrete	Class 2 Aggregate Base*	Lime-Treated Subgrade**
Heavy Truck and Storage Area	7.0	4	15.5	--
	7.0	4	6	12
	7.0	5	13.5	--
	7.0	5	4	12
Heavy Truck and Storage Area	5.5	3	12	--
	5.5	3	5	12
	5.5	5	8	--
	5.5	5.5	0	12
Automobile and Light Pickup Truck Driveways	3.7	2.5	8	--
	3.7	2.5	4	12
Automobile and Light Pickup Truck Parking	3.2	2.5	6	--
	3.2	2.5	4	12

* Minimum R-Value 78
** Minimum R-Value 40

Prior to subgrade preparation, all underground utilities in the paved areas should be installed and properly backfilled. Subgrade soils in highly expansive material areas should be uniformly moisture conditioned to at least 3 percent above optimum, compacted to at least 93 percent relative compaction, and provide a firm and nonyielding surface. The moisture conditioning should be sufficient to close any shrinkage cracks for their full depth. Scarifying and recompacting and/or overexcavation and replacement to achieve uniformity and proper moisture conditioning may be needed. Lime-treated subgrade soils should be compacted to at least 95 percent relative compaction.

We trust this provides the information needed at this time. If you have questions or wish to discuss this in more detail, please do not hesitate to contact us.

Yours very truly,

REESE & ASSOCIATES

Joseph M. Mauney
Civil Engineer No. 85560

REGISTERED PROFESSIONAL ENGINEER
JOSEPH MARTIS MAUNEY
No. C85560
EXP. 09-30-22
CIVIL
STATE OF CALIFORNIA

Jeffrey K. Reese
Civil Engineer No. 47753

REGISTERED PROFESSIONAL ENGINEER
JEFFREY KENT REESE
No. C 47753
EXP. 12-31-21
STATE OF CALIFORNIA

JM/JKR.nay/ra/Job No. 2266.1.13
Copies Submitted: 3

cc: CaliChi Design Group
Attention: Landon Odom
lodom@calichi.com

Storm Water Low Impact Development Report
For
Sandell Distribution Warehouse – Building Phase 2

380 Blodgett Street
Cotati, CA 94931

Prepared for:
Sandell Holdings LLC
3348 Paradise Drive
Tiburon, CA 94920

Prepared by:
CaliChi Design Group
Reco V. Prianto, P.E., QSD+QSP, LEED AP
3240 Peralta Street #3
Oakland, CA 94608
(510) 250-7877

July 11, 2022

Table of Contents

List of Appendices

1.0 Project Narrative

1.0 Project Description

The proposed project is located on an empty parcel of land, APN: 046-073-006, adjacent to the Laguna de Santa Rosa. The total parcel area is approximately 356,810 square feet (8.191 acres).

The proposed project consists of a new 35,500 sf industrial warehouse building with a surrounding parking lot, drive aisle, grading, water quality, retention and utility improvements situated directly West of the Phase 1 project currently under construction. The proposed building will have two truck docks; one on the east and one on the west side with a new trash enclosure situated just to the southeast of the proposed Phase 2 building.

1.1 Existing Conditions

The existing site is a flag lot off of Helman Lane that has a 50,064-sf Phase 1 industrial building that is under construction. The location on the parcel for the Phase 2 building is currently an empty grass field used in the past for agricultural purposes. As aforementioned, the Phase 2 location is bordered by the Laguna de Santa Rosa to the North; the Phase 1 industrial site currently under construction to the east; the Marin-Sonoma Mosquito Control building to the south, and an empty agricultural field to the west.

The site has mapped and documented wetlands along the south and west edges and the development plan allows for a 25-foot setback for proposed improvements. In addition, a Letter of Map Revision (LOMR) was approved by FEMA to more accurately reflect the 1090-year flood zones on-site of approximately 20,468 sf spread across the far northeast and northwest corners of the parcel. An underground storm drain outfall line is proposed to cross the 100-year flood zone in the northwest corner of the parcel, and all grades will be returned to their existing elevations upon completion of construction. No other construction is proposed in the 100-year floodplain zones.

Per the Soil Investigation Report performed by Reese & Associates on March 26, 2021, the existing soil has the following classification with its average depth, respectively. Type C, clay loam, 0-1.5 ft, Type D, Clay, 1.5-3.5 ft, and Type B, sandy loam, 3.5-10 ft. In addition, "Groundwater was not encountered in the test borings during our exploration. However, saturated soils were noted at a depth of about 15 feet in our deep test boring. The groundwater, if present, was likely sealed-off from the borehole by the clay cuttings. Groundwater levels can vary seasonally and can rise and fall several feet annually, depending on seasonal climatic conditions."

1.2 Project Triggers

This project will create over 10,000 SF of impervious area, which will trigger the need to implement permanent storm water BMP's, including, 100% volume capture and treatment of runoff.

In addition, since all proposed tributary areas contain new impervious area, we need to implement trash capture measures throughout the site. The proposed trash enclosure will require a floor drain that is routed to the sanitary sewer system for any potential seepage.

2.0 Pollution Prevention and Runoff Reduction Measures

The site will capture and retain 100% of its runoff volume based on the Santa Rosa LID manual.

2.1 Proposed BMP's

This site proposes to use the roadside bio-retention containing drain rock with 0.40 void space to satisfy the 100% Volume Capture Requirement to treat 100% of the on-site runoff. For reference throughout this report and the calculations; these will be referred to as BMP-1, -2, -3 & -4.

The delineated drainage basins, described in more detail within the accompanied Hydraulics and Hydrology Report, all flow to their respective roadside bio-retention BMP's (BMP-1 through BMP-4) where the 10-year storm is retained. An overflow inlet has been designed in each BMP in order to capture and convey runoff in excess of the required volume capture quantity. There are four of these BMP's spread throughout the site and referenced as BMP-1, BMP-2, BMP-3, and BMP-4.

These BMPs are considered Priority 2 of the city standard details. In certain areas, the detail has been slightly modified to work with the specific site conditions and the soil and retention materials have been modified and approved by the City of Cotati for the Phase 1 project and these changes will be implemented on the Phase 2 project as well. The BMPs are sized using the Santa Rosa Low Impact Development calculator and specifically placed to capture all the runoff throughout the site.

2.2 Volume Capture Calculations

The Santa Rosa Calculation Spreadsheet has been used to size the BMPs. Within the calculator, the drainage basins are separated by the type of cover within each basin in order to calculate an accurate CN value for each section. The composite CN number is then used to determine the required amount of hydromodification that is required for each basin.

Drain rock will be used in the bio-retention trench at various depths as required for each BMP using a porosity of 0.40 for the drain rock volume. The required volume, actual volume, and depth of drainage rock for each retention chamber is shown in the table below.

Subsurface Retention Pond	Required Retention Volume (cf)	Provided Retention Volume (cf)	Depth of Drain Rock (ft)
BMP-1	821.9	1,032.1	2.9
BMP-2	972.7	1,204.3	2.9
BMP-3	551.9	601.6	2.9
BMP-4	2,662.9	2,811.5	2.9

These values can also be found in ***Appendix C*** of this report.

To help clarify the location of the bio-treatment planters and subsurface retention trenches, the following descriptions are given. These can also be seen on the Stormwater Control Plan in ***Appendix B*** of this report.

BMP-1: This BMP accepts runoff from PR-1A, PR-1B & PG-1C. It's located just South of the Southeast quadrant of the building and the outfall pipe runs south and eventually discharges to an existing outfall to the Laguna in the Northwest corner of the site.

BMP-2: This BMP accepts runoff from PR-2B and is located near the southeastern corner of the site and the outfall pipe runs Northwest and eventually discharges to an existing outfall to the Laguna in the Northwest corner of the site. It should be noted that this BMP was sized to include the area of PR-2C, however PR-2C does not actually drain into it due to the elevation being approximately 3ft lower than the surrounding grades and is infeasible to route drainage into a BMP.

BMP-3: This BMP accepts runoff from PR-3A and PG-3B. It's located near the Northeast corner of the site and the outfall pipe runs Northwest and eventually discharges to an existing outfall to the Laguna in the Northwest corner of the site.

BMP-4: This BMP accepts runoff from PR-4A & PG-4B. It's located near the Northwest corner of the site and the outfall pipe runs North and eventually discharges to an existing outfall to the Laguna in the Northwest corner of the site.

2.3 Maintenance

BMP Maintenance:

At a minimum, each roadside bio-retention needs to be inspected twice annually for standing water beyond the drawdown period, excessive erosion of soil, or dead vegetation and plantings within the planter. If ponded water is observed, the perforated pipes and / or inlets within the planter may need maintenance and regrading or replacement of the soils may be necessary to prevent mosquito breeding.

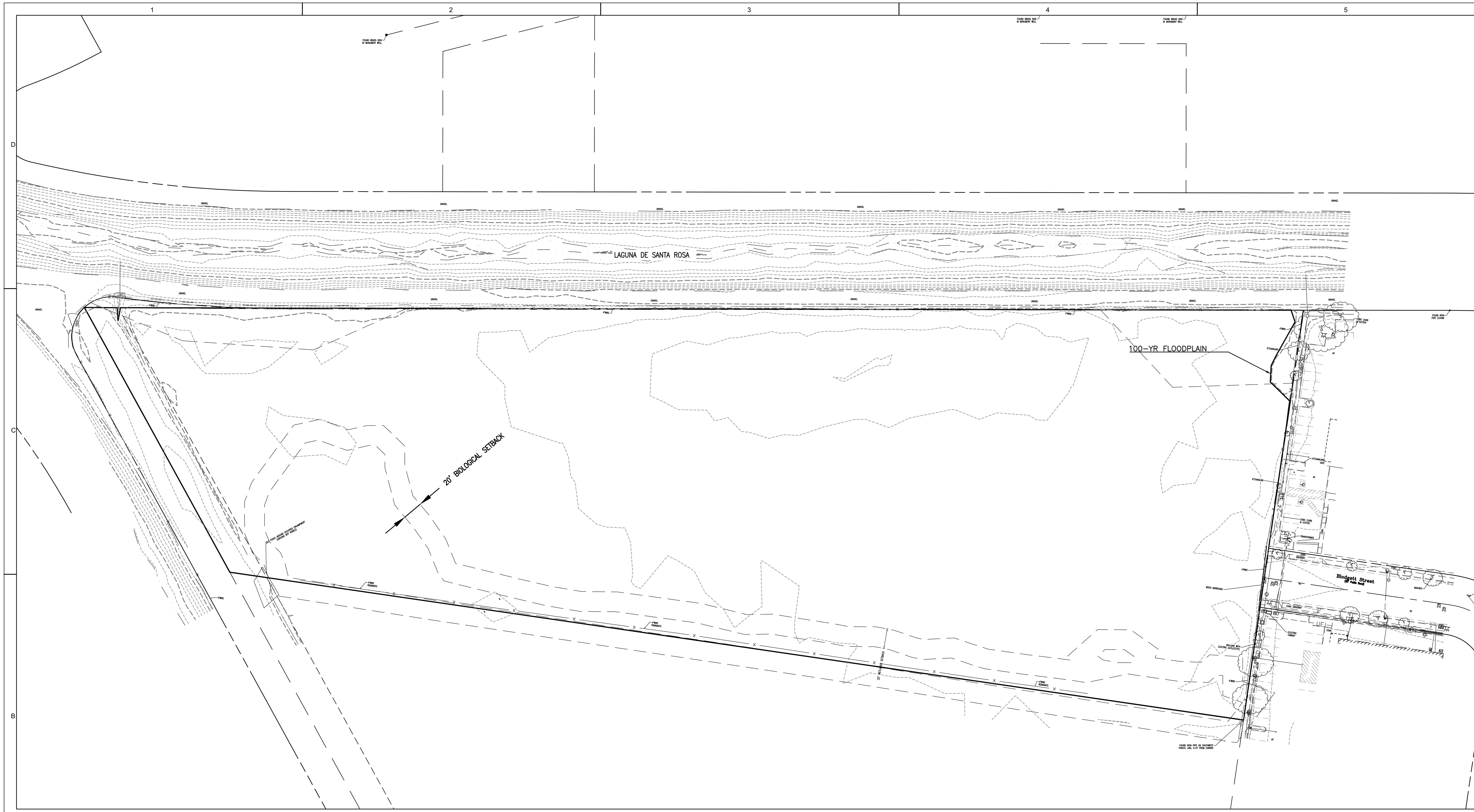
Trash Capture Maintenance:

These filters should be cleaned twice annually. This will involve the removal of the filter, vacuuming out all sediment and debris, pressure washing the device and inlet, and replacing the device.

2.4 Responsible Party

The property owner will be the responsible party for the maintenance of each BMP.

APPENDIX A: PRE-CONSTRUCTION CONDITIONS EXHIBIT



0 50 100 150
GRAPHIC SCALE IN FEET SCALE: 1"=50'

CALICHI DESIGN GROUP

LEGEND

	EXISTING
PROPERTY LINE	
EASEMENT LINE	
1-FOOT CONTOUR	9
5-FOOT CONTOUR	10
WATER LINE	WTR
FIRE PROTECTION WATER LINE	WTR
IRRIGATION WATER LINE	WTR
SANITARY SEWER LINE	SAN
STORM DRAIN LINE	SD
UNDERGROUND ELECTRIC	UE
GAS LINE	G
OVERHEAD ELECTRIC	OE
FENCE	x
APPROXIMATE LIMIT OF DISTURBANCE	
TREE	
WATER VALVE	
FIRE HYDRANT/CONNECTION	FDC
WATER METER OR BOX	
SEWER MANHOLE	
SANITARY SEWER CLEANOUT	SSCO
STORM DRAIN MANHOLE	
STORM DRAIN CLEANOUT	
CATCH BASIN	
LIGHT POLE, UTILITY POLE, OR PULLBOX	
GAS VALVE	GV
ELECTRIC VAULTS	SLV
ELECTRIC BOX	EM
SIGN	
100-YEAR FLOODPLAIN PENDING LOMA REVIEW WITH FEMA	

INSPECTION AND MAINTENANCE

RESPONSIBLE PARTY FOR BMP MAINTENANCE: PROPERTY OWNER

SOIL TYPE

EXISTING SOIL DETERMINED TO BE TYPE C

EXISTING IMPERVIOUS COVER

THERE IS NO EXISTING IMPERVIOUS COVER ONSITE (0 SF)

CONSULTANTS

CALICHI
CALICHI DESIGN GROUP
CIVIL ENGINEERS
3240 PERALTA STREET, #3
OAKLAND, CA 9460
(510) 250-7877
WWW.CALICHI.COM

SEAL

REGISTERED PROFESSIONAL ENGINEER
REGO VICENTE PIRANTO
C 69670
EXP. 6-30-2022
CIVIL
STATE OF CALIFORNIA
2021/02/017

DISTRIBUTION WAREHOUSE
597 HELMAN LANE
COTATI, CA 94931

1	PLANNING SUBMITTAL	02/17/2021

DATE:	02/17/2021
PROJECT NUMBER:	2021.338.001
PROJECT PHASE:	ENTITLEMENTS
DRAWN BY:	LMO
CHECKED BY:	RP

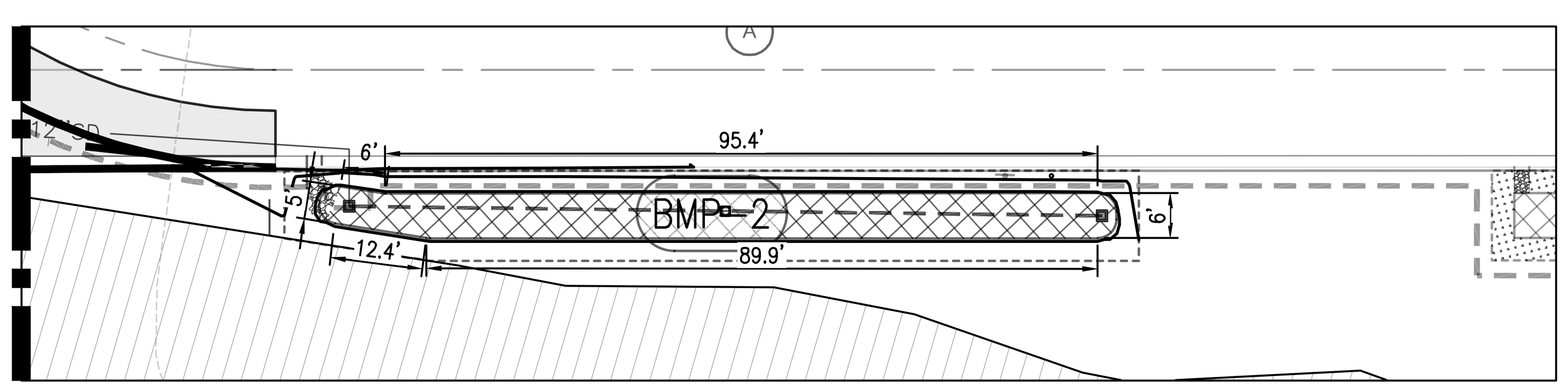
SHEET TITLE

EXISTING CONDITIONS EXHIBIT

SHEET NUMBER

EX-001

APPENDIX B: PROPOSED STORMWATER CONTROL PLAN AND UTILITY PLAN



PROPOSED FLOW - RATIONAL METHOD								
	C10	I10	A(ac)	Q10 (cfs)	C100	I100	A(ac)	Q100 (cfs)
PR-1A	0.90	1.50	0.16	0.22	0.90	2.21	0.16	0.32
PR-1B	0.90	1.52	0.22	0.30	0.90	2.27	0.22	0.45
PG-1C	0.58	1.66	0.07	0.06	0.58	2.73	0.07	0.11
PG-2B	0.86	1.37	0.53	0.63	0.86	1.83	0.53	0.83
PG-2C	0.90	1.50	0.07	0.10	0.90	2.23	0.07	0.14
PG-3B	0.83	1.64	0.16	0.21	0.83	2.64	0.16	0.34
PR-4A	0.90	1.96	0.22	0.39	0.90	3.65	0.22	0.72
PG-4B	0.90	2.26	0.64	1.30	0.90	4.56	0.64	2.62
PG-5A	0.90	2.33	0.10	0.21	0.90	5.12	0.10	0.46
Total	NA	NA	2.17	3.41	NA	NA	2.17	5.99
PG-5A TO BE TREATED BY BUILDING 1 BMP-1.								

ROADSIDE BIORETENTION VOLUME				
Retention Basin	Drainage Basins Flowing to Retention	Area (ac)	REQUIRED VOLUME (CF)	ACHIEVED VOLUME (CF)
BMP-1	PR-1A, PR-1B & PG-1C	0.45	821.87	1032.08
BMP-2	PG-2B & PG-2C	0.60	972.67	1204.34
BMP-3	PR-3A & PG-3B	0.16	551.88	601.64
BMP-4	PR-4A & PG-4B	0.86	2662.93	2811.50
PHASE 1 BMP 1	PG-5A	0.10	2628.04	2836.50
TOTAL		2.07	7637.39	8486.06

BMP NOTE

- ALL TREATMENT REQUIREMENTS ARE MET USING FLOW THROUGH PLANTERS.
- ALL VOLUME CAPTURE REQUIREMENTS ARE MET USING UNDERGROUND BIO-SWALES.

INSPECTION AND MAINTENANCE

RESPONSIBLE PARTY FOR BMP MAINTENANCE: PROPERTY OWNER

SOIL CLASSIFICATION

EXISTING SOIL TO BE INFILTRATED INTO (3.5' BELOW EG SURFACE) DETERMINED TO BE TYPE B – SANDY LOAM

- INFILTRATION RATE FOR THIS SOIL TYPE IS DETERMINED TO BE 0.8 IN/HR

STORMWATER CONTROL LEGEND

APPROXIMATE BOUNDARY OF DRAINAGE MANAGEMENT AREA

PROPOSED OVERFLOW DRAIN

PROPOSED STORMWATER CLEANOUT

GRND 1 BMP–4 PROPOSED DRAINAGE MANAGEMENT AREA, AND BMP DESIGNATION

PATH OF WATER

TRASH CAPTURE INLETS TO BE INSTALLED AT TRUCK DOCK TRENCH DRAINS

RL RAINWATER LEADER WILL EXIT THROUGH PIPE WITHIN BUILDING SLAB ONTO PAVEMENT

CONSULTANTS

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OAKLAND, CA 94608
(510) 250-7877
WWW.CALICHI.COM

SEAL

DISTRIBUTION WAREHOUSE BUILDING TWO

380 BLODGETT STREET
COTATI, CA 94931

#	DESCRIPTION	DATE
1	INITIAL PLANNING SUBMITTAL	1/10/22
2	PLANNING RESUBMITTAL	4/8/22
3	GRADING PERMIT SUBMITTAL	7/8/22
4	PLANNING RESUBMITTAL	7/13/22

DATE:	07/13/2022
PROJECT NUMBER:	2021.338.001
PROJECT PHASE:	PLANNING
DRAWN BY:	KS, AM, & TC
CHECKED BY:	RP

SHEET TITLE

STORM WATER CONTROL PLAN

SHEET NUMBER

C4.0

TIME OF CONCENTRATION - PROPOSED CONDITIONS 10-YEAR																					
	Pervious Area (sf)	Impervious Area (sf)	Total Area (sf)	Impervious %	Weighted C	Area (ac)	Roof Travel Time, tr (min)*	Overland Slope (ft/ft)	Overland Flow, L (ft)	Overland time, to (min)	Concentrated Slope (ft/ft)	Shallow Concentrated Length, Ls (ft)	Concentrated Velocity, Vc (ft/s)	Concentrated Travel Time, ts (min)	Treatment Time, ttr (min)**	Hydraulic Radius, Rh (ft)***	Velocity in Pipe, Vp (ft/s)	Pipe Length, Lp (ft)	Pipe Travel Time, tp (min)	Total Travel Time, tc (min)****	i (in/yr)
PR-1A	0	7,105	7,105	100	0.90	0.16	5.00				0.003	20	1.11	0.30	5.00	1.22	1.14	665	9.72	20.02	1.50
PR-1B	0	9,617	9,617	100	0.90	0.22	5.00				0.015	15	2.49	0.10	5.00	1.22	1.14	665	9.72	19.82	1.52
PG-1C	2,475	1,508	3,983	38	0.58	0.09		0.010	30	2.80	0.003	50	1.11	0.75	5.00	1.22	1.14	665	9.72	18.27	1.66
PR-2A	0	9,541	9,541	100	0.90	0.22	5.00				0.020	212	2.87	1.23	5.00	1.22	1.14	800	11.70	22.93	1.23
PG-2B	860	18,975	19,835	96	0.88	0.46		0.020	100	3.96	0.020	112	2.87	0.65	5.00	1.22	1.14	800	11.70	21.30	1.38
PG-2C	0	3,061	3,061	100	0.90	0.07		0.012	52	3.09	0.060	57	4.98	0.19	5.00	1.22	1.14	800	11.70	19.97	1.50
PG-3A	844	5,952	6,796	88	0.84	0.16		0.012	25	2.05	0.022	215	3.01	1.19	5.00	1.22	1.14	705	10.31	18.54	1.64
PR-4A	0	9,517	9,517	100	0.90	0.22	5.00				0.018	491	2.73	3.00	5.00	1.22	1.14	142	2.08	15.08	1.96
PG-4B	704	29,422	30,126	98	0.89	0.69		0.012	25	2.00	0.018	466	2.73	2.85	5.00	1.22	1.14	142	2.08	11.92	2.26
PG-5A	0	4,355	4,355	100	0.90	0.10		0.012	85	4.14	0.018	0	0.00	0.00	5.00	1.22	1.14	142	2.08	11.22	2.33

TIME OF CONCENTRATION - PROPOSED CONDITIONS 100-YEAR																					
	Pervious Area (sf)	Impervious Area (sf)	Total Area (sf)	Impervious %	Weighted C	Area (ac)	Roof Travel Time, tr (min)*	Overland Slope (ft/ft)	Overland Flow, L (ft)	Overland Time, to (min)	Concentrated Slope (ft/ft)	Shallow Concentrated Length, Ls (ft)	Concentrated Velocity, Vc (ft/s)	Concentrated Travel Time, ts (min)	Treatment Time, ttr (min)**	Hydraulic Radius, Rh (ft)***	Velocity in Pipe, Vp (ft/s)	Pipe Length, Lp (ft)	Pipe Travel Time, tp (min)	Total Travel Time, tc (min)****	i (in/yr)
PR-1A	0	7,105	7,105	100	0.90	0.16	5.00				0.00	20	1.11	0.30		1.22	1.14	665	9.72	15.02	2.21
PR-1B	0	9,617	9,617	100	0.90	0.22	5.00				0.02	15	2.49	0.10		1.22	1.14	665	9.72	14.82	2.27
PG-1C	2,475	1,508	3,983	38	0.58	0.09		0.01	30	2.80	0.00	50	1.11	0.75		1.22	1.14	665	9.72	13.27	2.72
PR-2A	0	9,541	9,541	100	0.90	0.22	5.00				0.02	212	2.87	1.23		1.22	1.14	800	11.70	17.93	1.37
PG-2B	860	18,975	19,835	96	0.88	0.46		0.02		3.96	0.02	112	2.87	0.65		1.22	1.14	800	11.70	16.30	1.84
PG-2C	0	3,061	3,061	100	0.90	0.07				3.09	0.06	57	4.98	0.19		1.22	1.14	800	11.70	14.97	2.23
PG-3A	844	5,952	6,796	88	0.84	0.16		0.01	25	2.05	0.02	215	3.01	1.19		1.22	1.14	705	10.31	13.54	2.64
PR-4A	0	9,517	9,517	100	0.90	0.22	5.00				0.02	491	2.73	3.00		1.22	1.14	142	2.08	10.08	3.65
PG-4B	704	29,422	30,126	98	0.89	0.69		0.01	25	2.00	0.02	466	2.73	2.85		1.22	1.14	142	2.08	6.92	4.56
PG-5A	0	4,366	4,366	0	0.90	0.10		0.01	85	4.14	0.00	0	0.00	0.00		1.22	1.14	0	0.00	5.00	5.12

*Assumes 5-minutes of travel time for roof runoff

**Assumes 5-minutes of treatment time through flow-thru planters. No treatment for Basins PR8 & PR9. 100-year storm by-passes treatment and flows directly to sub-surface retention chambers

***Hydraulic Radius shown is for an 8" pipe from planters to retention chambers and assumes 80% full pipe flow and uses Figure D.2-2 from the Flood Management Design Manual

****Per Flood Management Design Manual, the minimum Time of Concentration = 5 minutes

TIME OF CONCENTRATION - PRE-CONSTRUCTION 10-YEAR												
	Impervious %	C	Area (ac)	Overland Slope (ft/ft)	Overland Flow, L (ft)	Overland Time, to (min)	Concentrated Slope (ft/ft)	Shallow Concentrated Length, Ls (ft)	Concentrated Velocity, Vc (ft/s)	Concentrated Travel Time, ts (min)	Total Travel Time, tc (min)	i (in/yr)
EX1	0	0.33	4.69	0.006	300	16.24	0.005	727	1.14	10.62	26.86	0.85

TIME OF CONCENTRATION - PRE-CONSTRUCTION 100-YEAR												
	Impervious %	C	Area (ac)	Overland Slope (%)	Overland Flow, L (ft)	Overland Time, to (min)	Concentrated Slope (ft/ft)	Shallow Concentrated Length, Ls (ft)	Concentrated Velocity, Vc (ft/s)	Concentrated Travel Time, ts (min)	Total Travel Time, tc (min)	i (in/yr)
EX1	0	0.33	4.69	0.006	300	16.24	0.005	727	1.14	10.62	26.86	1.28

NOAA Storm Frequency		
Duration (min)	10	100
5	3.41	5.12
10	2.44	3.67
15	1.97	2.96
30	1.38	2.07
60	0.975	1.47

PROPOSED FLOW - RATIONAL METHOD								
	C10	I10	A(ac)	Q10 (cfs)	C100	I100	A(ac)	Q100 (cfs)
PR-1A	0.90	1.50	0.16	0.22	0.90	2.21	0.16	0.32
PR-1B	0.90	1.52	0.22	0.30	0.90	2.27	0.22	0.45
PG-1C	0.58	1.66	0.07	0.06	0.58	2.73	0.07	0.11
PG-2B	0.86	1.37	0.53	0.63	0.86	1.83	0.53	0.83
PG-2C	0.90	1.50	0.07	0.10	0.90	2.23	0.07	0.14
PG-3B	0.83	1.64	0.16	0.21	0.83	2.64	0.16	0.34
PR-4A	0.90	1.96	0.22	0.39	0.90	3.65	0.22	0.72
PG-4B	0.90	2.26	0.64	1.30	0.90	4.56	0.64	2.62
PG-5A	0.90	2.33	0.10	0.21	0.90	5.12	0.10	0.46
Total	NA	NA	2.17	3.41	NA	NA	2.17	5.99
PG-5A TO BE TREATED BY BUILDING 1 BMP-1.								

PRE-CONSTRUCTION FLOW - RATIONAL METHOD								
	C10	I10	A(ac)	Q10 (cfs)	C100	I100	A(ac)	Q100 (cfs)
EX1	0.33	0.85	4.69	1.32	0.33	1.28	4.69	1.97
The entire site ultimately enters the Laguna De Santa Rosa								

ROADSIDE BIORETENTION DESIGN - 10-YEAR						
Retention Basin	Drainage Basins Flowing to Retention	C	i (in/hr)	Tributary Area (ac)	Longest Total Travel Time, Tc (min)	Q10 (cfs)
BMP-1	PR-1A, PR-1B & PG-1C	0.85	1.50	0.45	20.02	0.58
BMP-2	PG-2B & PG-2C	0.86	1.23	0.60	22.93	0.64
BMP-3	PR-3A & PG-3B	0.83	1.64	0.16	18.55	0.21
BMP-4	PR-4A & PG-4B	0.90	1.96	0.86	15.08	1.51
Total release from these retention ponds not to exceed existing Q10 that enters Laguna De Santa Rosa						

ROADSIDE BIORETENTION DESIGN - 100-YEAR						
Retention Basin	Drainage Basins Flowing to Retention	C	i (in/hr)	Area (ac)	Longest Total Travel Time, Tc (min)	Q100 (cfs)
BMP-1	PR-1A, PR-1B & PG-1C	0.85	2.21	0.45	15.02	0.85
BMP-2	PG-2B & PG-2C	0.86	1.37	0.60	17.93	0.71
BMP-3	PR-3A & PG-3B	0.83	2.64	0.16	13.55	0.34
BMP-4	PR-4A & PG-4B	0.90	3.65	0.86	10.08	2.81
The Q100 is used in determining the overflow elevations within the retention ponds						

ROADSIDE BIORETENTION VOLUME				
Retention Basin	Drainage Basins Flowing to Retention	Area (ac)	REQUIRED VOLUME (CF)	ACHIEVED VOLUME (CF)
BMP-1	PR-1A, PR-1B & PG-1C	0.45	821.87	1032.08
BMP-2	PG-2B & PG-2C	0.60	972.67	1204.34
BMP-3	PR-3A & PG-3B	0.16	551.88	601.64
BMP-4	PR-4A & PG-4B	0.86	2662.93	2811.50
PHASE 1 BMP 1	PG-5A	0.10	2628.04	2836.50
TOTAL		2.07	7637.39	8486.06

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EXP. 6-30-2024
CIVIL
STATE OF CALIFORNIA

2022/07/13

DISTRIBUTION WAREHOUSE BUILDING TWO

380 BLODGETT STREET
COTATI, CA 94931

#	DESCRIPTION	DATE
1	INITIAL PLANNING SUBMITTAL	1/10/22
2	PLANNING RESUBMITTAL	4/8/22
3	GRADING PERMIT SUBMITTAL	7/8/22
4	PLANNING RESUBMITTAL	7/13/22

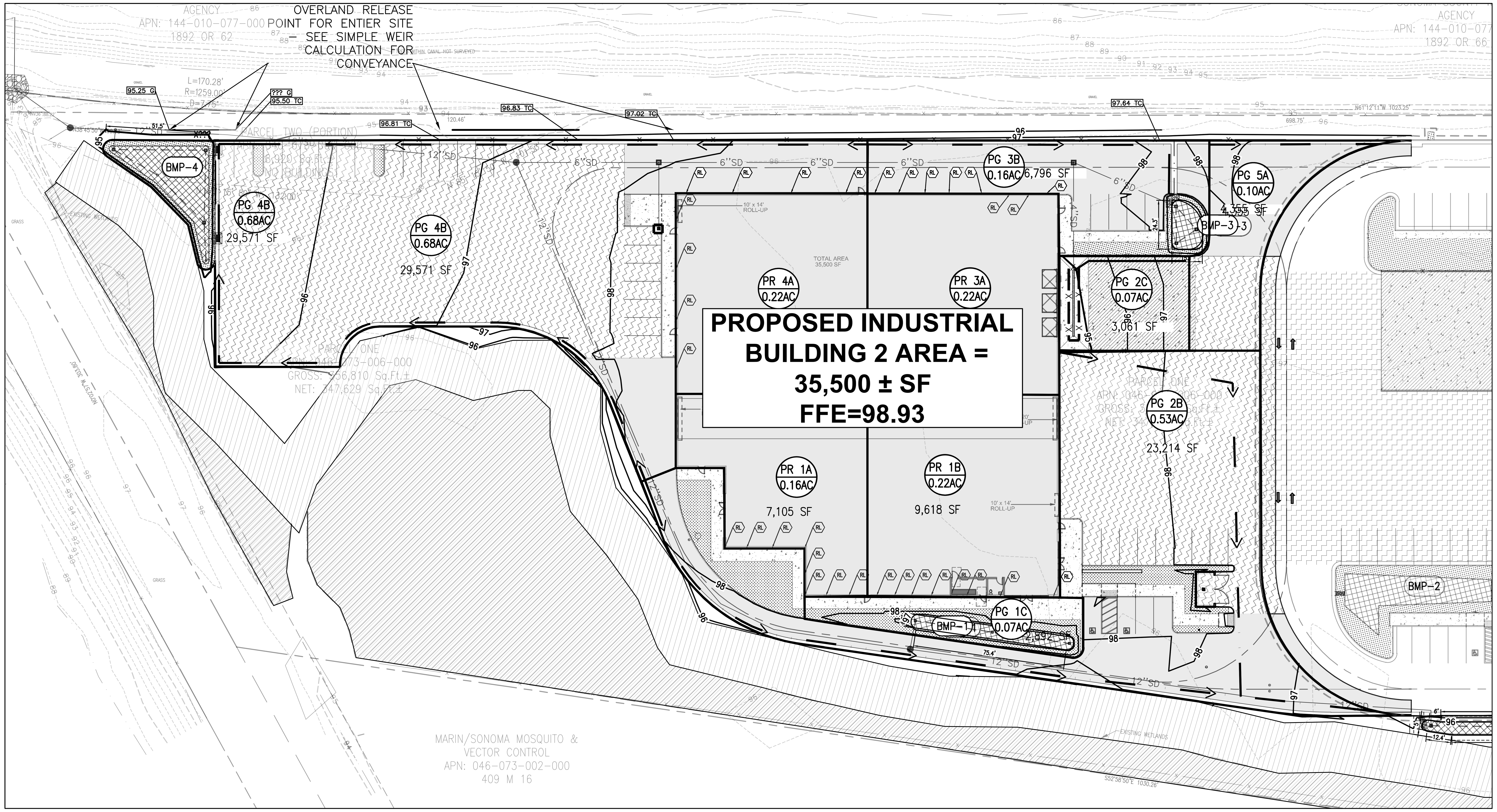
DATE:	07/13/2022
PROJECT NUMBER:	2021.338.001
PROJECT PHASE:	PLANNING
DRAWN BY:	KS, AM, & TC
CHECKED BY:	RP

SHEET TITLE

HYDROLOGY CALCULATIONS

SHEET NUMBER

C4.1



Manning Formula Uniform Trapezoidal Channel Flow at Given Slope and Depth

Inputs

Bottom width	171	ft
Side slope 1 (horiz./vert.)	200	
Side slope 2 (horiz./vert.)	200	
Manning roughness, n ? ○Strickler ○B/B (See notes)	0.03	
Channel slope	1	% rise/run
Flow depth	.16	ft
Bend Angle ? (for riprap sizing)	0	
Rock specific gravity (2.65)	2.65	
Design rock size ○Isbash ○Maynord ○Searcy * 1.25 (See notes)	0.1	m

Results

Flow area	32.4811	ft^2
Wetted perimeter	235.0008	ft
Hydraulic radius	0.1382	ft
Velocity, v	1.3240	ft/sec
Flow, Q (See notes)	43.0046	cfs
Velocity head, h_v	0.0272	ft
Top width, T	235.0000	ft
Froude number, F	0.63	
Average shear stress (tractive force), tau	0.0863	psf
n for design rock size per Strickler	0.0323	
n for design rock size per Blodgett	0.6568	
n for design rock size per Bathurst	0.1414	
Blodgett vs. Bathurst	Bathurst	
Required bottom angular rock size, D50 (Isbash & MC) ?	0.0062	m
Required side slope 1 angular rock size, D50 (Isbash & MC) ?	0.0062	m
Required side slope 2 angular rock size, D50 (Isbash & MC) ?	0.0062	m
Required angular rock size, D50 (Maynord, Ruff, and Abt 1989)	0.0060	m
Required angular rock size, D50 (Searcy 1967)	0.0036	m

CAPACITY OF OVERLAND RELEASE POINT:

100-YEAR FLOW FOR ENTIER SITE:

TOTAL SITE PROPOSED FLOW: 7.1 CFS

ELEVATION DIFFERENTIALS:

FINISHED FLOOR ELEVATION = 98.93
OVERLAND RELEASE POINT = 95.00

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4	PLANNING RESUBMITTAL	7/13/22

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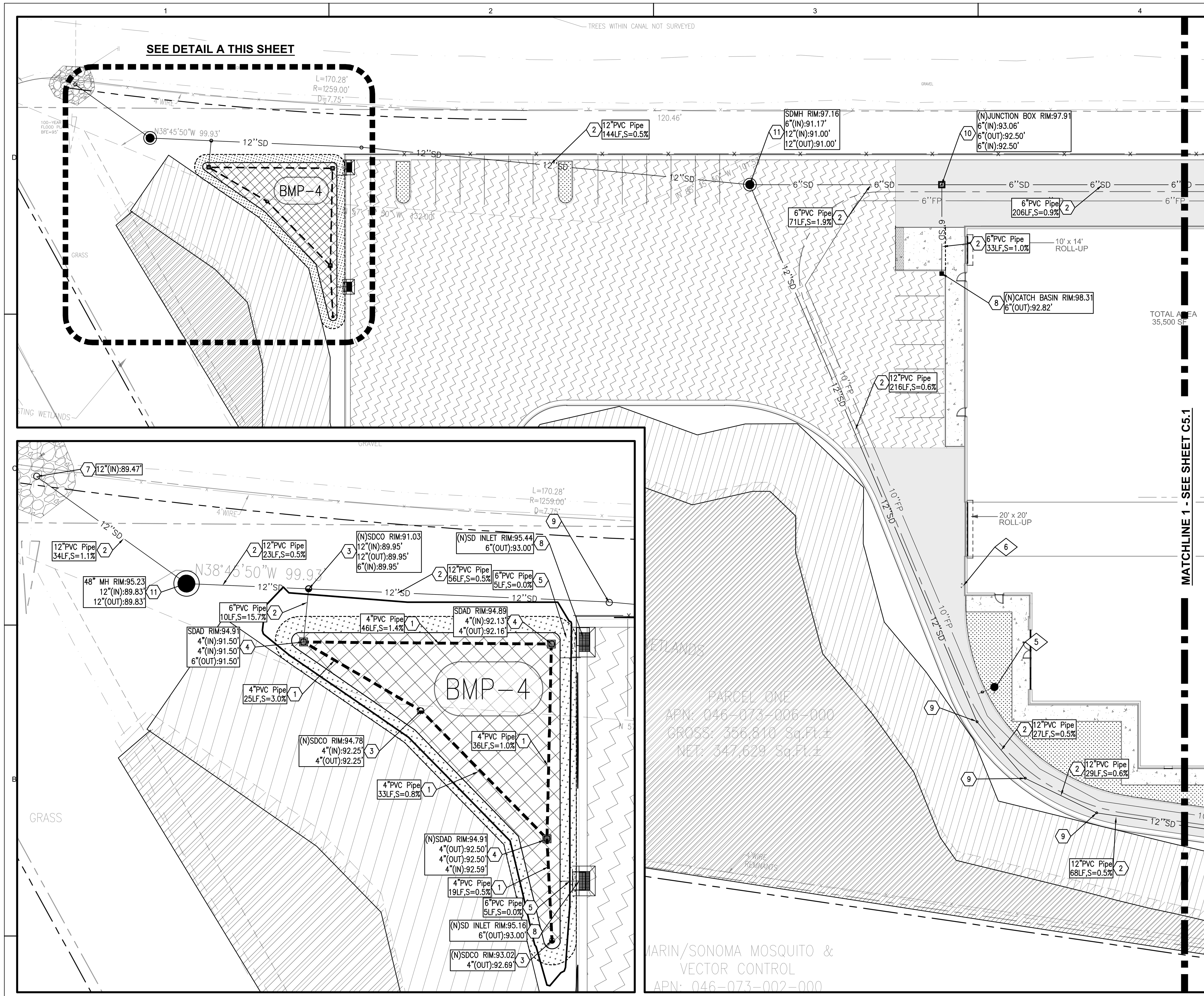
PROJECT PHASE:	PLANNING
DRAWN BY:	KS, AM, & TC
CHECKED BY:	RP

SHEET TITLE

OVERLAND RELEASE

SHEET NUMBER

C4.3



DETAIL A

0 10 20 30
GRAPHIC SCALE IN FEET SCALE: 1"=10'

CALICHI DESIGN GROUP

0 20 40 60
GRAPHIC SCALE IN FEET SCALE: 1"=20'

CALICHI DESIGN GROUP

STORM DRAIN KEY NOTES

1. PROPOSED PERFORATED PIPE IN FLOW THROUGH PLANTER. RIM AND INVERT PER PLAN.
2. PROPOSED STORM DRAIN PIPE. SIZE, LENGTH, MATERIAL AND SLOPE PER PLAN.
3. PROPOSED TWO-WAY CLEANOUT. SIZE, RIM, AND INVERT PER PLAN.
4. PROPOSED OVERFLOW STRUCTURE IN BIO-SWALE PLANTER. RIM AND INVERT PER PLAN.
5. OUTFALL PROPOSED STORM DRAIN LINE TO ROADSIDE BIO-RETENTION PLANTER. GROUND AND INVERT PER PLAN.
6. PROPOSED SLOPED TRENCH DRAIN WITH TRASH CAPTURE INLET.
7. CONNECT PROPOSED STORM DRAIN LINE TO EXISTING CHANNEL. INVERT PER PLAN.
8. PROPOSED CATCH BASIN CURB INLET. RIM AND INVERT PER PLAN.
9. BEND PROPOSED STORM DRAIN LINE. ANGLE PER PLAN – TO BE A DEGREE OF 15. RIM AND INVERT PER PLAN.
10. PROPOSED JUNCTION BOX. RIM AND INVERT PER PLAN.
11. PROPOSED 48" PRECAST CONCRETE MANHOLE. RIM AND INVERT PER PLAN.

LEGEND

PROPOSED		EXISTING
9	1-FOOT CONTOUR	9
10	5-FOOT CONTOUR	10
	PROPERTY LINE	
	EASEMENT LINE	
WTR	WATER LINE	WTR
FP	FIRE PROTECTION WATER LINE	WTR
IRR	IRRIGATION WATER LINE	WTR
SS	SANITARY SEWER LINE	SAN
SD	STORM DRAIN LINE	SD
UE	UNDERGROUND ELECTRIC	UE
G	GAS LINE	G
	OVERHEAD ELECTRIC	OE
x	FENCE	x
	APPROXIMATE LIMIT OF DISTURBANCE	
	TREE	
	SHRUB	
	WATER VALVE	
	FIRE HYDRANT/CONNECTION	FDC
WM WV	WATER METER OR BOX	
	SEWER MANHOLE	
	SANITARY SEWER CLEANOUT	SSCO
	STORM DRAIN MANHOLE/CLEANOUT	
	CATCH BASIN	
	LIGHT POLE, UTILITY POLE, OR PULLBOX	
	GAS VALVE	GV
	ELECTRIC VAULTS	CVL SLV
	ELECTRIC BOX	EM TSV
	SIGN	
	TRENCH DRAIN	
	3'X3' RIP RAP	
	TRANSFORMER	
	STANDARD/HEAVY DUTY PCC PAVEMENT. SEE DETAIL 3 ON SHEET C7.0.	
	HEAVY DUTY AC PAVEMENT. SEE DETAIL 2 ON SHEET C7.0.	
	STANDARD BIOTREATMENT PLANTER. SEE DETAIL 3 & 4 ON SHEET C7.2	
	STANDARD LANDSCAPE	
	WETLANDS 25' SETBACK	

DRY UTILITY KEY NOTES

1. CONNECT PROPOSED UNDERGROUND ELECTRICAL AND COMMUNICATIONS CONDUITS TO BUILDING. SEE ELECTRICAL PLANS FOR CONTINUATION.
2. CONNECT PROPOSED JOINT TRENCH CONDUITS TO EXISTING LINES FROM BUILDING 1. SEE PG&E PLANS FOR DETAILS.

NOTE: TRANSFORMER AND COMMUNICATIONS PEDASTAL TO BE LOCATED IN BUILDING 1 SITE.

SANITARY SEWER KEY NOTES

1. END SANITARY SEWER LINE 5' FROM BUILDING. SEE ARCH. PLANS FOR CONTINUATION.
2. PROPOSED PVC (SDR-26 MIN.) SANITARY SEWER SERVICE PIPE. SIZE, LENGTH AND SLOPE PER PLAN.
3. PROPOSED SANITARY SEWER CLEANOUT. SIZE, RIM, AND INVERT PER PLAN.
4. CONNECT PROPOSED SANITARY SEWER LINE TO EXISTING MANHOLE FROM BUILDING 1.
5. PROPOSED SANITARY SEWER DRAINAGE INLET FOR TRASH ENCLOSURE. RIM AND INVERT PER PLAN.

WATER KEY NOTES

1. POINT OF CONNECTION FOR PROPOSED 2" DOMESTIC WATER SERVICE. SEE ONSITE PLUMBING PLANS FOR CONTINUATION.
2. POINT OF CONNECTION FOR PROPOSED 6" FIRE WATER SERVICE. SEE ONSITE PLUMBING PLANS FOR CONTINUATION.
3. CONNECT PROPOSED 2" DOMESTIC WATER SERVICE TO EXISTING STUB FROM BUILDING 1.
4. CONNECT PROPOSED 6" FIRE WATER SERVICE TO EXISTING STUB FROM BUILDING 1.
5. PROPOSED PRIVATE FIRE HYDRANT ASSEMBLY.
6. PROPOSED FIRE DEPARTMENT CONNECTION (FDC) AND POST INDICATOR VALVE (PIV)

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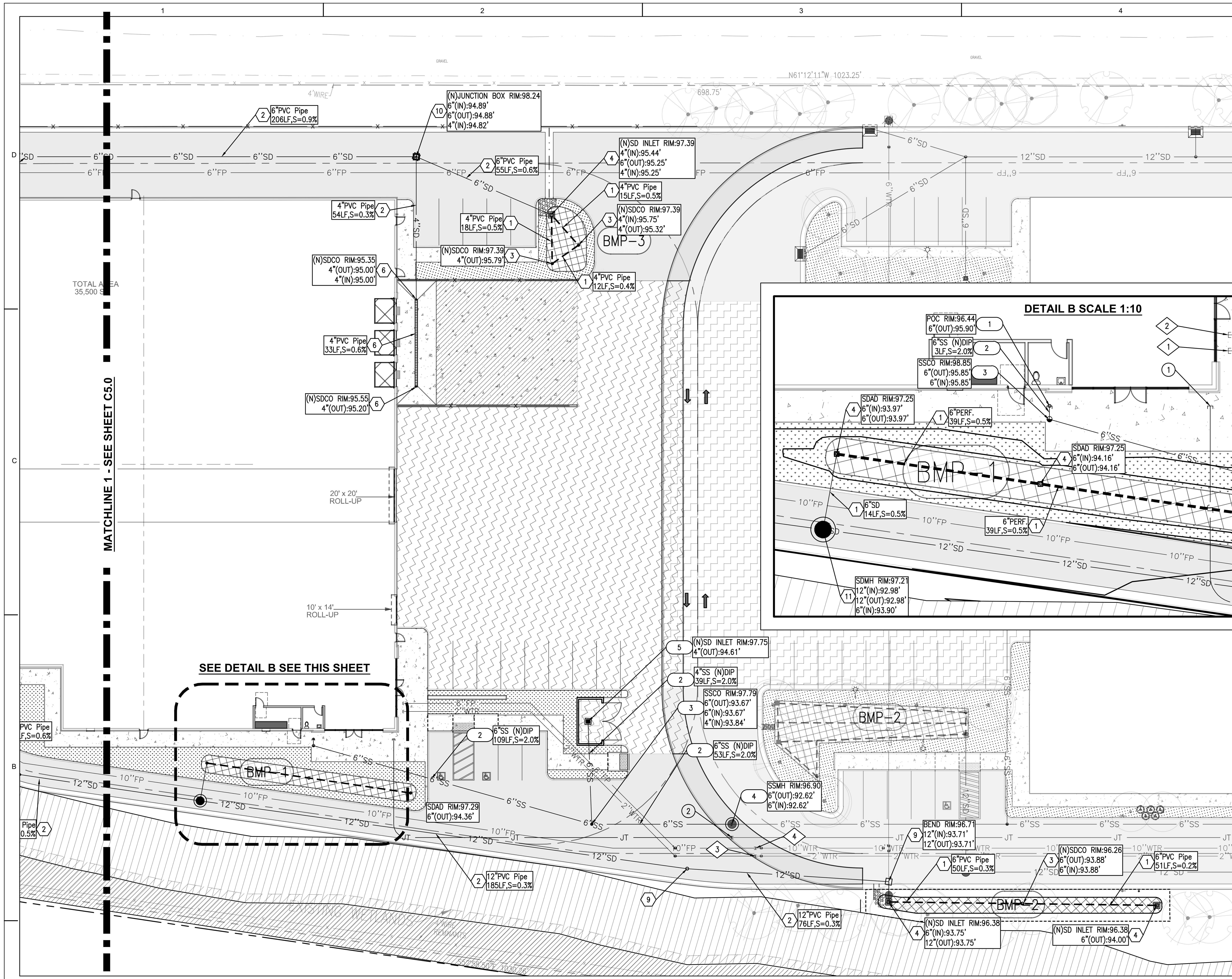
DRAWN BY:	KS, AM, & TC
CHECKED BY:	RP

SHEET TITLE

PRIVATE UTILITY PLAN

SHEET NUMBER

C3.0



LEGEND

PROPOSED		EXISTING
	PROPERTY LINE	
	EASEMENT LINE	
9	1-FOOT CONTOUR	9
10	5-FOOT CONTOUR	10
WTR	WATER LINE	WTR
FP	FIRE PROTECTION WATER LINE	WTR
IRR	IRRIGATION WATER LINE	WTR
SS	SANITARY SEWER LINE	SAN
SD	STORM DRAIN LINE	SD
UE	UNDERGROUND ELECTRIC	UE
G	GAS LINE	G
	OVERHEAD ELECTRIC	OE
x	FENCE	x
	APPROXIMATE LIMIT OF DISTURBANCE	
	TREE	
	SHRUB	
	WATER VALVE	WV
	FIRE HYDRANT/CONNECTION	FDC
WM WV	WATER METER OR BOX	WM
	SEWER MANHOLE	
	SANITARY SEWER CLEANOUT	SSCO
	STORM DRAIN MANHOLE/CLEANOUT	
	CATCH BASIN	
	LIGHT POLE, UTILITY POLE, OR PULLBOX	
	GAS VALVE	GV
	ELECTRIC VAULTS	CVL SLV
	ELECTRIC BOX	EM TSV
	SIGN	
	TRENCH DRAIN	
	3'X3' RIP RAP	
	TRANSFORMER	
	STANDARD/HEAVY DUTY PCC PAVEMENT. SEE DETAIL 3 ON SHEET C7.0.	
	HEAVY DUTY AC PAVEMENT. SEE DETAIL 2 ON SHEET C7.0.	
	STANDARD BIOTREATMENT PLANTER. SEE DETAIL 3 & 4 ON SHEET C7.2	
	STANDARD LANDSCAPE	
	WETLANDS 25' SETBACK	

DRY UTILITY KEY NOTES

1. CONNECT PROPOSED UNDERGROUND ELECTRICAL AND COMMUNCATIONS CONDUITS TO BUILDING. SEE ELECTRICAL PLANS FOR CONTINUATION.
2. CONNECT PROPOSED JOINT TRENCH CONDUITS TO EXISTING LINES FROM BUILDING 1. SEE PG&E PLANS FOR DETAILS.

NOTE: TRANSFORMER AND COMMUNICATIONS PEDASTAL TO BE LOCATED IN BUILDING 1 SITE.

SANITARY SEWER KEY NOTES

1. END SANITARY SEWER LINE 5' FROM BUILDING. SEE ARCH. PLANS FOR CONTINUATION.
2. PROPOSED PVC (SDR-26 MIN.) SANITARY SEWER SERVICE PIPE. SIZE, LENGTH AND SLOPE PER PLAN.
3. PROPOSED SANITARY SEWER CLEANOUT. SIZE, RIM, AND INVERT PER PLAN.
4. CONNECT PROPOSED SANITARY SEWER LINE TO EXISTING MANHOLE FROM BUILDING 1.
5. PROPOSED SANITARY SEWER DRAINAGE INLET FOR TRASH ENCLOSURE. RIM AND INVERT PER PLAN.

WATER KEY NOTES

1. POINT OF CONNECTION FOR PROPOSED 2" DOMESTIC WATER SERVICE. SEE ONSITE PLUMBING PLANS FOR CONTINUATION.
2. POINT OF CONNECTION FOR PROPOSED 6" FIRE WATER SERVICE. SEE ONSITE PLUMBING PLANS FOR CONTINUATION.
3. CONNECT PROPOSED 2" DOMESTIC WATER SERVICE TO EXISTING STUB FROM BUILDING 1.
4. CONNECT PROPOSED 6" FIRE WATER SERVICE TO EXISTING STUB FROM BUILDING 1.
5. PROPOSED PRIVATE FIRE HYDRANT ASSEMBLY.
6. PROPOSED FIRE DEPARTMENT CONNECTION (FDC) AND POST INDICATOR VALVE (PIV)

0 20 40 60
GRAPHIC SCALE IN FEET SCALE: 1"=20'

CALICHI DESIGN GROUP

ROADSIDE BIO-RETENTION PLANER DATA TABLE

1. BMP-1, DEPTH=2.9', RIM ELEVATION =97.25'
   DRAIN ROCK TOP INV ELEV.= 96.75'
   DRAIN ROCK BOTTOM INV ELEV.= 94.35
2. BMP-2, DEPTH=2.9', RIM ELEVATION =96.38'
   DRAIN ROCK TOP INV ELEV.= 95.88'
   DRAIN ROCK BOTTOM INV ELEV.= 93.48'
3. BMP-3, DEPTH=2.9', RIM ELEVATION =97.39'
   DRAIN ROCK TOP INV ELEV.= 96.89'
   DRAIN ROCK BOTTOM INV ELEV.= 94.49'
4. BMP-3, DEPTH=2.9', RIM ELEVATION =94.91'
   DRAIN ROCK TOP INV ELEV.= 94.41'
   DRAIN ROCK BOTTOM INV ELEV.= 92.01'

STORM DRAIN KEY NOTES

1. PROPOSED PERFORATED PIPE IN FLOW THROUGH PLANTER. RIM AND INVERT PER PLAN.
2. PROPOSED STORM DRAIN PIPE. SIZE, LENGTH, MATERIAL AND SLOPE PER PLAN.
3. PROPOSED TWO-WAY CLEANOUT. SIZE, RIM, AND INVERT PER PLAN.
4. PROPOSED OVERFLOW STRUCTURE IN BIO-SWALE PLANTER. RIM AND INVERT PER PLAN.
5. OUTFALL PROPOSED STORM DRAIN LINE TO ROADSIDE BIO-RETENTION PLANTER. GROUND AND INVERT PER PLAN.
6. PROPOSED SLOPED TRENCH DRAIN WITH TRASH CAPTURE INLET.
7. CONNECT PROPOSED STORM DRAIN LINE TO EXISTING CHANNEL. INVERT PER PLAN.
8. PROPOSED CATCH BASIN CURB INLET. RIM AND INVERT PER PLAN.
9. BEND PROPOSED STORM DRAIN LINE. ANGLE PER PLAN - TO BE A DEGREE OF 15. RIM AND INVERT PER PLAN.
10. PROPOSED JUNCTION BOX. RIM AND INVERT PER PLAN.
11. PROPOSED 48" PRECAST CONCRETE MANHOLE. RIM AND INVERT PER PLAN.

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REGISTERED PROFESSIONAL ENGINEER
RECO VICENTE PRIANTO
C 69670
EXP. 6-30-2024
CIVIL
STATE OF CALIFORNIA
2022/07/13

DISTRIBUTION WAREHOUSE BUILDING TWO

380 BLODGETT STREET
COTATI, CA 94931

#	DESCRIPTION	DATE
1	INITIAL PLANNING SUBMITTAL	1/10/22
2	PLANNING RESUBMITTAL	4/8/22
3	GRADING PERMIT SUBMITTAL	7/8/22
4	PLANNING RESUBMITTAL	7/13/22

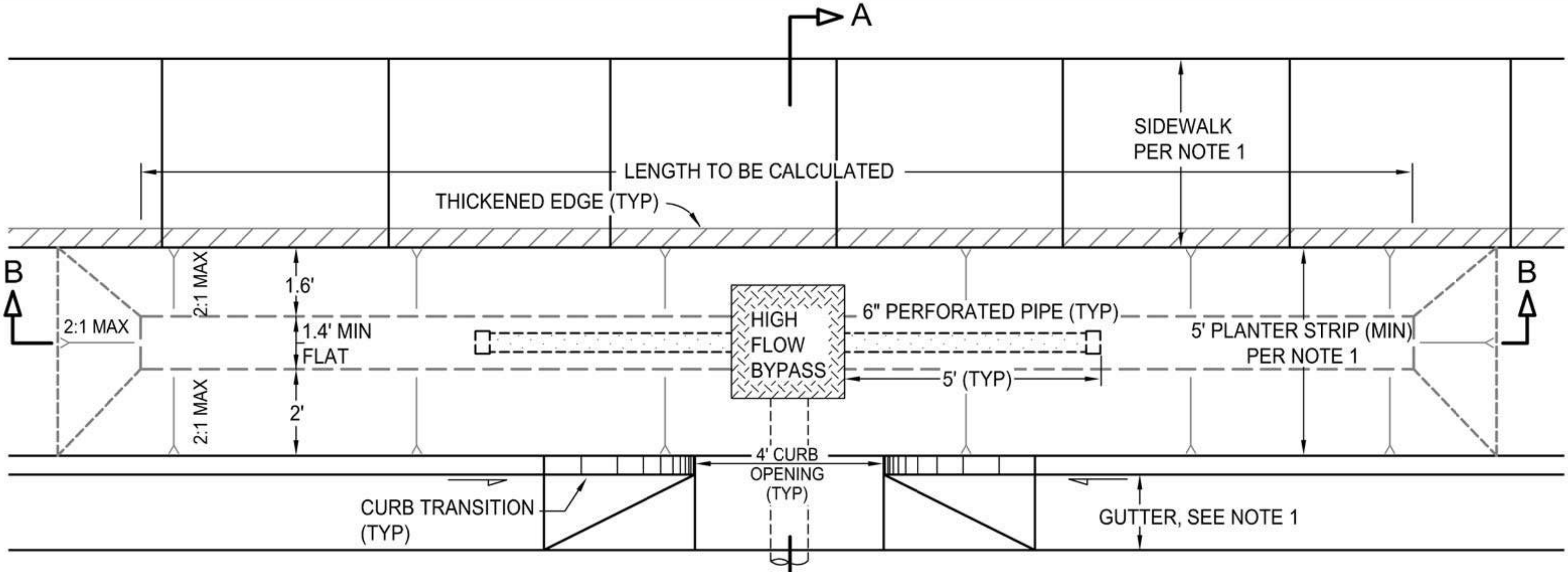
DATE:	07/13/2022
PROJECT NUMBER:	2021.338.001
PROJECT PHASE:	PLANNING
DRAWN BY:	KS, AM, & TC
CHECKED BY:	RP

SHEET TITLE

PRIVATE UTILITY PLAN

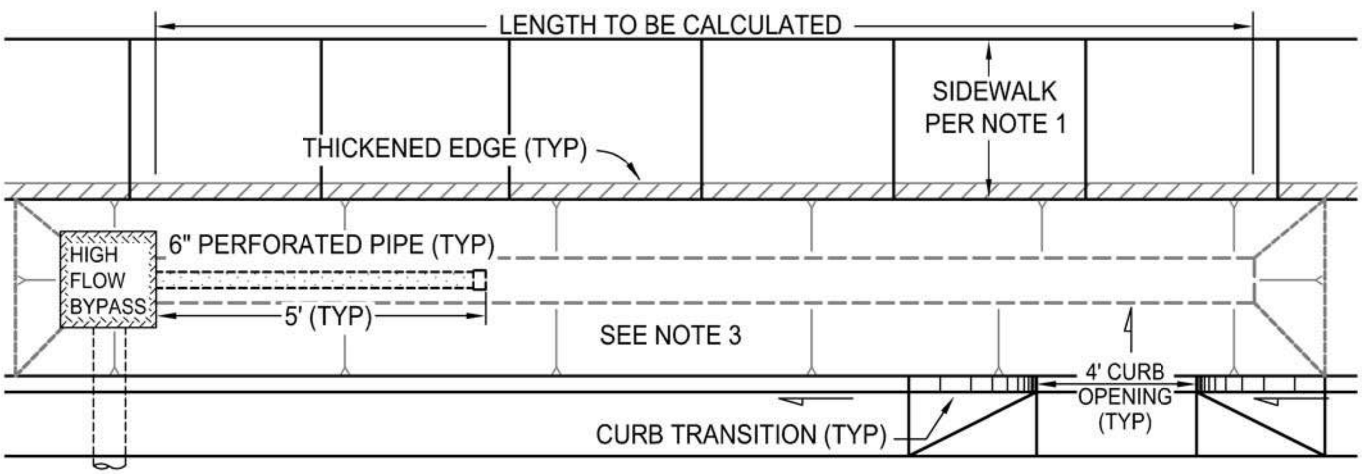
SHEET NUMBER

C3.1



PLAN

TYPE A - CURB OPENING AT LOW POINT



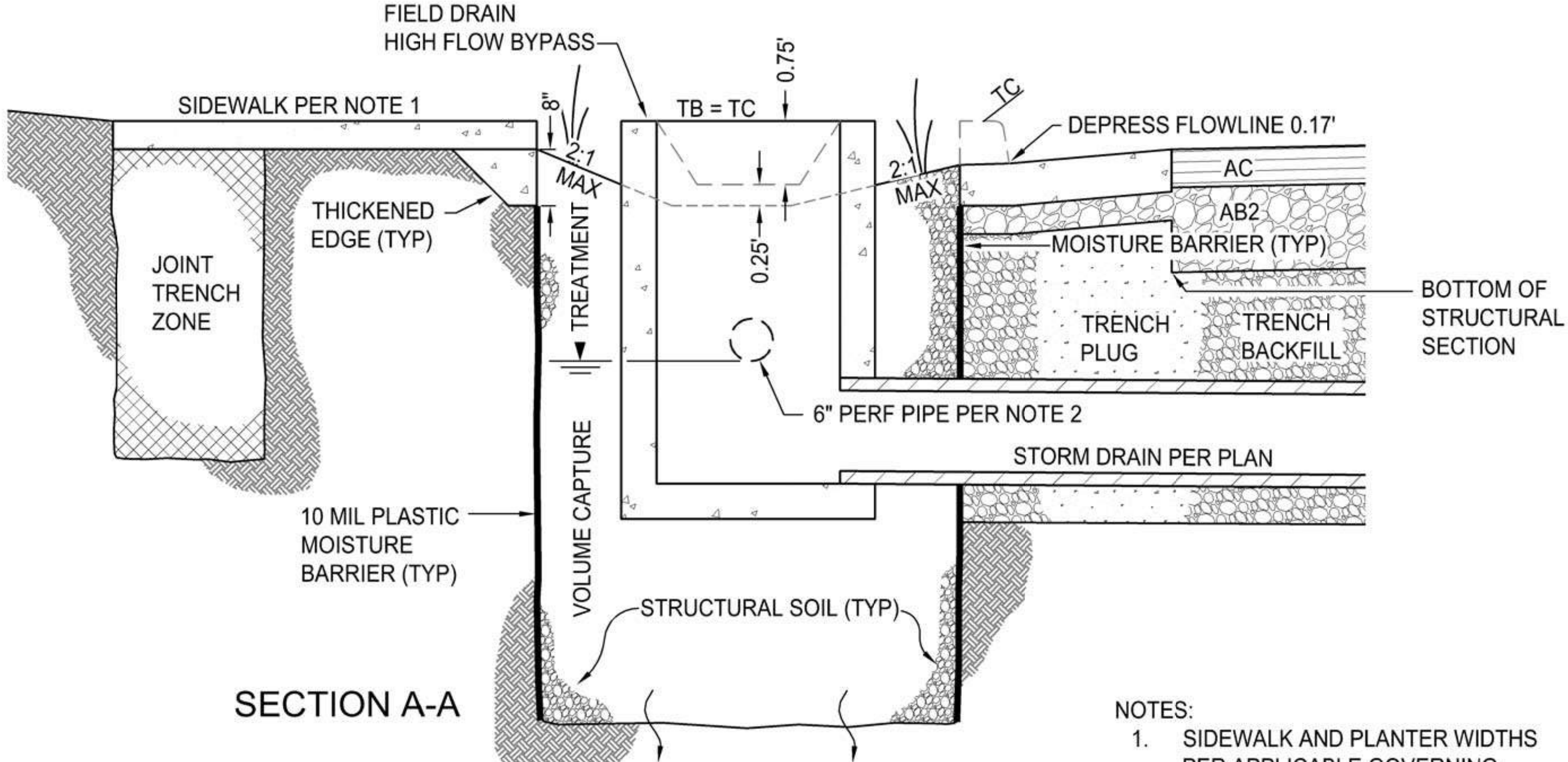
TYPE B -CURB OPENING ALONG A SLOPE

NOTE:

1. SIDEWALK, GUTTER AND PLANTER WIDTHS PER APPLICABLE MUNICIPAL STANDARDS (TYP).
2. TOP OF 6" PERFORATED PIPE TO BE SET 6" BELOW ROAD STRUCTURAL SECTION, MIN.
3. TYPE A MINIMUM DIMENSIONS AND GRADES APPLY TO TYPE B.

Not to Scale

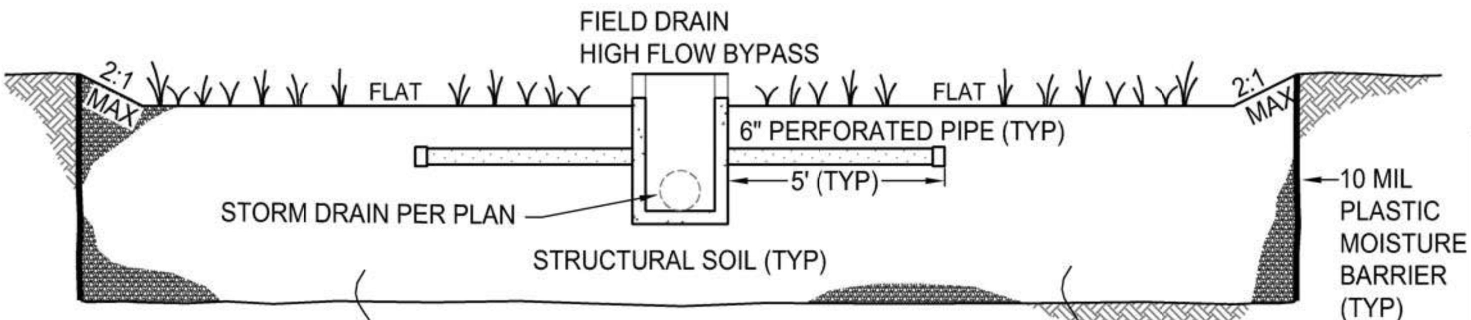
PRIORITY 2 ROADSIDE BIORETENTION - CURB OPENING		
SCALE: NONE	DATE: 04/06/17	
DWN. DIT CHK. HM	SHEET 1 of 2	P2–04



SECTION A-A

NOTES:

1. SIDEWALK AND PLANTER WIDTHS PER APPLICABLE GOVERNING AGENCY STANDARDS (TYP).
2. TOP OF 6" PERFORATED PIPE TO BE SET 6" BELOW BOTTOM OF ROAD STRUCTURAL SECTION.



SECTION B-B

Not to Scale

PRIORITY 2 ROADSIDE BIORETENTION - CURB OPENING SECTION A-A & B-B		
SCALE: NONE		DATE: 04/06/17
DWN. DIT CHK. HM	SHEET 2 of 2	P2–04

APPENDIX C: SANTA ROSA LOW IMPACT DEVELOPMENT CALCULATIONS

STORM WATER CALCULATOR

City of Santa Rosa WATER

LID BMP Summary Page & Site Global Values

Project Information:

Project Name: Distribution Warehouse - Building 2
Address/Location: 380 Blodgett Street
Designer: K Shibley
Date: 4/8/2022

Site Information:

Mean Seasonal Precipitation (MSP) of Project Site: 30.00 (inches)
K=MSP/3(K= 1.00

Impervious area - pre development: 0.0 ft^2
Impervious area - post development: 107,819.0 ft^2

Based upon the pre and post development impervious area, the post construction BMP requirement is:

100% Capture & Treatment

Summary of Saved BMP Results:

	BMP ID:	Tributary Area: Tributary Area (ft^2.)	Tributary Area: Runoff Reduction Measures (Y/N)	Requirements: Type of Requirement Met	Requirements: Type of BMP Design	Percent Achieved	Hydromodification Control: Required $V_{Hydromod}$ (ft^3)	Hydromodification Control: Achieved (ft^3)	Flow Base Treatment: Required Q Treatment (cfs)	Flow Base Treatment: Achieved (ft^3)	Delta Volume Capture: Required Vdelta (ft^3)	Delta Volume Capture: Achieved (ft^3)
1	BMP-1	20,615	No	Hydromod Volume Capture	Priority 2: P2-04 Roadside Bioretention - Curb Opening	101.5	576.1893	584.8000				
2	BMP-2	35,901	No	Hydromod Volume Capture	Priority 2: P2-04 Roadside Bioretention - Curb Opening	101.1	1275.3354	1290.0001				
3	BMP-3	6,827	No	Hydromod Volume Capture	Priority 2: P2-04 Roadside Bioretention - Curb Opening	108.7	294.2803	320.0000				
4	BMP-4	46,311	No	Hydromod Volume Capture	Priority 2: P2-04 Roadside Bioretention - Curb Opening	113.7	1662.1018	1890.0000				
5												
6												
7												
8												
9												
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STORM WATER CALCULATOR

BMP Tributary Parameters

Project Name: Distribution Warehouse - Phase 2

BMP ID:	BMP-1
BMP Design Criteria:	100% Capture & Treatment
Type of BMP Design:	Priority 2: P2-04 Roadside Bioretention - Curb Opening
BMP's Physical Tributary Area:	19,615.0 ft^2
Description/Notes:	BMP for PR-1A, PR-1B, and PG-1C.

Hydromodification Requirement: 100% Volume Capture; $V_{HYDROMOD}$

$V_{HYDROMOD}$ = 821.87 ft^3

Post development hydrologic soil type within tributary area:	A: greater than 0.30 in/hr infiltration (transmission) rate
Post development ground cover description:	Impervious - Paved Parking, Rooftop, Driveways
CN_{POST} :	
User Composite post development CN:	93.0

BMP Sizing Tool: Hydromodification Requirement

Percent of Goal Achieved = 125.58 %

	BMP Volume Below Ground			Ponded Water Above Ground	
Porosity:	0.40				
Depth below perforated pipe if present:	2.90	ft	Depth:	0.50	ft
Width:	0.00	ft	Width:	0.00	ft
Length:	0.00	ft	Length:	0.00	ft
Area:	538.00	ft^2	Area:	816.00	ft^2

STORM WATER CALCULATOR

BMP Input Worksheet

Enter BMP ID and BMP's Information:

To start a New BMP calculation, Press the **Clear/Reset All Inputs** button.

BMP ID (MUST BE unique): BMP-1
BMP's Physical Tributary Area: 19,615 ft^2 / 0.450 Acres
BMP Design Criteria: 100% Capture & Treatment

Type of BMP Design (select from pull down): Priority 2: P2-04 Roadside Bioretention - Curb Opening

BMP Notes:
BMP for PR-1A, PR-1B, and PG-1C.

Clear/Reset All Inputs | Calculate

Instructions: Enter in the Individual BMP's Tributary parameters in the **yellow cells**. To view the calculation worksheet, Click on the Display button for that section. All calculations are performed in the individual worksheets. To update the results on this worksheet, use the "**Calculate Results**" or "**Calculate All**" buttons.

CAUTION - MUST USE the Calculate button(s) to update results!

Action Buttons:

Clear/Reset All Inputs	Clear or load default values into cells of individual section or entire page.
Calculate	Will load values into worksheet, calculate and displays results.
Display Calculation Worksheet	Will load the values, calculate and display the corresponding worksheet with results.
Save BMP Data and Results	Calculates all sections before saving the BMP's design data, and then copies the results to the Summary worksheet by BMP ID. Will not save BMP if error(s) are present in the Runoff Reduction Measures or selected treatment method.

Runoff Reduction Measures

Note: The maximum Runoff Reduction Measures allowed is 50% of the physical tributary area.

Interceptor Trees

Number of new ***Evergreen Trees*** that qualify as interceptor trees: 0
Number of new ***Deciduous Trees*** that qualify as interceptor trees: 0
Enter square footage of qualifying **existing tree canopy:** 0 ft^2

Interceptor Tree trunk must be no greater than 25 feet from impervious surface.

Disconnected Roof Drains

Select disconnection condition: Select disconnection condition

Method 1

Amount of rooftop area that drain to disconnected downspouts: 0 ft^2

OR Method 2

Percent of rooftop area to be disconnected from downspouts: 0 %
Select Density: 1 Units per Acre

INSTRUCTIONS:
Method 1: Total Rooftop square foot area (ft^2) that is drained by the downspouts flowing to the single Tributary Area as designated. Can be from separate buildings.
OR
Method 2: Total Rooftop percentage (%) area relating to the total physical Tributary Area as designated.

Paved Area Disconnection

Paved Area Type (select from drop down list): Select paved area type
Enter area of alternatively designed paved area: 0.0 ft^2

Buffer Strips & Bovine Terraces

Area draining to a Buffer Strip or Bovine Terrace: 0.0 ft^2

Total Runoff Reduction Measures : 0 ft^2

Resulting reduced Tributary Area used for BMP sizing: 19,615 ft^2

Reset Reduction Measures Inputs | Display "Runoff Reduction Measures" calculation worksheet | Calculate Results

Hydromodification Control Requirement: 100% Volume Capture; $V_{hydromod}$

If User Composite CN is used, Supporting calculations are required to be submitted.

Post development hydrologic soil type within tributary area: A: greater than 0.30 in/hr infiltration (transmission) rate
Post development ground cover description: Impervious - Paved Parking, Rooftop, Driveways
CN_{POST} =
User Composite post development CN: 93.0

Entering a calculated composite CN will override selections made from the pull down menus above.

$V_{Hydromod}$: 821.87 ft^3

Reset Hydromod Inputs | Display "Hydromod" calculation worksheet | Calculate Results

BMP Sizing Tool: Hydromodification Control Requirement

BMP Depth:
- Measured from ground surface WITHOUT perforated pipe.
- Measured from bottom of perforated pipe if installed.

	BMP Volume Below Ground		Ponded Water Above Ground	
Imported BMP Soil Porosity:	0.40			
Depth:	2.90 ft	Depth:	0.50 ft	
Width:	ft	Width:	ft	
Length:	ft	Length:	ft	

The above and below ground Depth, Width, and Length or Areas will be summed together for the Percent of Requirement Achieved calculation.

-- OR -- ***Entering an Area information will override Width & Length information!***

Area BMP: 538.00 ft^2 Ponded Area: 816.00 ft^2

Percent of Requirement Achieved: 125.58 %
Results must be at least 100%

Design Check: Perforated Pipe is NOT allowed with Ponded Water values!

Total Volume achieved in BMP: 1,032.08 ft^3

Reset Hydromod Sizing Inputs | Display "Hydromod Sizing" calculation worksheet | Calculate Results

Select Hydromodification BMP Design when Saving? Yes

100% Treatment

If User Composite C_{POST} and or $I_{historical}$ are used, supporting calculations are required to be submitted.

$A_{Reduced}$: 19,615.0 ft^2
Post development surface: Concrete
C_{POST}: 0.80
User Composite post development C_{POST}:

-- OR -- Entering a calculated CPOST will override selection made from the pull down menu.

Treatment Factor (Tf): 1.0 Calculated
$I_{Design\ Storm}$: 0.20 in./hr. Default Value

-- OR -- Entering $I_{Historical}$ will override $I_{Design\ Storm}$ and set Tf to 2x

$I_{Historical}$: in./hr.

$Q_{TREATMENT}$= 0.0769 cfs

Reset Treatment Inputs | Display "100% Treatment" calculation worksheet | Calculate Results

STORM WATER CALCULATOR

Distribution Warehouse - Phase 2
380 Blodgett St.
A Mack/P Schlehr
6/24/2022

BMP Sizing Tool: 100% Treatment
Horizontal Flows - Swales

Calculated Swale Flow Depth = 0.0300 ft
Vsw = 1.2739 ft/s
Q Calculated Design Flow = 0.0787 cfs

Swale Side Slope (H / V): 2.00 ft./ft. (2:1 Max Slope)
Swale Bed Width: 2.00 ft. (2-7 foot width)
Longitudinal Swale Slope, %: 1.0% (8% Maximum Slope)
Manning Roughness Coefficient for Sheet Flow: Smooth surfaces; Concrete, Asphalt, Gravel, or Bare Soil
Manning's n: 0.011
Grass Height: 3.0 Inches
Swale Input Flow Characteristics: 90% or more of flow enters upstream end
Minimum required contact time: 5 Minutes
Design Swale Length: 0.0 ft

Percent of Treatment Requirement Achieved: 0.0 %
Results must be at least 100%

Reset Treatment Sizing Inputs | Display "Horizontal Flow Sizing" calculation worksheet | Calculate Results

Select 100% Flow Base Treatment Horizontal BMP Design Requirements when Saving? Yes

BMP Sizing Tool: 100% Treatment
Vertical Flow - Planter Boxes

Infiltration rate of the specified BMP soil, k: 5.00 in./hr.
Q Calculated Design Flow = 0.0501 cfs

Depth of drainage pipe: 2.50 ft (1.5 ft. minimum)
BMP Length: 216.5 ft
BMP Width: 2.0 ft

Percent of Requirement Achieved: 65.2 %
Results must be at least 100%

Reset Vertical Sizing Inputs | Display "Vertical Flow Sizing" calculation worksheet | Calculate Results

Select 100% Flow Base Treatment Vertical BMP Design Requirements when Saving? Yes

Delta Volume Capture; V_{delta}

If User Composite CN is used, Supporting calculations are required to be submitted.

Hydrologic soil type within tributary area: A: greater than 0.30 in/hr infiltration (transmission) rate
Predevelopment ground cover description: Brush: weed-grass mixture with brush major element - Poor (<50% ground cover)
Post development ground cover description: Brush: weed-grass mixture with brush major element - Poor (<50% ground cover)
CN_{PRE} = 48
CN_{POST} = 48
User Composite Predevelopment CN:
User Composite Post development CN:

User Cells must be blank to use CN_{PRE} OR CN_{POST} from drop down lists.

V_{DELTA} = 0.000 ft^3

-- OR -- *Entering a calculated composite CN_{PRE} Or CN_{POST} will override selections made from the pull down menus above.*

Error! CN too low to generate runoff!

Reset VDelta Inputs | Display "Delta Volume Capture" calculation | Calculate Results

BMP Sizing Tool: Delta Volume Capture Requirement

BMP Depth:
- Measured from ground surface WITHOUT perforated pipe.
- Measured from bottom of perforated pipe if installed.

The above and below ground Depth, Width, and Length or Areas will be summed together for the Percent of Requirement Achieved calculation.

Imported BMP Soil Porosity: 0.10

	BMP Volume Below Ground		Ponded Water Area Above Ground
Depth:	0.0 ft	Depth:	0.00 ft
Width:	0.0 ft	Width:	0.0 ft
Length:	0.0 ft	Length:	0.0 ft

-- OR -- Entering Area number will override Width & Length information!

Area BMP: ft^2 | Area: ft^2

Total Volume for calculation: 0.00 ft^3

Percent of Requirement Achieved: 0.00 %
Results must be at least 100%

Reset VDelta BMP Sizing Inputs | Display "VDelta BMP Sizing" calculation worksheet | Calculate Results

Select Delta Volume Capture BMP Design Requirements when Saving? Yes

Clear/Reset All Inputs | Calculate All

Hydromodification Control Requirement

Project:	Distribution Warehouse - Phase 2
Address/Location:	380 Blodgett St.
Designer:	A Mack/P Schlehr
Date:	June 24, 2022

BMP ID: BMP-1

Hydromodification Contro Results

$V_{HYDROMOD}$= 821.87 ft^3

Description: This Hydromodification Control Requiremen 100% Volume Capture is the ideal condition and if achieved satisfies all requirements so that no additional treatment is required.

To Navigate back to Input BMP Data worksheet, Please use the " Return to Input BMP Data Worksheet" button.

<<< Return to "Input BMP Data" Worksheet

Constants from Summary Page:

Reduced Physical Tributary Area that drains to Inlet/BMP 19,615 ft^2
Seasonal Precipitation Factor: K = 1.07

Hydromodification Control Requirement: 100% Volume Capture; $V_{hydromod}$

Capture (infiltration and/or reuse) of 100% of the volume of runoff generated by the 85th percentile 24 hour storm event.
Required for "Hydromodification Control Requirement" if the project creats or replaces 1 acre or more of impervious surface.

NOTE:
If the Design Goal of 100% Capture is not achieved, 100% Treatment AND Volume Capture must be achieved and both pages 4 and 5 of this calculator need to be completed.

Formulas:

$$S = \frac{1000}{CN} - 10$$

Where:
S= Potential maximum retention after runoff (in)[5]
CN= Curve Number [5]

$$Q = \frac{[(P \times K) - (0.2 \times S)]2}{[(P \times K) + (0.8 \times S)]} \times \frac{1ft}{12"}$$

Where:
Q= Runoff depth (ft) [6]
P= Precipitation (in) = 1.00
K= Seasonal Precipitation Factor [7]

Post-construction BMPs shall be sized to treat and caputure all of the runoff generated using the modified Rational Method with an intensity of 0.2 inches per hour for a one inch rain event over a 24 hour period.

$V = (Q)(A_r)$

Where:
V= Volume of Storm Water to be Retained (ft^3)
A_r= Reduced Tributary Area including credit for Pollution Prevention Measures (ft^2)

A_r = 19,615 ft^2
K [7] = 1.07

Input: (Pick data from drop down lists or enter calculated values)

Drop down Lists

Select post development hydrologic soil type within tributary area [8] = A: greater than 0.30 in/hr infiltration (transmission) rate
Select post development ground cover description [5] = Impervious - Paved Parking, Rooftop, Driveways

CN_{POST} =
OR: Composite post development CN [9] = 93.0

NOTE:
Entering a calculated composite CN will override selections made from the pull down menus above. Calculation worksheet should be used for all composite calculations and included with submittal.

Solution:

Volume of storm water - Post Development

S_{POST}= 0.75269 in

$$S_{POST} = \frac{1000}{93.000} - 10$$

Q_{POST}= 0.04190 ft

$$Q_{POST} = \frac{[(1.00 * 1.07)-(0.2 * 0.753)]^2}{[(1.00 * 1.07)+(0.8 * 0.753)]} \times \frac{1ft}{12in}$$

$V_{HRDROMOD}$= 821.87 ft^3

$V_{HYDROMOD}$= (0.04190)(19,615)

Where:
S_{POST}= Post development potential maximum retention after runoff (in).
Q_{POST}= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*
$V_{HYDROMOD}$= Post Development Volume of Storm Water to be Retained (ft^3)

[5] Per the "Urban Hydrology For Small Watersheds" TR-55 manual.

Click for the PDF of the Runoff curve numbers for urban areas. Check the bottom tool bar for open PDF.

[6] Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.

[7] From Sonoma County Water Agency Flood Control Design Criteria.

Click for PDF of Sonoma County Mean Seasonal Precipitation Map and Graph. Check the bottom tool bar for open PDF.

[8] Hydrologic soil type based of infiltration rate of native soil as defined by "Urban Hydrology For Small Watersheds" TR-55 Manual.

Click for PDF of TR-55 Appendix A Hydrologic Soil Groups. Check for open PDF file on bottom tool bar.

[9] Composite CN calculated per "Worksheet 2 Part 1 of the Urban Hydrology For Small Watersheds" TR-55 manual.

Click for PDF of "Worksheet 2: Runoff curve number and runoff". Check for open PDF file on bottom tool bar.

STORM WATER CALCULATOR

100% Treatment

Project: Distribution Warehouse - Phase 2
Address/Location: 380 Blodgett St.
Designer: A Mack/P Schlehr
Date: June 24, 2022

BMP ID: BMP-1 $Q_{TREATMENT}$= 0.07685 cfs

Treatment Only: If treatment is the only requirement, BMPs must be sized and design pertaining to the total area of the pre & post development impervious surfaces of the entire project.
Filter or Treatment:
- 1.5 times the design flow rate **OR**
- 2.0 times the design flow rate when using the local historical rainfall record flow rate runoff produced by the 24 hr 85th percentile rain event.

Constants and/or Results from:

Reduced Physical Tributary Area that drains to Inlet/BMP 19,615.00 ft^2

Summary: Seasonal Precipitation Factor: K = 1.07
Summary: Impervious area - pre development: - ft^2
Summary: Impervious area - post development: 103,887.00 ft^2

To Navigate back to Input BMP Data worksheet, Please use the " Return to Input BMP Data Worksheet" button.

<<< Return to "Input BMP Data"

100% Treatment

To be used if Volume Capture is also done.

Treatment of 100% of the flow generated by 85th percentile 24 hour mean annual rain event (0.2 in/hr).

C value note:
The C value used for this calculation is smaller than the value used for hydraulic Flood Control design.
The table of values can be found here.
This smaller value should not be used to size the overflow bypass.

[7] From Sonoma County Water Agency Flood Control Design Criteria.

Click for PDF of Sonoma County Mean Seasonal Precipitation Map and Graph. Check for open PDF file on bottom tool bar.

Formula:

$$Q_{TREATMENT} = I \times Ar \times CPOST \times K \times Tf$$

Where:
$Q_{TREATMENT}$= Design flow rate required to be treated (cfs)
C_{POST} = Rational method runoff coefficient for the developed condition [10]
A_r = Reduced Tributary Area including credit for Pollution Prevention Measures (in Acres)
K = Seasonal Precipitation Factor [7]
Tf= Treatment Factor (1.0, 1.5, or 2.0)
I = 0.2 in/hr Rain Intensity

Treatment Factor (Tf) is determined by the change of the impervious surface area and Volume Capture status.
1.5 = If Volume Capture is not required.
1.0 = If Post-Development > Pre-Development.
1.5 = If Pre-Development >= Post-Development.
2.0 = If local historical rainfall record flow rate of 24 hr. 85th percentile rain event is used.

[10] From "Using Site Design to Meet Development Standards For Storm water Quality" by the Bay Area Storm water Management Agencies Association (BASMAA).

Click for PDF of Table 6-1: C-Factors for Small Storms. Check for open PDF file on bottom tool bar.

Input:

K [7] :	1.07		
A_r :	19,615.0	ft^2 =	0.45030 Acres
Tf :	1.00		
Post Surface type :	Concrete		
C_{POST} [10] :	0.80		
User Composite post development C_{POST} :			
$I_{Design\ Storm}$:	0.20	in/hr	
$I_{historical}$:		in/hr	

NOTE:
The Flow Rate calculated here should only be used to size the appropriate BMP. All associated overflow inlets and systems should be sized for the Flood Control event.

Solution:

$Q_{TREATMENT}$= 0.07685 cfs

$Q_{TREATMENT}$= (0.20)(0.4503)(0.80)(1.07)(1.0)

City of Santa Rosa WATER

STORM WATER CALCULATOR

LID BMP Sizing Tool Delta Volume Capture Requirement

Project:	Distribution Warehouse - Phase 2
Address/Location:	380 Blodgett St.
Designer:	A Mack/P Schlehr
Date:	June 24, 2022

BMP ID: BMP-1

Percent of Goal Achieved: 0.00 %

Description: The Delta Volume Capture sizing tool helps the designer appropriately size a LID BMP to achieve the design requirement of the delta volume capture.
Instructions: Enter the percent of porosity of the specified soil and depth below perforated pipe (if present). The width and length entries will need to be interactively adjusted until "Percent of Requirement achieved" reaches 100%.

Results from another Worksheet:
V_{DELTA} from Delta Volume Capture Work Sheet = 0.00 ft^3

To Navigate back to Input BMP Data worksheet, Please use the " Return to Input BMP Data Worksheet" button.

<<< Return to "Input BMP Data" Worksheet

LID BMP Sizing Tool Delta Volume Capture Requirement: V_{DELTA}

NOTE:
LID Sizing Tool only applicable for volume based BMPs. Not required if site requires treatment only.

Formulas:

$$V_{LID\ DELTA} = \frac{V_{DELTA}}{P}$$

$$A_{LID\ DELTA} = (W)(L)\ \textit{or}\ \text{BMP Area}$$

$$V_{PONDED} = (W_P)(L_P)(D_P)\ \textit{or}\ AP(D_P)$$

Where:
$V_{LID\ DELTA}$= Required capture volume of the soil in LID BMP
$A_{LID\ DELTA}$ = Footprint of LID BMP area.
V_{PONDED} = Volume of Ponded Water above the treatment area surface.
V_{DELTA} = from Delta Volume Capture Work Sheet

Percent of Requirement Achieved =

$$\left(\frac{V_{PONDED}}{V_{DELTA}} + \frac{((D)(A_{LID\ DELTA}))}{V_{LID\ DELTA}}\right) \times 100$$

Where:
P= Porosity of the material used in the BMP (Drop Down List)
D= BMP Depth (See Note) (decimal feet)
W= Width (decimal feet)
L= Length (decimal feet)

Where:
D_P = Ponded Water Depth (decimal feet)
W_P = Ponded Water Width (decimal feet)
L_P = Ponded Water Length (decimal feet)
A_P = Ponded Water Surface area (decimal square feet)

BMP Depth:
- Measured from ground surface WITHOUT perforated pipe.
- Measured from bottom of perforated pipe if installed.

Input: BMP Below Ground

P =	0.10	
D =	0.0	ft
W =	0.0	ft
L =	0.0	ft

Input: Ponded Water Above Ground

D_P =	0.000	ft
W_P =	0.0	ft
L_P =	0.0	ft

OR enter Area (will override L & W)

BMP Area= 0.0 ft^2 Pond Area (A_P)= 0.0 ft^2

BMP Total Volume Area = 0.00 ft^3 V_{PONDED} = 0.00 ft^3

BMP + Ponded Volume Total = 0.00 ft^3

Solutions:

$V_{LID\ DELTA}$ =	0.00 ft^3	= 0.00 / 0.10
$A_{LID\ DELTA}$ =	0.00 ft^2	= 0.00 x 0.00
V_{PONDED} =	0.00 ft^3	= 0.00 x 0.00 x 0.000
Percent of Requirement Achieved =	0.00 %	= [(0.000 / 0.00) + ((0.00 x 0.0) / 0.00)] x 100

Simple Calculator Results (D,W,L)
Place zero in ether D, W, or L in the BMP Below Ground yellow cells:
@ 100% (given two dimensions) =

D=	0.00	ft
W=	0.00	ft
L=	0.00	ft

STORM WATER CALCULATOR

CN Composite Work Sheet

Project: Distribution Warehouse - Phase 2
Address/Location: 380 Blodgett St.
Designer: A Mack/P Schlehr
Date: June 24, 2022

Inlet Number/Tributary Area/BMP: BMP-1

INSTRUCTIONS: Please refer to the "Urban Hydrology for Small Watersheds" (TR-55 manual).

Soil Type (Infiltration Rate)	Cover Description	CN	Area ft^2	Product of CN x Area
A: greater than 0.30 in/hr infiltration (transmissi	Impervious - Paved Parking, Rooftop, Driveways	98	37188	3,644,424.0
A: greater than 0.30 in/hr infiltration (transmissi	Open Space (lawns, parks, golf courses, cemeteries, etc.) - Good (>75% grass cover)	39	1900	74,100.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
		Totals =	39088	3,718,524.0

$$CN_{COMPOSIT} = \frac{(CN \times Area) + (CN \times Area) + (CN \times Area) + (CN \times Area) \ldots}{\text{Total Tributary Area}} =$$

Use this $CN_{COMPOSIT}$ = 95.1

STORM WATER CALCULATOR

C Factor Composite Work Sheet

Project: Distribution Warehouse - Phase 2
Address/Location: 380 Blodgett St.
Designer: A Mack/P Schlehr
Date: June 24, 2022

Inlet Number/Tributary Area/BMP: BMP-1

INSTRUCTIONS: From "Using Site Design to Meet Development Standards For Storm water Quality" by the Bay Area Storm water Management Agencies Association (BASMAA).

Paving Surface	C Number	Area ft^2	Product of C x Area
Concrete	0.80	37,188	29,750.40
Grass	0.10	1,900	190.00
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
	Totals	39,088.00	29,940.40

$$C_{\text{FACTOR COMPOSIT}} = \frac{(C \times Area) + (C \times Area) + (C \times Area) + (C \times Area) \ldots}{\text{Total Tributary Area}} = \quad C_{\text{FACTOR COMPOSIT}} = \boxed{0.77}$$

STORM WATER CALCULATOR

City of Santa Rosa WATER

BMP Tributary Parameters

Project Name:	Distribution Warehouse - Phase 2		
BMP ID:	BMP-2		
BMP Design Criteria:	100% Capture & Treatment		
Type of BMP Design:	Priority 2: P2-04 Roadside Bioretention - Curb Opening		
BMP's Physical Tributary Area:	23,214.0	ft^2	
Description/Notes:	BMP for PG-2B		

Hydromodification Requirement: 100% Volume Capture; $V_{HYDROMOD}$

$V_{HYDROMOD}$ = 972.67 ft^3

Post development hydrologic soil type within tributary area:	A: greater than 0.30 in/hr infiltration (transmission) rate
Post development ground cover description:	Impervious - Paved Parking, Rooftop, Driveways
CN_{POST} :	
User Composite post development CN:	93.0

BMP Sizing Tool: Hydromodification Requirement

Percent of Goal Achieved = 123.82 %

BMP Volume Below Ground			Ponded Water Above Ground		
Porosity:	0.40				
Depth below perforated pipe if present:	2.90	ft	Depth:	0.50	ft
Width:	0.00	ft	Width:	0.00	ft
Length:	0.00	ft	Length:	0.00	ft
Area:	624.00	ft^2	Area:	961.00	ft^2

STORM WATER CALCULATOR

Distribution Warehouse - Phase 2
380 Blodgett St.
A Mack/P Schlehr
6/24/2022

BMP Input Worksheet

Enter BMP ID and BMP's Information:

To start a New BMP calculation, Press the **Clear/Reset All Inputs** button.

BMP ID (MUST BE unique): BMP-2
BMP's Physical Tributary Area: 23,214 ft^2 / 0.533 Acres
BMP Design Criteria: 100% Capture & Treatment

Type of BMP Design (select from pull down): Priority 2: P2-04 Roadside Bioretention - Curb Opening

BMP Notes:
BMP for PG-2B

Clear/Reset All Inputs | Calculate

Instructions: Enter in the Individual BMP's Tributary parameters in the **yellow cells**. To view the calculation worksheet, Click on the Display button for that section. All calculations are performed in the individual worksheets. To update the results on this worksheet, use the "**Calculate Results**" or "**Calculate All**" buttons.

CAUTION - MUST USE the Calculate button(s) to update results!

Action Buttons:

Clear/Reset All Inputs	Clear or load default values into cells of individual section or entire page.
Calculate	Will load values into worksheet, calculate and displays results.
Display Calculation Worksheet	Will load the values, calculate and display the corresponding worksheet with results.
Save BMP Data and Results	Calculates all sections before saving the BMP's design data, and then copies the results to the Summary worksheet by BMP ID. Will not save BMP if error(s) are present in the Runoff Reduction Measures or selected treatment method.

Runoff Reduction Measures

Note: The maximum Runoff Reduction Measures allowed is 50% of the physical tributary area.

Interceptor Trees

Number of new ***Evergreen Trees*** that qualify as interceptor trees: 0
Number of new ***Deciduous Trees*** that qualify as interceptor trees: 0
Enter square footage of qualifying **existing tree canopy:** 0 ft^2

Interceptor Tree trunk must be no greater than 25 feet from impervious surface.

Disconnected Roof Drains

Select disconnection condition: Select disconnection condition

Method 1
Amount of rooftop area that drain to disconnected downspouts: 0 ft^2

OR Method 2
Percent of rooftop area to be disconnected from downspouts: 0 %
Select Density: 1 Units per Acre

INSTRUCTIONS:
Method 1: Total Rooftop square foot area (ft^2) that is drained by the downspouts flowing to the single Tributary Area as designated. Can be from separate buildings.
OR
Method 2: Total Rooftop percentage (%) area relating to the total physical Tributary Area as designated.

Paved Area Disconnection

Paved Area Type (select from drop down list): Select paved area type
Enter area of alternatively designed paved area: 0.0 ft^2

Buffer Strips & Bovine Terraces

Area draining to a Buffer Strip or Bovine Terrace: 0.0 ft^2

Total Runoff Reduction Measures : 0 ft^2

Resulting reduced Tributary Area used for BMP sizing: 23,214 ft^2

Reset Reduction Measures Inputs | Display "Runoff Reduction Measures" calculation worksheet | Calculate Results

Hydromodification Control Requirement: 100% Volume Capture; $V_{hydromod}$

If User Composite CN is used, Supporting calculations are required to be submitted.

Post development hydrologic soil type within tributary area: A: greater than 0.30 in/hr infiltration (transmission) rate
Post development ground cover description: Impervious - Paved Parking, Rooftop, Driveways
CN_{POST} =
User Composite post development CN: 93.0

Entering a calculated composite CN will override selections made from the pull down menus above.

$V_{Hydromod}$: 972.67 ft^3

Reset Hydromod Inputs | Display "Hydromod" calculation worksheet | Calculate Results

BMP Sizing Tool: Hydromodification Control Requirement

The above and below ground Depth, Width, and Length or Areas will be summed together for the Percent of Requirement Achieved calculation.

BMP Depth:
- Measured from ground surface WITHOUT perforated pipe.
- Measured from bottom of perforated pipe if installed.

	BMP Volume Below Ground		Ponded Water Above Ground	
Imported BMP Soil Porosity:	0.40			
Depth:	2.90	ft	0.50	ft
Width:		ft		ft
Length:		ft		ft

-- OR -- *Entering an Area information will override Width & Length information!*

Area BMP: 624.00 ft^2 | Ponded Area: 961.00 ft^2

Design Check: Perforated Pipe is NOT allowed with Ponded Water values!

Total Volume achieved in BMP: 1,204.34 ft^3

Percent of Requirement Achieved: 123.82 %
Results must be at least 100%

Reset Hydromod Sizing Inputs | Display "Hydromod Sizing" calculation worksheet | Calculate Results

Select Hydromodification BMP Design when Saving? Yes

100% Treatment

If User Composite C_{POST} and or $I_{historical}$ are used, supporting calculations are required to be submitted.

$A_{Reduced}$: 23,214.0 ft^2
Post development surface: Concrete
C_{POST}: 0.80
User Composite post development C_{POST}:

-- OR -- Entering a calculated CPOST will override selection made from the pull down menu.

Treatment Factor (Tf): 1.0 Calculated
$I_{Design Storm}$: 0.20 in./hr. Default Value

-- OR -- Entering $I_{Historical}$ will override $I_{Design Storm}$ and set Tf to 2x

$I_{Historical}$: in./hr.

$Q_{TREATMENT}$= 0.0910 cfs

Reset Treatment Inputs | Display "100% Treatment" calculation worksheet | Calculate Results

STORM WATER CALCULATOR

BMP Sizing Tool: 100% Treatment
Horizontal Flows - Swales

Swale Side Slope (H / V): 2.00 ft./ft. (2:1 Max Slope)
Swale Bed Width: 2.00 ft. (2-7 foot width)
Longitudinal Swale Slope, %: 1.0% (8% Maximum Slope)
Manning Roughness Coefficient for Sheet Flow: Smooth surfaces; Concrete, Asphalt, Gravel, or Bare Soil
Manning's n: 0.011
Grass Height: 3.0 Inches
Swale Input Flow Characteristics: 90% or more of flow enters upstream end
Minimum required contact time: 5 Minutes
Design Swale Length: 0.0 ft

Calculated Swale Flow Depth = 0.0328 ft
Vsw = 1.3492 ft/s
Q Calculated Design Flow = 0.0914 cfs

Percent of Treatment Requirement Achieved: 0.0 %
Results must be at least 100%

Reset Treatment Sizing Inputs | Display "Horizontal Flow Sizing" calculation worksheet | Calculate Results

Select 100% Flow Base Treatment Horizontal BMP Design Requirements when Saving? ☐ Yes

BMP Sizing Tool: 100% Treatment
Vertical Flow - Planter Boxes

Infiltration rate of the specified BMP soil, k: 5.00 in./hr.
Depth of drainage pipe: 2.50 ft (1.5 ft. minimum)
BMP Length: 216.5 ft
BMP Width: 2.0 ft

Q Calculated Design Flow = 0.0501 cfs

Percent of Requirement Achieved: 55.1 %
Results must be at least 100%

Reset Vertical Sizing Inputs | Display "Vertical Flow Sizing" calculation worksheet | Calculate Results

Select 100% Flow Base Treatment Vertical BMP Design Requirements when Saving? ☐ Yes

Delta Volume Capture; V_{delta}

If User Composite CN is used, Supporting calculations are required to be submitted.

Hydrologic soil type within tributary area: A: greater than 0.30 in/hr infiltration (transmission) rate
Predevelopment ground cover description: Brush: weed-grass mixture with brush major element - Poor (<50% ground cover)
Post development ground cover description: Brush: weed-grass mixture with brush major element - Poor (<50% ground cover)
CN_{PRE} = 48
CN_{POST} = 48
User Composite Predevelopment CN:
User Composite Post development CN:

User Cells must be blank to use CN_{PRE} OR CN_{POST} from drop down lists.

V_{DELTA} = 0.000 ft^3

-- OR -- *Entering a calculated composite CN_{PRE} 0r CN_{POST} will override selections made from the pull down menus above.*

Error! CN too low to generate runoff!

Reset VDelta Inputs | Display "Delta Volume Capture" calculation | Calculate Results

BMP Sizing Tool: Delta Volume Capture Requirement

BMP Depth:
- Measured from ground surface WITHOUT perforrated pipe.
- Measured from bottom of perforated pipe if installed.

The above and below ground Depth, Width, and Length or Areas will be summed together for the Percent of Requirement Achieved calculation.

	BMP Volume Below Ground		Ponded Water Area Above Ground	
Imported BMP Soil Porosity:	0.10			
Depth:	0.0 ft	Depth:	0.00 ft	
Width:	0.0 ft	Width:	0.0 ft	
Length:	0.0 ft	Length:	0.0 ft	

-- OR -- Entering Area number will override Width & Length information!

Area BMP: ft^2 Area: ft^2

Total Volume for calculation: 0.00 ft^3

Percent of Requirement Achieved: 0.00 %
Results must be at least 100%

Reset VDelta BMP Sizing Inputs | Display "VDelta BMP Sizing" calculation worksheet | Calculate Results

Select Delta Volume Capture BMP Design Requirements when Saving? ☐ Yes

Clear/Reset All Inputs | Calculate All

Hydromodification Control Requirement

Project: Distribution Warehouse - Phase 2
Address/Location: 380 Blodgett St.
Designer: A Mack/P Schlehr
Date: June 24, 2022

BMP ID: BMP-2

Hydromodification Contro Results

$V_{HYDROMOD}$ = 972.67 ft^3

Description: This Hydromodification Control Requiremen 100% Volume Capture is the ideal condition and if achieved satisfies all requirements so that no additional treatment is required.

To Navigate back to Input BMP Data worksheet, Please use the " Return to Input BMP Data Worksheet" button.

<<< Return to "Input BMP Data" Worksheet

Constants from Summary Page:

Reduced Physical Tributary Area that drains to Inlet/BMP: 23,214 ft^2
Seasonal Precipitation Factor: K = 1.07

Hydromodification Control Requirement: 100% Volume Capture; $V_{hydromod}$

Capture (infiltration and/or reuse) of 100% of the volume of runoff generated by the 85th percentile 24 hour storm event.
Required for "Hydromodification Control Requirement" if the project creats or replaces 1 acre or more of impervious surface.

NOTE:
If the Design Goal of 100% Capture is not achieved, 100% Treatment AND Volume Capture must be achieved and both pages 4 and 5 of this calculator need to be completed.

Formulas:

$$S = \frac{1000}{CN} - 10$$

Where:
S= Potential maximum retention after runoff (in)[5]
CN= Curve Number [5]

$$Q = \frac{[(P \times K) - (0.2 \times S)]2}{[(P \times K)+(0.8 \times S)]} \times \frac{1ft}{12"}$$

Where:
Q= Runoff depth (ft) [6]
P= Precipitation (in) = 1.00
K= Seasonal Precipitation Factor [7]

Post-construction BMPs shall be sized to treat and caputure all of the runoff generated using the modified Rational Method with an intensity of 0.2 inches per hour for a one inch rain event over a 24 hour period.

$V = (Q)(A_r)$

Where:
V= Volume of Storm Water to be Retained (ft^3)
A_r= Reduced Tributary Area including credit for Pollution Prevention Measures (ft^2)

A_r = 23,214 ft^2
K [7] = 1.07

Input: (Pick data from drop down lists or enter calculated values)

Drop down Lists

Select post development hydrologic soil type within tributary area [8] = A: greater than 0.30 in/hr infiltration (transmission) rate
Select post development ground cover description [5] = Impervious - Paved Parking, Rooftop, Driveways

CN_{POST} =

OR: Composite post development CN [9] = 93.0

NOTE:
Entering a calculated composite CN will override selections made from the pull down menus above. Calculation worksheet should be used for all composite calculations and included with submittal.

Solution:

Volume of storm water - Post Development

S_{POST}= 0.75269 in

$$S_{POST} = \frac{1000}{93.000} - 10$$

Where:
S_{POST}= Post development potential maximum retention after runoff (in).

Q_{POST}= 0.04190 ft

$$Q_{POST} = \frac{[(1.00 * 1.07)-(0.2 * 0.753)]^2}{[(1.00 * 1.07)+(0.8 * 0.753)]} \times \frac{1ft}{12in}$$

Q_{POST}= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

$V_{HRDROMOD}$= 972.67 ft^3

$V_{HYDROMOD}$= (0.04190)(23,214)

$V_{HYDROMOD}$= Post Development Volume of Storm Water to be Retained (ft^3)

[5] Per the "Urban Hydrology For Small Watersheds" TR-55 manual.

Click for the PDF of the Runoff curve numbers for urban areas. Check the bottom tool bar for open PDF.

[6] Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.

[7] *From Sonoma County Water Agency Flood Control Design Criteria.*

Click for PDF of Sonoma County Mean Seasonal Precipitation Map and Graph. Check the bottom tool bar for open PDF.

[8] Hydrologic soil type based of infiltration rate of native soil as defined by "Urban Hydrology For Small Watersheds" TR-55 Manual.

Click for PDF of TR-55 Appendix A Hydrologic Soil Groups. Check for open PDF file on bottom tool bar.

[9] *Composite CN calculated per "Worksheet 2 Part 1 of the Urban Hydrology For Small Watersheds" TR-55 manual.*

Click for PDF of "Worksheet 2: Runoff curve number and runoff". Check for open PDF file on bottom tool bar.

STORM WATER CALCULATOR

The Project
A Location
A Person
Some Day

100% Treatment

Project:	Distribution Warehouse - Phase 2
Address/Location:	380 Blodgett St.
Designer:	A Mack/P Schlehr
Date:	June 24, 2022

BMP ID: BMP-2 $Q_{TREATMENT}$= 0.09095 cfs

Treatment Only: If treatment is the only requirement, BMPs must be sized and design pertaining to the total area of the pre & post development impervious surfaces of the entire project.
Filter or Treatment:
- 1.5 times the design flow rate **OR**
- 2.0 times the design flow rate when using the local historical rainfall record flow rate runoff produced by the 24 hr 85th percentile rain event.

Constants and/or Results from:

Reduced Physical Tributary Area that drains to Inlet/BMP 23,214.00 ft²

Summary: Seasonal Precipitation Factor: K = 1.07
Summary: Impervious area - pre development: - ft²
Summary: Impervious area - post development: 103,887.00 ft²

To Navigate back to Input BMP Data worksheet, Please use the " Return to Input BMP Data Worksheet" button.
<<< Return to "Input BMP Data"

100% Treatment

To be used if Volume Capture is also done.

Treatment of 100% of the flow generated by 85th percentile 24 hour mean annual rain event (0.2 in/hr).

C value note:
The C value used for this calculation is smaller than the value used for hydraulic Flood Control design.
The table of values can be found here.
This smaller value should not be used to size the overflow bypass.

[7] From Sonoma County Water Agency Flood Control Design Criteria.

Click for PDF of Sonoma County Mean Seasonal Precipitation Map and Graph. Check for open PDF file on bottom tool bar.

Formula:

$$Q_{TREATMENT} = I \times Ar \times CPOST \times K \times Tf$$

Where:
$Q_{TREATMENT}$= Design flow rate required to be treated (cfs)
C_{POST} = Rational method runoff coefficient for the developed condition [10]
A_r = Reduced Tributary Area including credit for Pollution Prevention Measures (in Acres)
K = Seasonal Precipitation Factor [7]
Tf= Treatment Factor (1.0, 1.5, or 2.0)
I = 0.2 in/hr Rain Intensity

Treatment Factor (Tf) is determined by the change of the impervious surface area and Volume Capture status.
1.5 = If Volume Capture is not required.
1.0 = If Post-Development > Pre-Development.
1.5 = If Pre-Development >= Post-Development.
2.0 = If local historical rainfall record flow rate of 24 hr. 85th percentile rain event is used.

Input:

K [7] : 1.07
A_r : 23,214.0 ft² = 0.53292 Acres
Tf : 1.00
Post Surface type : Concrete
C_{POST} [10] : 0.80
User Composite post development C_{POST} :
$I_{Design\ Storm}$: 0.20 in/hr
$I_{historical}$: in/hr

[10] From "Using Site Design to Meet Development Standards For Storm water Quality" by the Bay Area Storm water Management Agencies Association (BASMAA).

Click for PDF of Table 6-1: C-Factors for Small Storms. Check for open PDF file on bottom tool bar.

NOTE:
The Flow Rate calculated here should only be used to size the appropriate BMP. All associated overflow inlets and systems should be sized for the Flood Control event.

Solution:

$Q_{TREATMENT}$= 0.09095 cfs

$Q_{TREATMENT}$= (0.20)(0.5329)(0.80)(1.07)(1.0)

STORM WATER CALCULATOR

City of Santa Rosa WATER

LID BMP Sizing Tool Delta Volume Capture Requirement

Project:	Distribution Warehouse - Phase 2
Address/Location:	380 Blodgett St.
Designer:	A Mack/P Schlehr
Date:	June 24, 2022

BMP ID: BMP-2

Percent of Goal Achieved: 0.00 %

Description: The Delta Volume Capture sizing tool helps the designer appropriately size a LID BMP to achieve the design requirement of the delta volume capture.
Instructions: Enter the percent of porosity of the specified soil and depth below perforated pipe (if present). The width and length entries will need to be interactively adjusted until "Percent of Requirement achieved" reaches 100%.

Results from another Worksheet:
V_{DELTA} from Delta Volume Capture Work Sheet = 0.00 ft^3

To Navigate back to Input BMP Data worksheet, Please use the " Return to Input BMP Data Worksheet" button.

<<< Return to "Input BMP Data" Worksheet

LID BMP Sizing Tool Delta Volume Capture Requirement: V_{DELTA}

NOTE:
LID Sizing Tool only applicable for volume based BMPs. Not required if site requires treatment only.

Formulas:

$$V_{LID\ DELTA} = \frac{V_{DELTA}}{P}$$

$$A_{LID\ DELTA} = (W)(L)\ \textit{or}\ \text{BMP Area}$$

$$V_{PONDED} = (W_P)(L_P)(D_P)\ \textit{or}\ AP(D_P)$$

Where:
$V_{LID\ DELTA}$= Required capture volume of the soil in LID BMP
$A_{LID\ DELTA}$ = Footprint of LID BMP area.
V_{PONDED} = Volume of Ponded Water above the treatment area surface.
V_{DELTA} = from Delta Volume Capture Work Sheet

Percent of Requirement Achieved =

$$\left(\frac{V_{PONDED}}{V_{DELTA}} + \frac{((D)(A_{LID\ DELTA}))}{V_{LID\ DELTA}}\right) \times 100$$

Where:
P= Porosity of the material used in the BMP (Drop Down List)
D= BMP Depth (See Note) (decimal feet)
W= Width (decimal feet)
L= Length (decimal feet)

Where:
D_P = Ponded Water Depth (decimal feet)
W_P = Ponded Water Width (decimal feet)
L_P = Ponded Water Length (decimal feet)
A_P = Ponded Water Surface area (decimal square feet)

BMP Depth:
- Measured from ground surface WITHOUT perforrated pipe.
- Measured from bottom of perforated pipe if installed.

Input: BMP Below Ground

P =	0.10
D =	0.0 ft
W =	0.0 ft
L =	0.0 ft

Input: Ponded Water Above Ground

D_P =	0.000 ft
W_P =	0.0 ft
L_P =	0.0 ft

OR enter Area (will override L & W)
BMP Area= 0.0 ft^2 Pond Area (A_P)= 0.0 ft^2

BMP Total Volume Area = 0.00 ft^3 V_{PONDED} = 0.00 ft^3

BMP + Ponded Volume Total = 0.00 ft^3

Solutions:

$V_{LID\ DELTA}$ =	0.00 ft^3	= 0.00 / 0.10
$A_{LID\ DELTA}$ =	0.00 ft^2	= 0.00 x 0.00
V_{PONDED} =	0.00 ft^3	= 0.00 x 0.00 x 0.000
Percent of Requirement Achieved =	0.00 %	= [(0.000 / 0.00) + ((0.00 x 0.0) / 0.00)] x 100

Simple Calculator Results (D,W,L)
Place zero in ether D, W, or L in the BMP Below Ground yellow cells:
@ 100% (given two dimensions) =
D= 0.00 ft
W= 0.00 ft
L= 0.00 ft

City of Santa Rosa WATER

STORM WATER CALCULATOR

CN Composite Work Sheet

Project:	Distribution Warehouse - Phase 2
Address/Location:	380 Blodgett St.
Designer:	A Mack/P Schlehr
Date:	June 24, 2022
Inlet Number/Tributary Area/BMP:	BMP-2

INSTRUCTIONS: Please refer to the "Urban Hydrology for Small Watersheds" (TR-55 manual).

Soil Type (Infiltration Rate)	Cover Description	CN	Area ft^2	Product of CN x Area
A: greater than 0.30 in/hr infiltration (transmissi	Impervious - Paved Parking, Rooftop, Driveways	98	37188	3,644,424.0
A: greater than 0.30 in/hr infiltration (transmissi	Open Space (lawns, parks, golf courses, cemeteries, etc.) - Good (>75% grass cover)	39	1900	74,100.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
		Totals =	39088	3,718,524.0

$$CN_{COMPOSIT} = \frac{(CN \times Area) + (CN \times Area) + (CN \times Area) + (CN \times Area) \ldots}{\text{Total Tributary Area}} =$$

Use this $CN_{COMPOSIT}$ = 95.1

City of Santa Rosa WATER

STORM WATER CALCULATOR

C Factor Composite Work Sheet

Project: Distribution Warehouse - Phase 2
Address/Location: 380 Blodgett St.
Designer: A Mack/P Schlehr
Date: June 24, 2022

Inlet Number/Tributary Area/BMP: BMP-2

INSTRUCTIONS: From "Using Site Design to Meet Development Standards For Storm water Quality" by the Bay Area Storm water Management Agencies Association (BASMAA).

Paving Surface	C Number	Area ft^2	Product of C x Area
Concrete	0.80	37,188	29,750.40
Grass	0.10	1,900	190.00
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
	Totals	39,088.00	29,940.40

$C_{FACTOR\ COMPOSIT} = \frac{(C \times Area) + (C \times Area) + (C \times Area) + (C \times Area)\ \ldots}{\text{Total Tributary Area}}$ = **$C_{FACTOR\ COMPOSIT}$ = 0.77**

STORM WATER CALCULATOR

City of Santa Rosa WATER

BMP Tributary Parameters

Project Name:	Distribution Warehouse - Phase 2
BMP ID:	BMP-3
BMP Design Criteria:	100% Capture & Treatment
Type of BMP Design:	Priority 2: P2-04 Roadside Bioretention - Curb Opening
BMP's Physical Tributary Area:	16,299.0 ft^2
Description/Notes:	BMP for PR-3A and PG-3B

Hydromodification Requirement: 100% Volume Capture; $V_{HYDROMOD}$

$V_{HYDROMOD}$ = 551.88 ft^3

Post development hydrologic soil type within tributary area:	A: greater than 0.30 in/hr infiltration (transmission) rate
Post development ground cover description:	Impervious - Paved Parking, Rooftop, Driveways
CN_{POST} :	
User Composite post development CN:	91.0

BMP Sizing Tool: Hydromodification Requirement

Percent of Goal Achieved = 109.02 %

BMP Volume Below Ground			Ponded Water Above Ground		
Porosity:	0.40				
Depth below perforated pipe if present:	2.90	ft	Depth:	0.50	ft
Width:	0.00	ft	Width:	0.00	ft
Length:	0.00	ft	Length:	0.00	ft
Area:	329.00	ft^2	Area:	440.00	ft^2

STORM WATER CALCULATOR

BMP Input Worksheet

Enter BMP ID and BMP's Information:

To start a New BMP calculation, Press the **Clear/Reset All Inputs** button.

BMP ID (MUST BE unique): BMP-3
BMP's Physical Tributary Area: 16,299 ft^2 / 0.374 Acres
BMP Design Criteria: 100% Capture & Treatment

Type of BMP Design (select from pull down): Priority 2: P2-04 Roadside Bioretention - Curb Opening

BMP Notes:
BMP for PR-3A and PG-3B

Clear/Reset All Inputs | Calculate

Instructions: Enter in the Individual BMP's Tributary parameters in the **yellow cells**. To view the calculation worksheet, Click on the Display button for that section. All calculations are performed in the individual worksheets. To update the results on this worksheet, use the "**Calculate Results**" or "**Calculate All**" buttons.

CAUTION - MUST USE the Calculate button(s) to update results!

Action Buttons:

Clear/Reset All Inputs	Clear or load default values into cells of individual section or entire page.
Calculate	Will load values into worksheet, calculate and displays results.
Display Calculation Worksheet	Will load the values, calculate and display the corresponding worksheet with results.
Save BMP Data and Results	Calculates all sections before saving the BMP's design data, and then copies the results to the Summary worksheet by BMP ID. Will not save BMP if error(s) are present in the Runoff Reduction Measures or selected treatment method.

Runoff Reduction Measures

Note: The maximum Runoff Reduction Measures allowed is 50% of the physical tributary area.

Interceptor Trees

Number of new ***Evergreen Trees*** that qualify as interceptor trees: 0
Number of new ***Deciduous Trees*** that qualify as interceptor trees: 0
Enter square footage of qualifying **existing tree canopy:** 0 ft^2

Interceptor Tree trunk must be no greater than 25 feet from impervious surface.

Disconnected Roof Drains

Select disconnection condition: Select disconnection condition

Method 1
Amount of rooftop area that drain to disconnected downspouts: 0 ft^2

OR Method 2
Percent of rooftop area to be disconnected from downspouts: 0 %
Select Density: 1 Units per Acre

INSTRUCTIONS:
Method 1: Total Rooftop square foot area (ft^2) that is drained by the downspouts flowing to the single Tributary Area as designated. Can be from separate buildings.
OR
Method 2: Total Rooftop percentage (%) area relating to the total physical Tributary Area as designated.

Paved Area Disconnection

Paved Area Type (select from drop down list): Select paved area type
Enter area of alternatively designed paved area: 0.0 ft^2

Buffer Strips & Bovine Terraces

Area draining to a Buffer Strip or Bovine Terrace: 0.0 ft^2

Total Runoff Reduction Measures : 0 ft^2

Resulting reduced Tributary Area used for BMP sizing: 16,299 ft^2

Reset Reduction Measures Inputs | Display "Runoff Reduction Measures" calculation worksheet | Calculate Results

Hydromodification Control Requirement: 100% Volume Capture; $V_{hydromod}$

If User Composite CN is used, Supporting calculations are required to be submitted.

Post development hydrologic soil type within tributary area: A: greater than 0.30 in/hr infiltration (transmission) rate
Post development ground cover description: Impervious - Paved Parking, Rooftop, Driveways
CN_{POST} =
User Composite post development CN: 91.0

Entering a calculated composite CN will override selections made from the pull down menus above.

$V_{Hydromod}$: 551.88 ft^3

Reset Hydromod Inputs | Display "Hydromod" calculation worksheet | Calculate Results

BMP Sizing Tool: Hydromodification Control Requirement

BMP Depth:
- Measured from ground surface WITHOUT perforated pipe.
- Measured from bottom of perforated pipe if installed.

The above and below ground Depth, Width, and Length or Areas will be summed together for the Percent of Requirement Achieved calculation.

	BMP Volume Below Ground		Ponded Water Above Ground
Imported BMP Soil Porosity:	0.40		
Depth:	2.90 ft	Depth:	0.50 ft
Width:	ft	Width:	ft
Length:	ft	Length:	ft

-- OR -- *Entering an Area information will override Width & Length information!*

Area BMP: 329.00 ft^2 Ponded Area: 440.00 ft^2

Design Check: Perforated Pipe is NOT allowed with Ponded Water values!

Total Volume achieved in BMP: 601.64 ft^3

Percent of Requirement Achieved: 109.02 %
Results must be at least 100%

Reset Hydromod Sizing Inputs | Display "Hydromod Sizing" calculation worksheet | Calculate Results

Select Hydromodification BMP Design when Saving? Yes

100% Treatment

If User Composite C_{POST} and or $I_{historical}$ are used, supporting calculations are required to be submitted.

$A_{Reduced}$: 16,299.0 ft^2
Post development surface: Concrete
C_{POST}: 0.80
User Composite post development C_{POST}:

-- OR -- Entering a calculated CPOST will override selection made from the pull down menu.

Treatment Factor (Tf): 1.0 Calculated
$I_{Design\ Storm}$: 0.20 in./hr. Default Value

-- OR -- Entering $I_{Historical}$ will override $I_{Design\ Storm}$ and set Tf to 2x

$I_{Historical}$: in./hr.

$Q_{TREATMENT}$= 0.0639 cfs

Reset Treatment Inputs | Display "100% Treatment" calculation worksheet | Calculate Results

STORM WATER CALCULATOR

BMP Sizing Tool: 100% Treatment
Horizontal Flows - Swales

Calculated Swale Flow Depth = 0.0265 ft
Vsw = 1.1759 ft/s
Q Calculated Design Flow = 0.0640 cfs

Swale Side Slope (H / V):	2.00	ft./ft. (2:1 Max Slope)
Swale Bed Width:	2.00	ft. (2-7 foot width)
Longitudinal Swale Slope, %:	1.0%	(8% Maximum Slope)
Manning Roughness Coefficient for Sheet Flow:	Smooth surfaces; Concrete, Asphalt, Gravel, or Bare Soil	
Manning's n:	0.011	
Grass Height:	3.0	Inches
Swale Input Flow Characteristics:	90% or more of flow enters upstream end	
Minimum required contact time:	5	Minutes
Design Swale Length:	0.0	ft

Percent of Treatment Requirement Achieved: 0.0 %
Results must be at least 100%

Reset Treatment Sizing Inputs | Display "Horizontal Flow Sizing" calculation worksheet | Calculate Results

Select 100% Flow Base Treatment Horizontal BMP Design Requirements when Saving? Yes

BMP Sizing Tool: 100% Treatment
Vertical Flow - Planter Boxes

Infiltration rate of the specified BMP soil, k:	5.00	in./hr.
Depth of drainage pipe:	2.50	ft (1.5 ft. minimum)
BMP Length:	216.5	ft
BMP Width:	2.0	ft

Q Calculated Design Flow = 0.0501 cfs

Percent of Requirement Achieved: 78.5 %
Results must be at least 100%

Reset Vertical Sizing Inputs | Display "Vertical Flow Sizing" calculation worksheet | Calculate Results

Select 100% Flow Base Treatment Vertical BMP Design Requirements when Saving? Yes

Delta Volume Capture; V_{delta}

If User Composite CN is used, Supporting calculations are required to be submitted.

Hydrologic soil type within tributary area:	A: greater than 0.30 in/hr infiltration (transmission) rate
Predevelopment ground cover description:	Brush: weed-grass mixture with brush major element - Poor (<50% ground cover)
Post development ground cover description:	Brush: weed-grass mixture with brush major element - Poor (<50% ground cover)
CN_{PRE} =	48
CN_{POST} =	48
User Composite Predevelopment CN:	
User Composite Post development CN:	

User Cells must be blank to use CN_{PRE} OR CN_{POST} from drop down lists.

-- OR -- ***Entering a calculated composite CN_{PRE} Or CN_{POST} will override selections made from the pull down menus above.***

Error! CN too low to generate runoff!

V_{DELTA} = 0.000 ft^3

Reset VDelta Inputs | Display "Delta Volume Capture" calculation | Calculate Results

BMP Sizing Tool: Delta Volume Capture Requirement

BMP Depth:
- Measured from ground surface WITHOUT perforrated pipe.
- Measured from bottom of perforated pipe if installed.

The above and below ground Depth, Width, and Length or Areas will be summed together for the Percent of Requirement Achieved calculation.

	BMP Volume Below Ground			Ponded Water Area Above Ground	
Imported BMP Soil Porosity:	0.10				
Depth:	0.0	ft	Depth:	0.00	ft
Width:	0.0	ft	Width:	0.0	ft
Length:	0.0	ft	Length:	0.0	ft
-- OR -- Entering Area number will override Width & Length information!					
Area BMP:		ft^2	Area:		ft^2

Total Volume for calculation: 0.00 ft^3

Percent of Requirement Achieved: 0.00 %
Results must be at least 100%

Reset VDelta BMP Sizing Inputs | Display "VDelta BMP Sizing" calculation worksheet | Calculate Results

Select Delta Volume Capture BMP Design Requirements when Saving? Yes

Clear/Reset All Inputs | Calculate All

STORM WATER CALCULATOR

Hydromodification Control Requirement

Project: Distribution Warehouse - Phase 2
Address/Location: 380 Blodgett St.
Designer: A Mack/P Schlehr
Date: June 24, 2022

BMP ID: BMP-3

Hydromodification Contro Results

$V_{HYDROMOD}$= 551.88 ft^3

Description: This Hydromodification Control Requiremen 100% Volume Capture is the ideal condition and if achieved satisfies all requirements so that no additional treatment is required.

To Navigate back to Input BMP Data worksheet, Please use the " Return to Input BMP Data Worksheet" button.

<<< Return to "Input BMP Data" Worksheet

Constants from Summary Page:

Reduced Physical Tributary Area that drains to Inlet/BMP 16,299 ft^2
Seasonal Precipitation Factor: K = 1.07

Hydromodification Control Requirement: 100% Volume Capture; $V_{hydromod}$

Capture (infiltration and/or reuse) of 100% of the volume of runoff generated by the 85th percentile 24 hour storm event.
Required for "Hydromodification Control Requirement" if the project creats or replaces 1 acre or more of impervious surface.

NOTE:
If the Design Goal of 100% Capture is not achieved, 100% Treatment AND Volume Capture must be achieved and both pages 4 and 5 of this calculator need to be completed.

Formulas:

$$S = \frac{1000}{CN} - 10$$

Where:
S= Potential maximum retention after runoff (in)[5]
CN= Curve Number [5]

$$Q = \frac{[(P \times K) - (0.2 \times S)]2}{[(P \times K)+(0.8 \times S)]} \times \frac{1ft}{12"}$$

Where:
Q= Runoff depth (ft) [6]
P= Precipitation (in) = 1.00
K= Seasonal Precipitation Factor [7]

Post-construction BMPs shall be sized to treat and caputure all of the runoff generated using the modified Rational Method with an intensity of 0.2 inches per hour for a one inch rain event over a 24 hour period.

$V= (Q)(A_r)$

Where:
V= Volume of Storm Water to be Retained (ft^3)
A_r= Reduced Tributary Area including credit for Pollution Prevention Measures (ft^2)

A_r = 16,299 ft^2
K [7] = 1.07

Input: (Pick data from drop down lists or enter calculated values)

Drop down Lists

Select post development hydrologic soil type within tributary area [8] = A: greater than 0.30 in/hr infiltration (transmission) rate
Select post development ground cover description [5] = Impervious - Paved Parking, Rooftop, Driveways

CN_{POST} =

OR: Composite post development CN [9] = 91.0

NOTE:
Entering a calculated composite CN will override selections made from the pull down menus above. Calculation worksheet should be used for all composite calculations and included with submittal.

Solution:

Volume of storm water - Post Development

S_{POST}= 0.98901 in

$$S_{POST} = \frac{1000}{91.000} - 10$$

Q_{POST}= 0.03386 ft

$$Q_{POST} = \frac{[(1.00 * 1.07)-(0.2 * 0.989)]^2}{[(1.00 * 1.07)+(0.8 * 0.989)]} \times \frac{1ft}{12in}$$

$V_{HRDROMOD}$= 551.88 ft^3

$V_{HYDROMOD}$= (0.03386)(16,299)

Where:
S_{POST}= Post development potential maximum retention after runoff (in).
Q_{POST}= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*
$V_{HYDROMOD}$= Post Development Volume of Storm Water to be Retained (ft^3)

[5] Per the "Urban Hydrology For Small Watersheds" TR-55 manual.

Click for the PDF of the Runoff curve numbers for urban areas. Check the bottom tool bar for open PDF.

[6] Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.

[7] *From Sonoma County Water Agency Flood Control Design Criteria.*

Click for PDF of Sonoma County Mean Seasonal Precipitation Map and Graph. Check the bottom tool bar for open PDF.

[8] Hydrologic soil type based of infiltration rate of native soil as defined by "Urban Hydrology For Small Watersheds" TR-55 Manual.

Click for PDF of TR-55 Appendix A Hydrologic Soil Groups. Check for open PDF file on bottom tool bar.

[9] *Composite CN calculated per "Worksheet 2 Part 1 of the Urban Hydrology For Small Watersheds" TR-55 manual.*

Click for PDF of "Worksheet 2: Runoff curve number and runoff". Check for open PDF file on bottom tool bar.

STORM WATER CALCULATOR

100% Treatment

Project: Distribution Warehouse - Phase 2
Address/Location: 380 Blodgett St.
Designer: A Mack/P Schlehr
Date: June 24, 2022

BMP ID: BMP-3 $Q_{TREATMENT}$= 0.06386 cfs

Treatment Only: If treatment is the only requirement, BMPs must be sized and design pertaining to the total area of the pre & post development impervious surfaces of the entire project.
Filter or Treatment:
- 1.5 times the design flow rate **OR**
- 2.0 times the design flow rate when using the local historical rainfall record flow rate runoff produced by the 24 hr 85th percentile rain event.

Constants and/or Results from:

Reduced Physical Tributary Area that drains to Inlet/BMP 16,299.00 ft²

Summary:	Seasonal Precipitation Factor: K =	1.07	
Summary:	Impervious area - pre development:	-	ft²
Summary:	Impervious area - post development:	103,887.00	ft²

To Navigate back to Input BMP Data worksheet, Please use the " Return to Input BMP Data Worksheet" button.

<<< Return to "Input BMP Data"

100% Treatment

To be used if Volume Capture is also done.

Treatment of 100% of the flow generated by 85th percentile 24 hour mean annual rain event (0.2 in/hr).

C value note:
The C value used for this calculation is smaller than the value used for hydraulic Flood Control design.
The table of values can be found here.
This smaller value should not be used to size the overflow bypass.

[7] From Sonoma County Water Agency Flood Control Design Criteria.

Click for PDF of Sonoma County Mean Seasonal Precipitation Map and Graph. Check for open PDF file on bottom tool bar.

Formula:

$$Q_{TREATMENT} = I \times Ar \times CPOST \times K \times Tf$$

Where:
$Q_{TREATMENT}$= Design flow rate required to be treated (cfs)
C_{POST} = Rational method runoff coefficient for the developed condition [10]
A_r = Reduced Tributary Area including credit for Pollution Prevention Measures (in Acres)
K = Seasonal Precipitation Factor [7]
Tf= Treatment Factor (1.0, 1.5, or 2.0)
I = 0.2 in/hr Rain Intensity

Treatment Factor (Tf) is determined by the change of the impervious surface area and Volume Capture status.
1.5 = If Volume Capture is not required.
1.0 = If Post-Development > Pre-Development.
1.5 = If Pre-Development >= Post-Development.
2.0 = If local historical rainfall record flow rate of 24 hr. 85th percentile rain event is used.

[10] From "Using Site Design to Meet Development Standards For Storm water Quality" by the Bay Area Storm water Management Agencies Association (BASMAA).

Click for PDF of Table 6-1: C-Factors for Small Storms. Check for open PDF file on bottom tool bar.

Input:

K [7] :	1.07		
A_r :	16,299.0	ft² =	0.37417 Acres
Tf :	1.00		
Post Surface type :	Concrete		
C_{POST} [10] :	0.80		
User Composite post development C_{POST} :			
$I_{Design\ Storm}$:	0.20	in/hr	
$I_{historical}$:		in/hr	

NOTE:
The Flow Rate calculated here should only be used to size the appropriate BMP. All associated overflow inlets and systems should be sized for the Flood Control event.

Solution:

$Q_{TREATMENT}$= 0.06386 cfs

$Q_{TREATMENT}$= (0.20)(0.3742)(0.80)(1.07)(1.0)

STORM WATER CALCULATOR

City of Santa Rosa WATER

Delta Volume Capture

Project:	Distribution Warehouse - Phase 2
Address/Location:	380 Blodgett St.
Designer:	A Mack/P Schlehr
Date:	June 24, 2022

Description: To calculate the delta volume to be used in the Delta Capture BMP Sizing.

BMP ID: BMP-3 V_{DELTA}= 0.000 ft^3

Constants from Summary Page:

Reduced Physical Tributary Area that drains to Inlet/BMP 16,299 ft^2

Seasonal Precipitation Factor. K = 1.07

To Navigate back to Input BMP Data worksheet, Please use the " Return to Input BMP Data Worksheet" button.

<<< Return to "Input BMP Data" Worksheet

Requirement 2: Delta Volume Capture

No increase in volume of runoff leaving the site due to development for the 85th percentile 24 hour storm event.

NOTE:
If the amount of volume generated after development is less than or equal to that generated before development, Requirement 2-Volume Capture is not required.

($C_{POST} \le C_{PRE}$ or $CN_{POST} \le CN_{PRE}$)

Formulas:

$$S = \frac{1000}{CN} - 10$$

Where:
S= Potential maximum retention after runoff (in)[5]
CN= Curve Number [5]

$$Q = \frac{[(P \times K) - (0.2 \times S)]2}{[(P \times K) + (0.8 \times S)]} \times \frac{1ft}{12in}$$

Where:
Q= Runoff depth (ft) [6]
P= Precipitation (in) = 1.00
K= Seasonal Precipitation Factor [7]

Post-construction BMPs shall be sized to treat and caputure all of the runoff generated using the modified Rational Method with an intensity of 0.2 inches per hour for a one inch rain event over a 24 hour period.

$V=(Q)(A_r)$

Where:
V= Volume of Storm Water to be Retained (ft^3)
A_r= Reduced Tributary Area including credit for Pollution Prevention Measures (ft^2)

[5] Per the "Urban Hydrology For Small Watersheds" TR-55 manual.

[6] *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

[7] From Sonoma County Water Agency Flood Control Design Criteria.

[8] Hydrologic soil type based of infiltration rate of native soil as defined by "Urban Hydrology For Small Watersheds" TR-55 Manual.

[9] Composite CN calculated per "Worksheet 2 Part 1 of the Urban Hydrology For Small Watersheds" TR-55 manual.

Input: (Pick data from drop down lists or enter calculated values)

A_r = 16,299 ft^2

K [7] = 1.07

Drop down Lists

Select hydrologic soil type within tributary area[8] = A: greater than 0.30 in/hr infiltration (transmission) rate

Select predevelopment ground cover description [5] = Brush: weed-grass mixture with brush major element - Poor (<50% ground cover)

Select post development ground cover description [5] = Brush: weed-grass mixture with brush major element - Poor (<50% ground cover)

CN_{PRE} = 48.00

CN_{POST} = 48.00

OR Composite Predevelopment CN [9] =

Composite Post development CN [9] =

NOTE:
Entering a calculated composite CN will override selections made from the pull down menus above. Calculation worksheet should be used for all composite calculations and included with submittal.

Solution: **Error! CN too low to generate runoff!**

Pre Development Storm Water Runoff Volume

S_{PRE}= 10.83 in S_{PRE}= $\frac{1000}{48}$ -10

Where:
S_{PRE}= Pre development potential maximum retention after runoff (in).

Q_{PRE}= 0.00 ft Q_{PRE}= $\frac{[(1.00*1.07)-(0.2 * 10.83)]^2}{[(1.00*1.07)+(0.8 * 10.83)]}$ X $\frac{1ft}{12in}$

Q_{PRE}= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

V_{PRE}= 0.00 ft^3 V_{PRE}= (0.00000)(16,299)

V_{PRE}= Pre Development Volume of Storm Water Generated (ft^3)

Post Development Storm Water Runoff Volume

S_{POST}= 10.83 in S_{POST}= $\frac{1000}{48}$ -10

Where:
S_{POST}= Post development potential maximum retention after runoff (in).

Q_{POST}= 0.00 ft Q_{POST}= $\frac{[(1.00*1.07)-(0.2 * 10.83)]^2}{[(1.00*1.07)+(0.8 * 10.83)]}$ X $\frac{1ft}{12in}$

Q_{POST}= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

V_{POST}= 0.00 ft^3 V_{POST}= (0.00000)(16,299)

V_{POST}= Post Development Volume of Storm Water Generated (ft^3)

Solution: Volume Capture Requirement

Increase in volume of storm water that must be retained onsite (may be infiltrated or reused).

Delta Volume Capture= (V_{POST}-V_{PRE}) Delta Volume Capture= (0.00) - (0.00)

V_{DELTA}= 0.000 ft^3

Where:
Delta Volume Capture= The increase in volume of storm water generated by the 85th percentile 24 hour storm event due to development that must be retained onsite (may be infiltrated or reused).

STORM WATER CALCULATOR

City of Santa Rosa WATER

LID BMP Sizing Tool Delta Volume Capture Requirement

Project:	Distribution Warehouse - Phase 2
Address/Location:	380 Blodgett St.
Designer:	A Mack/P Schlehr
Date:	June 24, 2022

BMP ID: BMP-3

Percent of Goal Achieved: 0.00 %

Description: The Delta Volume Capture sizing tool helps the designer appropriately size a LID BMP to achieve the design requirement of the delta volume capture.
Instructions: Enter the percent of porosity of the specified soil and depth below perforated pipe (if present). The width and length entries will need to be interactively adjusted until "Percent of Requirement achieved" reaches 100%.

To Navigate back to Input BMP Data worksheet, Please use the " Return to Input BMP Data Worksheet" button.

<<< Return to "Input BMP Data" Worksheet

Results from another Worksheet:
V_{DELTA} from Delta Volume Capture Work Sheet = 0.00 ft^3

LID BMP Sizing Tool Delta Volume Capture Requirement: V_{DELTA}

NOTE:
LID Sizing Tool only applicable for volume based BMPs. Not required if site requires treatment only.

Formulas:

$$V_{LID\ DELTA} = \frac{V_{DELTA}}{P}$$

$$A_{LID\ DELTA} = (W)(L)\ or\ \text{BMP Area}$$

$$V_{PONDED} = (W_P)(L_P)(D_P)\ or\ AP(D_P)$$

Where:
$V_{LID\ DELTA}$= Required capture volume of the soil in LID BMP
$A_{LID\ DELTA}$ = Footprint of LID BMP area.
V_{PONDED} = Volume of Ponded Water above the treatment area surface.
V_{DELTA} = from Delta Volume Capture Work Sheet

Percent of Requirement Achieved =

$$\left(\frac{V_{PONDED}}{V_{DELTA}} + \frac{((D)(A_{LID\ DELTA}))}{V_{LID\ DELTA}}\right) \times 100$$

Where:
P= Porosity of the material used in the BMP (Drop Down List)
D= BMP Depth (See Note) (decimal feet)
W= Width (decimal feet)
L= Length (decimal feet)

Where:
D_P = Ponded Water Depth (decimal feet)
W_P = Ponded Water Width (decimal feet)
L_P = Ponded Water Length (decimal feet)
A_P = Ponded Water Surface area (decimal square feet)

BMP Depth:
- Measured from ground surface WITHOUT perforated pipe.
- Measured from bottom of perforated pipe if installed.

Input: BMP Below Ground

P =	0.10	
D =	0.0	ft
W =	0.0	ft
L =	0.0	ft

Input: Ponded Water Above Ground

D_P =	0.000	ft
W_P =	0.0	ft
L_P =	0.0	ft

OR enter Area (will override L & W)

BMP Area= 0.0 ft^2 Pond Area (A_P)= 0.0 ft^2

BMP Total Volume Area = 0.00 ft^3 V_{PONDED} = 0.00 ft^3

BMP + Ponded Volume Total = 0.00 ft^3

Solutions:

$V_{LID\ DELTA}$ =	0.00 ft^3	= 0.00 / 0.10
$A_{LID\ DELTA}$ =	0.00 ft^2	= 0.00 x 0.00
V_{PONDED} =	0.00 ft^3	= 0.00 x 0.00 x 0.000
Percent of Requirement Achieved =	0.00 %	= [(0.000 / 0.00) + ((0.00 x 0.0) / 0.00)] x 100

Simple Calculator Results (D,W,L)
Place zero in ether D, W, or L in the BMP Below Ground yellow cells:
@ 100% (given two dimensions) =
D= 0.00 ft
W= 0.00 ft
L= 0.00 ft

City of Santa Rosa WATER

STORM WATER CALCULATOR

CN Composite Work Sheet

Project: Distribution Warehouse - Phase 2
Address/Location: 380 Blodgett St.
Designer: A Mack/P Schlehr
Date: June 24, 2022

Inlet Number/Tributary Area/BMP: BMP-3

INSTRUCTIONS: Please refer to the "Urban Hydrology for Small Watersheds" (TR-55 manual).

Soil Type (Infiltration Rate)	Cover Description	CN	Area ft^2	Product of CN x Area
A: greater than 0.30 in/hr infiltration (transmissi	Impervious - Paved Parking, Rooftop, Driveways	98	37188	3,644,424.0
A: greater than 0.30 in/hr infiltration (transmissi	Open Space (lawns, parks, golf courses, cemeteries, etc.) - Good (>75% grass cover)	39	1900	74,100.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
		Totals =	39088	3,718,524.0

$$CN_{COMPOSIT} = \frac{(CN \times Area) + (CN \times Area) + (CN \times Area) + (CN \times Area) \ldots}{\text{Total Tributary Area}} =$$

Use this $CN_{COMPOSIT}$ = 95.1

City of Santa Rosa WATER

STORM WATER CALCULATOR

C Factor Composite Work Sheet

Project:	Distribution Warehouse - Phase 2
Address/Location:	380 Blodgett St.
Designer:	A Mack/P Schlehr
Date:	June 24, 2022
Inlet Number/Tributary Area/BMP:	BMP-3

INSTRUCTIONS: From "Using Site Design to Meet Development Standards For Storm water Quality" by the Bay Area Storm water Management Agencies Association (BASMAA).

Paving Surface	C Number	Area ft^2	Product of C x Area
Concrete	0.80	37,188	29,750.40
Grass	0.10	1,900	190.00
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
	Totals	39,088.00	29,940.40

$$C_{\text{FACTOR COMPOSIT}} = \frac{(C \times Area) + (C \times Area) + (C \times Area) + (C \times Area) \ldots}{\text{Total Tributary Area}} = \quad C_{\text{FACTOR COMPOSIT}} = \boxed{0.77}$$

STORM WATER CALCULATOR

City of Santa Rosa WATER

BMP Tributary Parameters

Project Name:	Distribution Warehouse - Phase 2
BMP ID:	BMP-4
BMP Design Criteria:	100% Capture & Treatment
Type of BMP Design:	Priority 2: P2-04 Roadside Bioretention - Curb Opening
BMP's Physical Tributary Area:	37,343.0 ft^2
Description/Notes:	BMP for PG-4B and PR-4A

Hydromodification Requirement: 100% Volume Capture; $V_{HYDROMOD}$

$V_{HYDROMOD}$ = 2,662.93 ft^3

Post development hydrologic soil type within tributary area:	A: greater than 0.30 in/hr infiltration (transmission) rate
Post development ground cover description:	Impervious - Paved Parking, Rooftop, Driveways
CN_{POST} :	
User Composite post development CN:	98.0

BMP Sizing Tool: Hydromodification Requirement

Percent of Goal Achieved = 105.58 %

BMP Volume Below Ground			Ponded Water Above Ground		
Porosity:	0.40				
Depth below perforated pipe if present:	4.50	ft	Depth:	0.50	ft
Width:	0.00	ft	Width:	0.00	ft
Length:	0.00	ft	Length:	0.00	ft
Area:	1,160.00	ft^2	Area:	1,447.00	ft^2

STORM WATER CALCULATOR

BMP Input Worksheet

Enter BMP ID and BMP's Information:

To start a New BMP calculation, Press the **Clear/Reset All Inputs** button.

BMP ID (MUST BE unique): BMP-4
BMP's Physical Tributary Area: 37,343 ft² | 0.857 Acres
BMP Design Criteria: 100% Capture & Treatment

Type of BMP Design (select from pull down): Priority 2: P2-04 Roadside Bioretention - Curb Opening

BMP Notes:
BMP for PG-4B and PR-4A

Clear/Reset All Inputs | Calculate

Instructions: Enter in the Individual BMP's Tributary parameters in the **yellow cells**. To view the calculation worksheet, Click on the Display button for that section. All calculations are performed in the individual worksheets. To update the results on this worksheet, use the "**Calculate Results**" or "**Calculate All**" buttons.

CAUTION - MUST USE the Calculate button(s) to update results!

Action Buttons:

Clear/Reset All Inputs	Clear or load default values into cells of individual section or entire page.
Calculate	Will load values into worksheet, calculate and displays results.
Display Calculation Worksheet	Will load the values, calculate and display the corresponding worksheet with results.
Save BMP Data and Results	Calculates all sections before saving the BMP's design data, and then copies the results to the Summary worksheet by BMP ID. Will not save BMP if error(s) are present in the Runoff Reduction Measures or selected treatment method.

Runoff Reduction Measures

Note: The maximum Runoff Reduction Measures allowed is 50% of the physical tributary area.

Interceptor Trees

Number of new ***Evergreen Trees*** that qualify as interceptor trees: 0
Number of new ***Deciduous Trees*** that qualify as interceptor trees: 0
Enter square footage of qualifying **existing tree canopy:** 0 ft²

Interceptor Tree trunk must be no greater than 25 feet from impervious surface.

Disconnected Roof Drains

Select disconnection condition: Select disconnection condition

Method 1

Amount of rooftop area that drain to disconnected downspouts: 0 ft²

OR **Method 2**

Percent of rooftop area to be disconnected from downspouts: 0 %
Select Density: 1 Units per Acre

INSTRUCTIONS:
Method 1: Total Rooftop square foot area (ft²) that is drained by the downspouts flowing to the single Tributary Area as designated. Can be from separate buildings.
OR
Method 2: Total Rooftop percentage (%) area relating to the total physical Tributary Area as designated.

Paved Area Disconnection

Paved Area Type (select from drop down list): Select paved area type
Enter area of alternatively designed paved area: 0.0 ft²

Buffer Strips & Bovine Terraces

Area draining to a Buffer Strip or Bovine Terrace: 0.0 ft²

Total Runoff Reduction Measures : 0 ft²

Resulting reduced Tributary Area used for BMP sizing: 37,343 ft²

Reset Reduction Measures Inputs | Display "Runoff Reduction Measures" calculation worksheet | Calculate Results

Hydromodification Control Requirement: 100% Volume Capture; $V_{hydromod}$

If User Composite CN is used, Supporting calculations are required to be submitted.

Post development hydrologic soil type within tributary area: A: greater than 0.30 in/hr infiltration (transmission) rate
Post development ground cover description: Impervious - Paved Parking, Rooftop, Driveways
CN_{POST} =
User Composite post development CN: 98.0

Entering a calculated composite CN will override selections made from the pull down menus above.

$V_{Hydromod}$: 2,662.93 ft³

Reset Hydromod Inputs | Display "Hydromod" calculation worksheet | Calculate Results

BMP Sizing Tool: Hydromodification Control Requirement

BMP Depth:
- Measured from ground surface WITHOUT perforated pipe.
- Measured from bottom of perforated pipe if installed.

The above and below ground Depth, Width, and Length or Areas will be summed together for the Percent of Requirement Achieved calculation.

	BMP Volume Below Ground		Ponded Water Above Ground
Imported BMP Soil Porosity:	0.40		
Depth:	4.50 ft	Depth:	0.50 ft
Width:	ft	Width:	ft
Length:	ft	Length:	ft

-- OR -- ***Entering an Area information will override Width & Length information!***

Area BMP:	1,160.00 ft²	Ponded Area:	1,447.00 ft²

Design Check: Perforated Pipe is NOT allowed with Ponded Water values!

Total Volume achieved in BMP: 2,811.50 ft³

Percent of Requirement Achieved: 105.58 %
Results must be at least 100%

Reset Hydromod Sizing Inputs | Display "Hydromod Sizing" calculation worksheet | Calculate Results

Select Hydromodification BMP Design when Saving? Yes

100% Treatment

If User Composite C_{POST} and or $I_{historical}$ are used, supporting calculations are required to be submitted.

$A_{Reduced}$: 37,343.0 ft²
Post development surface: Concrete
C_{POST}: 0.80
User Composite post development C_{POST}:

-- OR -- ***Entering a calculated CPOST will override selection made from the pull down menu.***

Treatment Factor (Tf): 1.0 Calculated
$I_{Design\ Storm}$: 0.20 in./hr. Default Value

-- OR -- ***Entering $I_{Historical}$ will override $I_{Design\ Storm}$ and set Tf to 2x***

$I_{Historical}$: in./hr.

$Q_{TREATMENT}$= 0.1463 cfs

Reset Treatment Inputs | Display "100% Treatment" calculation worksheet | Calculate Results

STORM WATER CALCULATOR

Distribution Warehouse - Phase 2
380 Blodgett St.
A Mack/P Schlehr
6/24/2022

BMP Sizing Tool: 100% Treatment
Horizontal Flows - Swales

Swale Side Slope (H / V):	2.00	ft./ft. (2:1 Max Slope)
Swale Bed Width:	2.00	ft. (2-7 foot width)
Longitudinal Swale Slope, %:	1.0%	(8% Maximum Slope)
Manning Roughness Coefficient for Sheet Flow:	Smooth surfaces; Concrete, Asphalt, Gravel, or Bare Soil	
Manning's n:	0.011	
Grass Height:	3.0	Inches
Swale Input Flow Characteristics:	90% or more of flow enters upstream end	
Minimum required contact time:	5	Minutes
Design Swale Length:	0.0	ft

Calculated Swale Flow Depth =	0.0440	ft
Vsw =	1.6276	ft/s
Q Calculated Design Flow =	0.1495	cfs

Percent of Treatment Requirement Achieved: 0.0 %

Results must be at least 100%

Reset Treatment Sizing Inputs | Display "Horizontal Flow Sizing" calculation worksheet | Calculate Results

Select 100% Flow Base Treatment Horizontal BMP Design Requirements when Saving? Yes

BMP Sizing Tool: 100% Treatment
Vertical Flow - Planter Boxes

Infiltration rate of the specified BMP soil, k:	5.00	in./hr.
Depth of drainage pipe:	2.50	ft (1.5 ft. minimum)
BMP Length:	216.5	ft
BMP Width:	2.0	ft

Q Calculated Design Flow = 0.0501 cfs

Percent of Requirement Achieved: 34.3 %

Results must be at least 100%

Reset Vertical Sizing Inputs | Display "Vertical Flow Sizing" calculation worksheet | Calculate Results

Select 100% Flow Base Treatment Vertical BMP Design Requirements when Saving? Yes

Delta Volume Capture; V_{delta}

If User Composite CN is used, Supporting calculations are required to be submitted.

Hydrologic soil type within tributary area:	A: greater than 0.30 in/hr infiltration (transmission) rate
Predevelopment ground cover description:	Brush: weed-grass mixture with brush major element - Poor (<50% ground cover)
Post development ground cover description:	Brush: weed-grass mixture with brush major element - Poor (<50% ground cover)
CN_{PRE} =	48
CN_{POST} =	48
User Composite Predevelopment CN:	
User Composite Post development CN:	

User Cells must be blank to use CN_{PRE} OR CN_{POST} from drop down lists.

-- OR -- *Entering a calculated composite CN_{PRE} Or CN_{POST} will override selections made from the pull down menus above.*

Error! CN too low to generate runoff!

V_{DELTA}= 0.000 ft^3

Reset VDelta Inputs | Display "Delta Volume Capture" calculation | Calculate Results

BMP Sizing Tool: Delta Volume Capture Requirement

BMP Depth:
- Measured from ground surface WITHOUT perforated pipe.
- Measured from bottom of perforated pipe if installed.

The above and below ground Depth, Width, and Length or Areas will be summed together for the Percent of Requirement Achieved calculation.

	BMP Volume Below Ground			Ponded Water Area Above Ground	
Imported BMP Soil Porosity:	0.10				
Depth:	0.0	ft	Depth:	0.00	ft
Width:	0.0	ft	Width:	0.0	ft
Length:	0.0	ft	Length:	0.0	ft

-- OR -- Entering Area number will override Width & Length information!

Area BMP:		ft^2	Area:		ft^2

Total Volume for calculation: 0.00 ft^3

Percent of Requirement Achieved: 0.00 %

Results must be at least 100%

Reset VDelta BMP Sizing Inputs | Display "VDelta BMP Sizing" calculation worksheet | Calculate Results

Select Delta Volume Capture BMP Design Requirements when Saving? Yes

Clear/Reset All Inputs | Calculate All

Hydromodification Control Requirement

Project: Distribution Warehouse - Phase 2
Address/Location: 380 Blodgett St.
Designer: A Mack/P Schlehr
Date: June 24, 2022

Description: This Hydromodification Control Requiremen 100% Volume Capture is the ideal condition and if achieved satisfies all requirements so that no additional treatment is required.

BMP ID: BMP-4

Hydromodification Contro Results

$V_{HYDROMOD}$= 2662.93 ft^3

To Navigate back to Input BMP Data worksheet, Please use the " Return to Input BMP Data Worksheet" button.

<<< Return to "Input BMP Data" Worksheet

Constants from Summary Page:

Reduced Physical Tributary Area that drains to Inlet/BMP 37,343 ft^2
Seasonal Precipitation Factor: K = 1.07

Hydromodification Control Requirement: 100% Volume Capture; $V_{hydromod}$
Capture (infiltration and/or reuse) of 100% of the volume of runoff generated by the 85th percentile 24 hour storm event.
Required for "Hydromodification Control Requirement" if the project creats or replaces 1 acre or more of imperivous surface.

NOTE:
If the Design Goal of 100% Capture is not achieved, 100% Treatment AND Volume Capture must be achieved and both pages 4 and 5 of this calculator need to be completed.

Formulas:

$$S = \frac{1000}{CN} - 10$$

Where:
S= Potential maximum retention after runoff (in)[5]
CN= Curve Number [5]

$$Q = \frac{[(P \times K) - (0.2 \times S)]2}{[(P \times K) + (0.8 \times S)]} \times \frac{1ft}{12"}$$

Where:
Q= Runoff depth (ft) [6]
P= Precipitation (in) = 1.00
K= Seasonal Precipitation Factor [7]

Post-construction BMPs shall be sized to treat and caputure all of the runoff generated using the modified Rational Method with an intensity of 0.2 inches per hour for a one inch rain event over a 24 hour period.

$V = (Q)(A_r)$

Where:
V= Volume of Storm Water to be Retained (ft^3)
A_r= Reduced Tributary Area including credit for Pollution Prevention Measures (ft^2)

A_r = 37,343 ft^2
K [7] = 1.07

Input: (Pick data from drop down lists or enter calculated values)

Drop down Lists

Select post development hydrologic soil type within tributary area [8] = **A: greater than 0.30 in/hr infiltration (transmission) rate**
Select post development ground cover description [5] = **Impervious - Paved Parking, Rooftop, Driveways**

CN_{POST} =

OR: Composite post development CN [9] = 98.0

NOTE:
Entering a calculated composite CN will override selections made from the pull down menus above. Calculation worksheet should be used for all composite calculations and included with submittal.

Solution:

Volume of storm water - Post Development

S_{POST}= 0.20408 in

$$S_{POST} = \frac{1000}{98.000} - 10$$

Q_{POST}= 0.07131 ft

$$Q_{POST} = \frac{[(1.00 * 1.07)-(0.2 * 0.204)]^2}{[(1.00 * 1.07)+(0.8 * 0.204)]} \times \frac{1ft}{12in}$$

$V_{HRDROMOD}$= 2,662.93 ft^3

$V_{HYDROMOD}$= (0.07131)(37,343)

Where:
S_{POST}= Post development potential maximum retention after runoff (in).
Q_{POST}= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*
$V_{HYDROMOD}$= Post Development Volume of Storm Water to be Retained (ft^3)

[5] Per the "Urban Hydrology For Small Watersheds" TR-55 manual.

Click for the PDF of the Runoff curve numbers for urban areas. Check the bottom tool bar for open PDF.

[6] Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.

[7] *From Sonoma County Water Agency Flood Control Design Criteria.*

Click for PDF of Sonoma County Mean Seasonal Precipitation Map and Graph. Check the bottom tool bar for open PDF.

[8] Hydrologic soil type based of infiltration rate of native soil as defined by "Urban Hydrology For Small Watersheds" TR-55 Manual.

Click for PDF of TR-55 Appendix A Hydrologic Soil Groups. Check for open PDF file on bottom tool bar.

[9] *Composite CN calculated per "Worksheet 2 Part 1 of the Urban Hydrology For Small Watersheds" TR-55 manual.*

Click for PDF of "Worksheet 2: Runoff curve number and runoff". Check for open PDF file on bottom tool bar.

City of Santa Rosa WATER

STORM WATER CALCULATOR

LID BMP Sizing Tool Delta Volume Capture Requirement

Project:	Distribution Warehouse - Phase 2
Address/Location:	380 Blodgett St.
Designer:	A Mack/P Schlehr
Date:	June 24, 2022

BMP ID: BMP-4

Percent of Goal Achieved: 0.00 %

Description: The Delta Volume Capture sizing tool helps the designer appropriately size a LID BMP to achieve the design requirement of the delta volume capture.
Instructions: Enter the percent of porosity of the specified soil and depth below perforated pipe (if present). The width and length entries will need to be interactively adjusted until "Percent of Requirement achieved" reaches 100%.

Results from another Worksheet:
V_{DELTA} from Delta Volume Capture Work Sheet = 0.00 ft^3

To Navigate back to Input BMP Data worksheet, Please use the " Return to Input BMP Data Worksheet" button.

<<< Return to "Input BMP Data" Worksheet

LID BMP Sizing Tool Delta Volume Capture Requirement: V_{DELTA}

NOTE:
LID Sizing Tool only applicable for volume based BMPs. Not required if site requires treatment only.

Formulas:

$$V_{LID\ DELTA} = \frac{V_{DELTA}}{P}$$

$$A_{LID\ DELTA} = (W)(L)\ \mathit{or}\ \text{BMP Area}$$

$$V_{PONDED} = (W_P)(L_P)(D_P)\ \mathit{or}\ AP(D_P)$$

Where:
$V_{LID\ DELTA}$ = Required capture volume of the soil in LID BMP
$A_{LID\ DELTA}$ = Footprint of LID BMP area.
V_{PONDED} = Volume of Ponded Water above the treatment area surface.
V_{DELTA} = from Delta Volume Capture Work Sheet

Percent of Requirement Achieved =

$$\left(\frac{V_{PONDED}}{V_{DELTA}} + \frac{((D)(A_{LID\ DELTA}))}{V_{LID\ DELTA}}\right) \times 100$$

Where:
P= Porosity of the material used in the BMP (Drop Down List)
D= BMP Depth (See Note) (decimal feet)
W= Width (decimal feet)
L= Length (decimal feet)

Where:
D_P = Ponded Water Depth (decimal feet)
W_P = Ponded Water Width (decimal feet)
L_P = Ponded Water Length (decimal feet)
A_P = Ponded Water Surface area (decimal square feet)

BMP Depth:
- Measured from ground surface WITHOUT perforated pipe.
- Measured from bottom of perforated pipe if installed.

Input: BMP Below Ground

P = 0.10
D = 0.0 ft
W = 0.0 ft
L = 0.0 ft

Input: Ponded Water Above Ground

D_P = 0.000 ft
W_P = 0.0 ft
L_P = 0.0 ft

OR enter Area (will override L & W)

BMP Area= 0.0 ft^2
Pond Area (A_P)= 0.0 ft^2

BMP Total Volume Area = 0.00 ft^3
V_{PONDED} = 0.00 ft^3
BMP + Ponded Volume Total = 0.00 ft^3

Solutions:

$V_{LID\ DELTA}$ =	0.00 ft^3	= 0.00 / 0.10
$A_{LID\ DELTA}$ =	0.00 ft^2	= 0.00 x 0.00
V_{PONDED} =	0.00 ft^3	= 0.00 x 0.00 x 0.000
Percent of Requirement Achieved =	0.00 %	= [(0.000 / 0.00) + ((0.00 x 0.0) / 0.00)] x 100

Simple Calculator Results (D,W,L)
Place zero in ether D, W, or L in the BMP Below Ground yellow cells:
@ 100% (given two dimensions) =
D= 0.00 ft
W= 0.00 ft
L= 0.00 ft

City of Santa Rosa WATER

STORM WATER CALCULATOR

CN Composite Work Sheet

Project: Distribution Warehouse - Phase 2
Address/Location: 380 Blodgett St.
Designer: A Mack/P Schlehr
Date: June 24, 2022

Inlet Number/Tributary Area/BMP: BMP-4

INSTRUCTIONS: Please refer to the "Urban Hydrology for Small Watersheds" (TR-55 manual).

Soil Type (Infiltration Rate)	Cover Description	CN	Area ft^2	Product of CN x Area
A: greater than 0.30 in/hr infiltration (transmissi	Impervious - Paved Parking, Rooftop, Driveways	98	37188	3,644,424.0
A: greater than 0.30 in/hr infiltration (transmissi	Open Space (lawns, parks, golf courses, cemeteries, etc.) - Good (>75% grass cover)	39	1900	74,100.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
No Entry	No Entry	0	0	0.0
		Totals =	39088	3,718,524.0

$CN_{COMPOSIT} = \frac{(CN \times Area) + (CN \times Area) + (CN \times Area) + (CN \times Area) \ldots}{\text{Total Tributary Area}}$ = **Use this $CN_{COMPOSIT}$ =** 95.1

City of Santa Rosa WATER

STORM WATER CALCULATOR

C Factor Composite Work Sheet

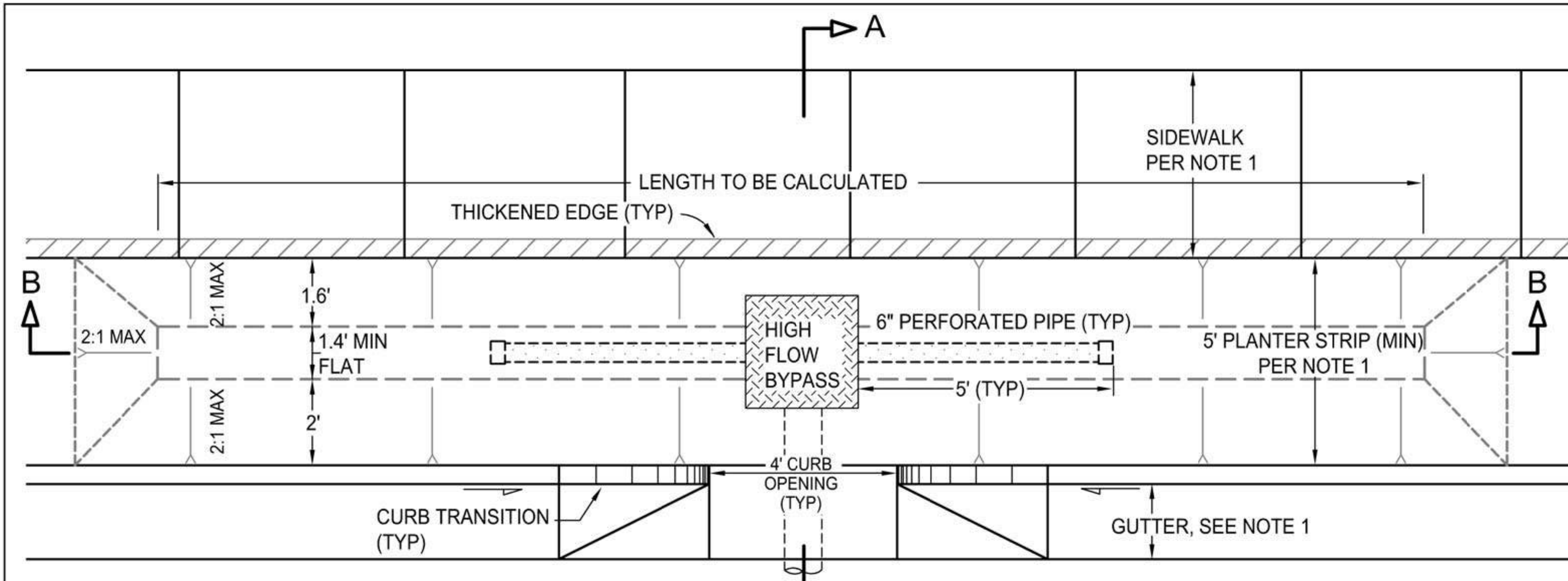
Project: Distribution Warehouse - Phase 2
Address/Location: 380 Blodgett St.
Designer: A Mack/P Schlehr
Date: June 24, 2022

Inlet Number/Tributary Area/BMP: BMP-4

INSTRUCTIONS: From "Using Site Design to Meet Development Standards For Storm water Quality" by the Bay Area Storm water Management Agencies Association (BASMAA).

Paving Surface	C Number	Area ft^2	Product of C x Area
Concrete	0.80	37,188	29,750.40
Grass	0.10	1,900	190.00
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
No Entry	-	-	-
	Totals	39,088.00	29,940.40

$$C_{\text{FACTOR COMPOSIT}} = \frac{(C \times Area) + (C \times Area) + (C \times Area) + (C \times Area) \ldots}{\text{Total Tributary Area}} = \quad C_{\text{FACTOR COMPOSIT}} = \boxed{0.77}$$

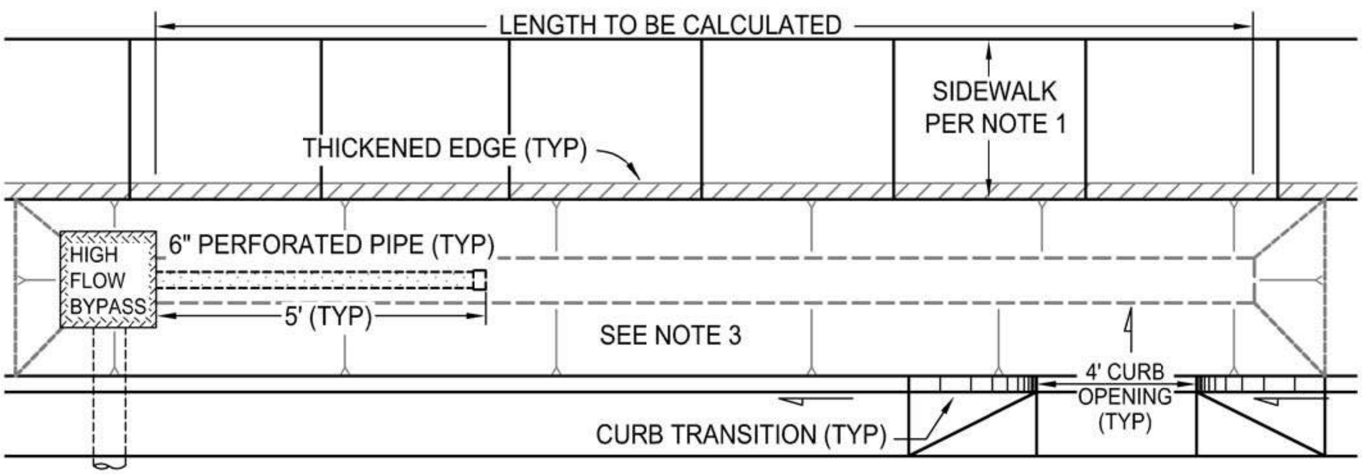


PLAN

TYPE A - CURB OPENING AT LOW POINT

NOTE:

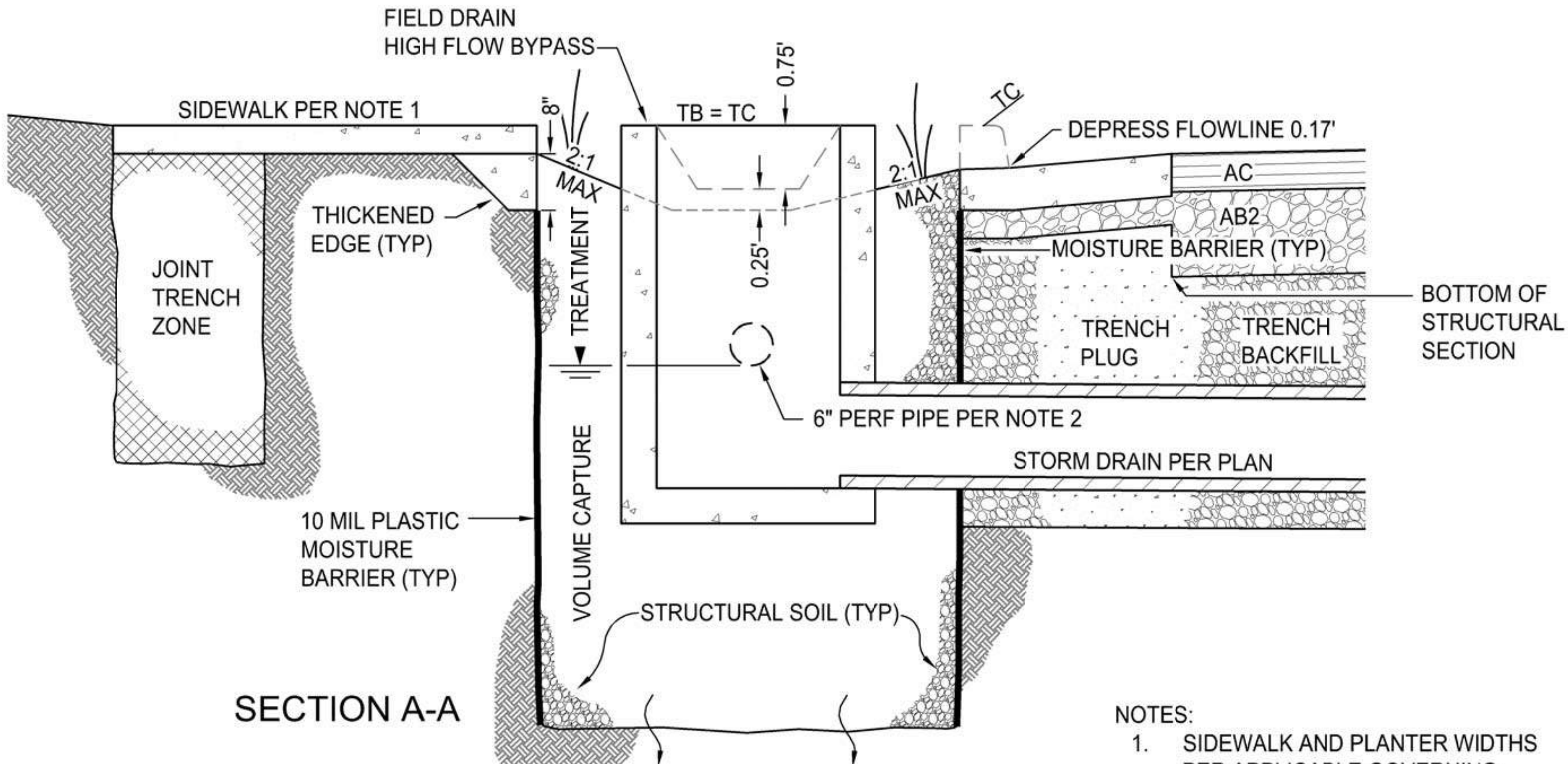
1. SIDEWALK, GUTTER AND PLANTER WIDTHS PER APPLICABLE MUNICIPAL STANDARDS (TYP).
2. TOP OF 6" PERFORATED PIPE TO BE SET 6" BELOW ROAD STRUCTURAL SECTION, MIN.
3. TYPE A MINIMUM DIMENSIONS AND GRADES APPLY TO TYPE B.



TYPE B -CURB OPENING ALONG A SLOPE

Not to Scale

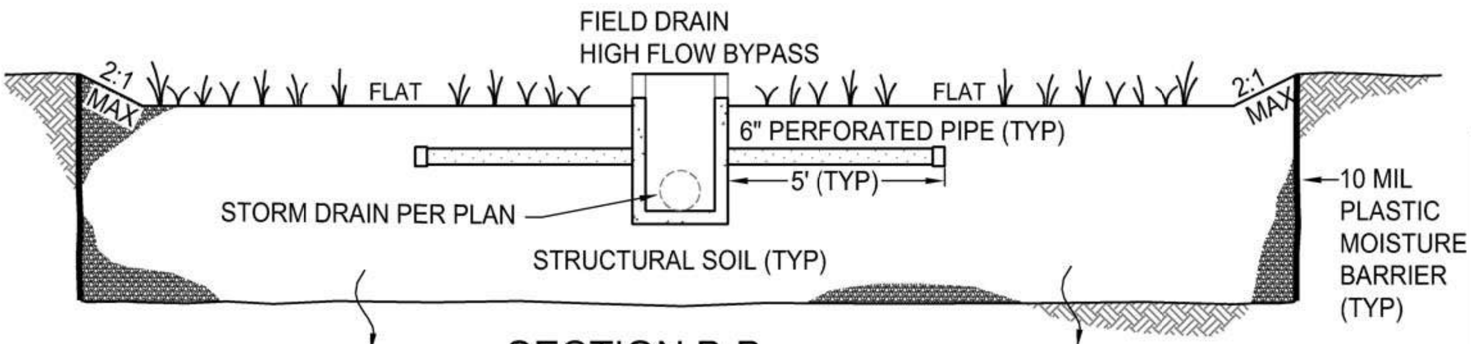
PRIORITY 2 ROADSIDE BIORETENTION - CURB OPENING		
SCALE: NONE	DATE: 04/06/17	
DWN. DIT CHK. HM	SHEET 1 of 2	P2–04



SECTION A-A

NOTES:

1. SIDEWALK AND PLANTER WIDTHS PER APPLICABLE GOVERNING AGENCY STANDARDS (TYP).
2. TOP OF 6" PERFORATED PIPE TO BE SET 6" BELOW BOTTOM OF ROAD STRUCTURAL SECTION.



SECTION B-B

Not to Scale

PRIORITY 2 ROADSIDE BIORETENTION - CURB OPENING SECTION A-A & B-B		
SCALE: *NONE*		DATE: *04/06/17*
DWN. *DIT* CHK. *HM*	SHEET 2 of 2	P2–04

RECORDING REQUESTED BY
ANDWHEN RECORDED MAIL TO: ________________________

City of Cotati
Public Works
201 West Sierra Ave
Cotati CA 94931

Project/Property: 380 Blodgett Street Building 2, Cotati, CA 94931
APN(s): 046-073-006-000

Cotati, California

DECLARATION OF COVENANTS REGARDING MAINTENANCE OF STORM WATER BMP FACILITIES

This Declaration of Covenants Regarding Maintenance of Storm Water BMP Facilities ("Declaration") is made on this______________day of___________, 20___, by Sandell Holdings LLC ("Landowner") a California limited liability company .

RECITALS

A. Landowner is the fee simple owner of certain real property located in the City of Cotati ("City"), Sonoma County, California, with an address of 380 Blodgett Street, APN 046-074-006-000, and more fully described in Exhibit A to this Declaration ("Property").

B. The City's National Pollutant Discharge Elimination System ("NPDES") Municipal Separate Storm Sewer System ("MS4") Permit, Order number R1-2009-0050, issued by the North Coast Regional Water Quality Control Board, requires the City to implement and enforce specific requirements for the construction and maintenance of onsite storm water management facilities/best management practices (collectively, "BMP") for development, redevelopment, and other applicable projects with the goal of mitigating impacts to storm water quality and runoff volume discharges into the MS4.

C. Provisions of Section 13.68 and other applicable sections of the Cotati City Code shall apply to the construction, inspection and maintenance of BMP facilities and the enforcement of MS4 Permit requirements.

D. On INSERT DATE, who (City Engineer OR Chief Building Official) approved Improvement Plans (Plans) and a Final Stormwater Low Impact Development Submittal (FSWLIDS) for the Property which require the construction and maintenance of BMP facilities on the Property (the "BMP Facilities") by Landowner in the locations as shown on Exhibit B – BMP Facilities attached to this Declaration. The BMP Facilities required under the FSWLIDS may include both built and landscaping features. The Improvement Plans, and Final SWLIDS may be inspected at the City of Cotati, Department of Public Works, 201

West Sierra Ave upon appointment.

E. The Cotati SWLIDS Ordinances and the Final SWLIDS requires that Landowner make and execute this Declaration.

DECLARATION OF COVENANTS

NOW, THEREFORE, in consideration of the foregoing recitals, Landowner hereby covenants, agrees and declares as follows:

1. Landowner shall, at Landowner's sole cost and expense, construct, inspect, and maintain the BMP Facilities in accordance with the Plans and the FSWLIDS. Landowner shall assure that all BMPs remain fully functional and that all areas identified in the Plans and FSWLIDS for treatment and/or volume capture discharge to the specified BMP as designed.

2. Landowner shall keep all records related to annual inspections of BMP's by City and all records related to BMP maintenance for a period of at least five years. The records shall include records of any BMP Facilities corrections, repairs, and replacements. Landowner shall make these records available to the City upon request.

3. In the event Landowner fails to maintain the BMP Facilities in good working condition as solely determined by the City, the City may enter upon the Property and take whatever steps it deems reasonably necessary to maintain and/or make in good working condition, such BMP Facilities. It is expressly understood that the City is under no obligation to maintain or repair the BMP Facilities, and in no event shall this Declaration be construed to impose such an obligation on the City.

4. In the event that the City performs work of any nature, or expends any funds in the performance of such work for labor, use of equipment, supplies, materials, or the like, due to failure of the Landowner to perform its maintenance obligations under this Declaration, as solely determined by City, Landowner shall reimburse the City within 60 days of receipt of notice for all costs incurred by the City to undertake such work. Costs shall include, but are not limited to, the actual cost of construction, maintenance and/or repair, and administrative costs directly related to such work.

5. Any violation of the Plans or FSWLIDS by Landowner shall be deemed a public nuisance the Cotati City Code and City shall be entitled to any remedies available to it in addition to those available to it under Section 13.68. The remedies identified herein shall be in addition to and cumulative of all other remedies, criminal or civil, which may be pursued by the City.

6. Landowner shall indemnify, defend and hold harmless the City and its employees, officials, and agents, from and against any liability, (including liability for claims, suits, actions, arbitration proceedings, administrative proceedings, regulatory proceedings,

losses, expenses or costs of any kind, whether actual, alleged or threatened, interest, defense costs, and expert witness fees), where the same relates to, or arises out of, the construction, presence, existence, inspection, or maintenance of BMP Facilities on the Property or the performance of the covenants underlying this Declaration by Landowner, its officers, employees, agents, contractors or sub- contractors, excepting only that resulting from the sole, active negligence or intentional misconduct of the City, its employees, officials, or agents. This indemnification obligation is not limited in any way by any limitation on the amount or type of damages or compensation payable to or for the Landowner or its agents under workers' compensation acts, disability benefits acts or other employees' benefits acts. If any judgment or claim against the City, its officials, agents, or employees, shall be entered, Landowner shall pay all cost and expenses in connection therewith.

7. If any provisions of this Declaration shall be held to be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.

8. This Declaration shall be governed according to the laws of the State of California. The parties hereto agree that the forum for the adjudication of any dispute related to this Declaration shall be brought exclusively and solely in Sonoma County, California.

9. Landowner shall not assign this Declaration to a third party without the express prior written consent of the City, provided that such consent will not be unreasonably withheld and that such consent shall not be required for Landowner to sell or lease the property to a third party.

10. Landowner binds itself, its partners, successors, legal representatives and assigns to the City, and to the partners, successors, legal representatives and assigns of the City with respect to all promises and agreements contained herein.

11. This Declaration shall be recorded by Landowner, and shall: a) constitute a "covenant running with the land;" b) be binding upon Landowner and Landowner's successors, heirs, and assigns in perpetuity; and, 3) benefit the City of Cotati, its successors, and assigns. Any breach of this Declaration shall render Landowner or Landowner's heirs, successors or assigns liable pursuant to the provisions of the Cotati City Code.

12. Any notice, submittal or communication required or permitted to be served on Landowner or City may be served by personal delivery to the person or the office of the person identified below. Service may also be made by mail, by placing first-class postage, and addressed as indicated below, and depositing in the United States mail to:

City Representative:	Landowner or Landowner Representative:
Name:________________________	Name: ___________________________
City of Cotati	Address:____________________________

Public Works Department ____________________________
201 West Sierra Avenue ____________________________
Cotati CA 94931 ____________________________

Executed as of the day and year first above stated.

LANDOWNER:

Name:____________________________

Signatures of Authorized Persons:

By: ______________________________

Print Name:________________________

Title: _____________________________

By: ______________________________

Print Name:________________________

Title: _____________________________

ATTACHMENTS:
Exhibit A- Property Description
Exhibit B – BMP Facilities
Notary Acknowledgment

EXHIBIT A
PROPERTY DESCRIPTION

LEGAL DESCRIPTION

Real property in the City of Cotati, County of Sonoma, State of California, described as follows:

PARCEL ONE:

LOT 172 AS NUMBERED AND DESIGNATED UPON THE MAP OF SUBDIVISION NO. 7, RANCHO COTATI, FILED JUNE 7, 1893, IN BOOK 10 OF MAPS, PAGE 9, SONOMA COUNTY RECORDS.

EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE SONOMA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT BY DEED DATED SEPTEMBER 29, 1961 AND RECORDED MAY 25, 1962, IN BOOK 1892 OF OFFICIAL RECORDS, PAGE 66, UNDER RECORDER'S SERIAL NO. G-93896, SONOMA COUNTY RECORDS.

ALSO EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE SONOMA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT BY DEED DATED SEPTEMBER 29, 1961 AND RECORDED MAY 25, 1962, IN BOOK 1892 OF OFFICIAL RECORDS, PAGE 72, UNDER RECORDER'S SERIAL NO. G-93898, SONOMA COUNTY RECORDS.

PARCEL TWO:

ALL THAT PORTION OF LAND THAT LIES BETWEEN THE NORTHEASTERLY EXTENSION OF THE EASTERLY LINE AND THE NORTHEASTERLY EXTENSION OF THE WESTERLY LINE OF PARCEL 4 REFERRED TO IN THE GRANT DEED FROM SONOMA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT TO CLYDE A. BLODGETT AND DORIS BLODGETT, HIS WIFE, DATED FEBRUARY 9, 1962 AND RECORDED MAY 25, 1962, IN BOOK 1892 OF OFFICIAL RECORDS, PAGE 85, UNDER RECORDER'S SERIAL NO. G-93901, SONOMA COUNTY RECORDS.

APN: 046-073-006-000

EXHIBIT B
BMP FACILITIES

As described beginning on page 4. in the CaliChi Design Group Initial Storm Water Low Impact Development Report for Sandell Distribution Warehouse – Building 2, 380 Blodgett Street, Cotati, CA 94931 dated July 8, 2022:

2.0 Pollution Prevention and Runoff Reduction Measures

The site will capture 100% of its runoff volume. This is based on the proposed projects qualities in reference to the Santa Rosa LID manual.

2.1 Proposed BMP's

This design is proposing the use of four (4) roadside bio-retention containing drain rock with 0.40 void space to satisfy the 100% Volume Capture Requirement that are located at low points throughout the site and are labeled BMP-1, -2, -3 & -4.

The delineated drainage basins all flow to their respective roadside bio-retention BMP's (BMP-1 through BMP-4) where the 10-year storm is retained. An overflow inlet has been designed in each BMP in order to capture and convey runoff in excess of the required volume capture quantity and are considered Priority 2 and have been sized using the Santa Rosa Low Impact Development calculator and specifically placed to capture all the runoff throughout the site.

In addition to the four (4) Priority 2 BMPs, drains with trash capture devices will be installed at the two truck docks on the East and West sides of the site.

2.2 Volume Capture Calculations

The Santa Rosa Calculation Spreadsheet has been used to size the BMPs. Within the calculator, the drainage basins are separated by the type of cover within each basin in order to calculate an accurate CN value for each section. The composite CN number is then used to determine the required amount of hydromodification that is required for each basin.
Drain rock will be used in the bio-retention trench at various depths as required for each BMP using a porosity of 0.40 for the drain rock volume. The required volume, actual volume, and depth of drainage rock for each retention chamber is shown in the table below.

Subsurface Retention Pond	Required Retention Volume (cf)	Provided Retention Volume (cf)	Depth of Drain Rock (ft)
BMP-1	821.9	1,032.1	2.9
BMP-2	972.7	1,204.3	2.9
BMP-3	551.9	601.6	2.9
BMP-4	2,662.9	2,811.5	2.9

These values can also be found in ***Appendix C*** of this report.

To help clarify the location of the bio-treatment planters and subsurface retention trenches, the following descriptions are given. These can also be seen on the Stormwater Control Plan in Appendix B of this report.

BMP-1: This BMP accepts runoff from PR-1A, PR-1B & PG-1C. It's located just South of the Southeast quadrant of the building and the outfall pipe runs south and eventually discharges to an existing outfall to the Laguna in the Northwest corner of the site.

BMP-2: This BMP accepts runoff from PR-2B and is located near the southeastern corner of the site and the outfall pipe runs Northwest and eventually discharges to an existing outfall to the Laguna in the Northwest corner of the site. It should be noted that this BMP was sized to include the area of PR-2C, however PR-2C does not actually drain into it due to the elevation being approximately 3ft lower than the surrounding grades and is infeasible to route drainage into a BMP.

BMP-3: This BMP accepts runoff from PR-3A and PG-3B. It's located near the Northeast corner of the site and the outfall pipe runs Northwest and eventually discharges to an existing outfall to the Laguna in the Northwest corner of the site.

BMP-4: This BMP accepts runoff from PR-4A & PG-4B. It's located near the Northwest corner of the site and the outfall pipe runs North and eventually discharges to an existing outfall to the Laguna in the Northwest corner of the site.

2.3 Maintenance

BMP Maintenance:

At a minimum, each roadside bio-retention needs to be inspected twice annually for standing water beyond the drawdown period, excessive erosion of soil, or dead vegetation and plantings within the planter. If ponded water is observed, the perforated pipes and / or inlets within the planter may need maintenance and regrading or replacement of the soils may be necessary to prevent mosquito breeding.

Trash Capture Maintenance:

These filters should be cleaned twice annually. This will involve the removal of the filter, vacuuming out all sediment and debris, pressure washing the device and inlet, and replacing the device.

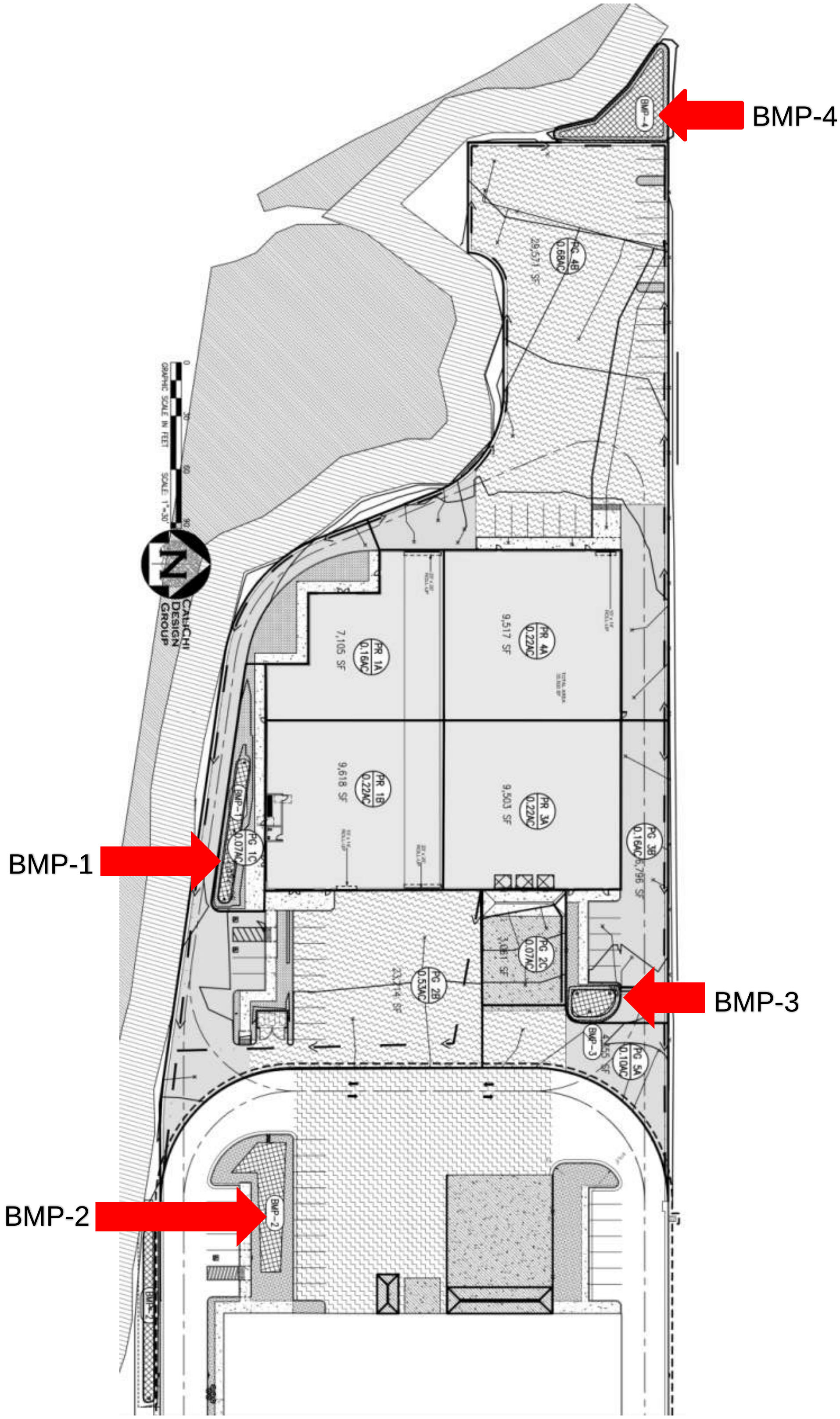
2.4 Responsible Party

The property owner will be the responsible party for the maintenance of each BMP.

Note 1: By way of clarification to the report, when significant "ponded water" is observed within a BMP for more than 72 hours after a storm event concludes, then corrective actions shall be taken. A 72-hour drawdown is the criteria used for the design of the BMP's.

EXHIBIT B

BMP FACILITIES - CONTINUED



FACT SHEET- BIORETENTION

BIORETENTION

Also know as: Street rain garden, roadside bioretention, and bioretention cell

DESCRIPTION

The bioretention area best management practice (BMP) functions as a soil and plant-based filtration and infiltration feature that removes pollutants through a variety of natural physical, biological, and chemical treatment processes.

ADVANTAGES

- Achieves both water quality and volume capture objectives.
- Bioretention areas provide storm water treatment that enhances the quality of downstream water bodies by using natural processes.
- The vegetation provides shade and wind breaks, absorbs noise, reduces heat island effects and improves an area's landscape.
- Bioretention provides habitat for birds and attracts other pollinators like butterflies and bees.
- Does not interrupt utility installation.
- Does not interfere with tree planting.

FACT SHEET- BIORETENTION

LIMITATIONS

- Bioretention is not recommended for areas where street slopes exceed 10%.
- Should not be used in areas of known contamination. If soil and/or groundwater contamination is present on the site or within a 100’ radius of the proposed BMP location, the North Coast Regional Water Quality Control Board will need to be contacted and the site reviewed.
- Should not be used in areas of high groundwater. In general a minimum of 2’ of clearance should be provided between the bottom of the bioretention cell and seasonal high groundwater.
- Should not be used in areas of slope instability where infiltrated storm water may cause failure. Slope stability should be determined by a licensed geotechnical engineer.
- Do not use in locations that can negatively impact building foundation or footings. Location shall be approved by a licensed Geotechnical Engineer.

KEY DESIGN FEATURES

ALL BIORETENTION

- Structural soil should be used within the bioretention area requiring load bearing capacity (adjacent to roadways and/or buildings.)
- Structural soil shall be installed as described in Reference Document E.
- Some BMPs may not require the use of structural soil and a more organic type planting soil and/or treatment media may be used in its place. It may be possible in some cases to use native soil or to amend the native soil so that it is suitable. Use of non-structural soil will depend on evaluation of the criteria in “Chapter 4-Site Assessment” as well as consideration of structural needs and may require evaluation by a licensed Geotechnical Engineer.
- Native soil should remain uncompacted to preserve infiltration capacity. Fence off the area during construction to protect it from compaction.
- Bottom of bioretention should be unlined to allow infiltration into native soil.
- Moisture barrier must be installed to protect road sub-base and any trenches adjacent to the bioretention area.
- If used, pervious concrete shall be designed and installed as described in Appendix G.
- If used, porous gutter must be protected during construction to prevent sediment loading.
- If the porous gutter design option is used additional trash and sediment capture BMPs may be required
- A curb opening type design may be used in place of a porous gutter if appropriate for the project.
- Bioretention areas shall be planted with plants from the approved plant and tree list included in Appendix F and shall be planted to achieve 51% cover.

- All bioretention areas shall be designed with a designated high flow bypass inlet for storms larger than the design storm.
- 6” perforated pipe to be installed at a depth of 6” below road structural section.
- Perforated pipe shall be installed in straight runs.
- The volume below the perforated pipe must be sufficient to hold and infiltrate the design volume.

SIZING DESIGN- GOAL AND REQUIREMENTS

- The **design goal** for all bioretention areas is to capture (infiltration and/or reuse) 100% of the volume of runoff generated by the 85^{th} percentile 24 hour storm event. This is a retention requirement. If 100% volume capture is achieved than no additional treatment is required.
- If the design goal is not achievable, then the bioretention area *sizing requirement* is:
  - **Water Quality Treatment** of 100% of the flow generated by the 85th percentile 24 hour storm event, as calculated using the Rational Method and a known intensity of 0.20 inches per hour, **and**
  - **Volume Capture** (infiltration and/or reuse) of the increase in volume of storm water due to development generated by the 85th percentile 24 hour storm event. This is a retention requirement.
- All calculations shall be completed using the “Storm Water Calculator” available at www.srcity.org/stormwaterLID.

INSPECTION AND MAINTENANCE REQUIREMENTS

A maintenance plan shall be provided with the Final SUSMP. The maintenance plan shall include recommended maintenance practices, state the parties responsible for maintenance and upkeep, specify the funding source for ongoing maintenance with provisions for full replacement when necessary and provide site specific inspection checklist.

At a minimum maintenance shall include the following:

- Dry street sweeping upon completion of construction
- Dry street sweeping annually, and
  - When water is observed flowing in the gutter during a low intensity storm.
  - Algae is observed in the gutter.
  - Sediment/debris covers 1/3 of the gutter width or more.
- Inspect twice annually for sedimentation and trash accumulation in the gutter. Obstructions and trash shall be removed and properly disposed of.
- Inspect twice during the rainy season for ponded water.
- Pesticides and fertilizers shall not be used in the bioretention area.
- Plants should be pruned, weeds pulled and dead plants replaced as needed.

PLANTER STRIP BIORETENTION- CHECKLIST

Planter Strip Bioretention
Inspection and Maintenance Checklist
(aka: Street Rain Garden, Roadside Bioretention, Bioretention Cell)

Date of Inspection: ______________________________
Inspector(s): ______________________________
BMP ID #:______________________________
Property Owner: ______________________________

Location Description: ____

Type of Inspection: ☐ Pre-rainy Season (PRS) ☐ Rainy Season (RS) ☐ After-rainy Season (ARS)

This Inspection and Maintenance Checklist is to be used in conjunction with its corresponding LID Factsheet and Maintenance Plan. Please review these documents before performing the field inspection.

Inspection Category	When to Inspect	Maintenance Issue	Is the Issue Present?	Require Maintenance	**Comments** (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)
Drainage	RS	Is there standing or pooling of water in the Bioretention area after 3 days of dry weather? Is water not draining into catch basin from the overflow pipe during a high intensity storm? *		• Check perforated pipe outlet for obstruction or damage. * • Flush perforated pipe to remove obstructions/sediment. * • Remove and replace the first few inches of topsoil. • Remove soil and inspect perforated pipe. Repair or replace perforated pipe, replace with new soil and regrade.	
	PRS RS ARS	Is there sediment visible in the gutter?		• In dry weather, use a mechanical sweeper or a Vactor truck to clean gutter pan.	
	RS	Is there water flowing in the pervious concrete gutter section during a low intensity storm? *		• In wet weather, use a Vactor truck to clean gutter pan.	

* If perforated pipe is present.

PLANTER STRIP BIORETENTION- CHECKLIST

Inspection Category	When to Inspect	Maintenance Issue	Is the Issue Present?	Require Maintenance	**Comments** (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)
Erosion	RS ARS	Is there under cutting or washouts along the sidewalks and/or curbs abutting the planter strip?		• Fill in eroded areas and regrade.	
	RS ARS	Is there channelization (gully) forming along the length of the planter area?		• Fill in eroded areas and regrade.	
	RS ARS	Is there accumulation of sediment (sand, dirt, mud) in the planter?		• Remove sediment and check the grading. Add replacement soil and/or mulch.	
	PRS RS ARS	Is the mulch unevenly distributed in the planter area?		• Redistribute and add additional mulch if needed. • Regrade planter area.	
	PRS RS ARS	Are there voids or deep holes present? Is there sediment present in the catch basin and in the overflow pipe?		• Check the perforated pipe for damage.*	
	PRS RS ARS	Is there evidence of animal activity such as holes or dirt mounds from digging or borrowing?		• Repair and fill in damage areas. • Rodent control activities must be in accordance with applicable laws and do not affect any protected species.	

* If perforated pipe is present.

PLANTER STRIP BIORETENTION- CHECKLIST

Inspection Category	When to Inspect	Maintenance Issue	Is the Issue Present?	Require Maintenance	**Comments** (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)
Vegetation	PRS RS ARS	Is the vegetation clogging the inlet flow areas?		• Trim and/or remove the excess vegetation.	
	PRS RS ARS	Is the mulch distributed evenly throughout the planter area?		• Redistribute and add additional mulch if needed. • Regrade planter area.	
	PRS RS ARS	Are there dead or dry plants/weeds? Is the vegetation over grown?		• Remove dead and/or dry vegetation. Replace as needed. • Remove or trim any vegetation that is causing a visual barrier, trip, and or obstruction hazard.	

PLANTER STRIP BIORETENTION- CHECKLIST

Inspection Category	When to Inspect	Maintenance Issue	Is the Issue Present?	Require Maintenance	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)
BMP General	PRS RS ARS	Is there debris/trash in the planter area?		• Remove all trash and debris.	
	PRS RS ARS	Is graffiti present?		• Remove all graffiti from the area.	
	PRS RS ARS	Are there missing or disturbed aesthetics features?		• Replace and/or reposition aesthetics features to original placement. • Placement should not disrupt flow characteristics/design.	
	PRS RS ARS	Is the vegetation irrigation functional?		• Repaired broken missing spray/drip emitters. • Reposition and/or adjust to eliminate over spray and/or over watering.	
	PRS RS ARS	Are the aesthetic features firmly secured in placed?		• Repair and/or replace loose or damage features.	
	PRS RS ARS	Check for damage sidewalk, curb, gutter, and catch basin including uplift and settling.		• Remove and replace damaged areas.	

APPENDIX D: GEOTECHNICAL REPORT

REESE CONSULTING GEOTECHNICAL & ASSOCIATES ENGINEERS
134 LYSTRA COURT
TELEPHONE (707) 528-3078
REESE@REESEANDASSOC.COM
SANTA ROSA, CA 95403
FACSIMILE (707) 528-2837

Report
Soil Investigation
Sandell Building 2
380 Blodgett Street
Cotati, California

Prepared for
Sandell Holdings LLC
3348 Paradise Drive
Tiburon, CA 94920

By

REESE & ASSOCIATES
Consulting Geotechnical Engineers

Joseph M. Mauney
Civil Engineer No. 85560

REGISTERED PROFESSIONAL ENGINEER
JOSEPH MARTIS MAUNEY
No. C85560
EXP. 09-30-22
CIVIL
STATE OF CALIFORNIA

Jeffrey K. Reese
Civil Engineer No. 47753

REGISTERED PROFESSIONAL ENGINEER
JEFFREY KENT REESE
No. C47753
EXP. 12-31-23
CIVIL
STATE OF CALIFORNIA

Job No. 2266.1.13
April 27, 2022

INTRODUCTION

This report presents the results of our soil investigation for the proposed Building 2 to be located at 380 Blodgett Road in Cotati, California. We understand that the proposed warehouse building will be approximately 35,500 square feet in size and will consist of tall, one-story, steel-frame structure with a concrete slab-on-grade floor. The building will be served by asphalt-paved driveway and parking areas with underground utilities. Foundation and floor loads are not known at this time but are expected to be normal for the type of construction proposed.

We performed a soil investigation for Building 1 located about 230 feet east of the proposed Building 2, and the results were presented in our report dated March 26, 2021. Our investigation included test borings drilled to depths up to about 31½ feet. Our general recommendations included criteria for spread footings and conventional concrete slab-on-grade floors underlain by properly compacted fill of low expansion potential. In November 2021, we were on-site during site preparation and grading of Building 1 that included removal of weak, compressible soils and the installation of a 30-inch-thick, nonexpansive fill blanket.

The object of our investigation was to review the data from our previous work on the site and selected geologic references in our files, explore subsurface conditions, and measure depth to groundwater, if encountered. We then performed engineering analyses to develop conclusions and recommendations concerning:

1. Proximity of the site to active faults.
2. Site preparation and grading.
3. Foundation support and design criteria.

4. Support of concrete slab-on-grade floors.

5. Loading dock and retaining wall design criteria.

6. Flexible pavement thicknesses.

7. Soil engineering drainage.

8. Supplemental soil engineering services.

WORK PERFORMED

We reviewed selected, published geologic information in our files including:

1. The Cotati Quadrangle Sheet of the Alquist-Priolo Earthquake Fault Zone maps, California Division of Mines and Geology (CDMG), 1983.

2. "Geologic Map of the Cotati 7.5' Quadrangle, Sonoma County, California: A Digital Database," by M. T. Mascorro and E. W. Ford, California Geological Survey (CGS), 2003.

3. "Geology for Planning in Sonoma County," Special Report 120, M. E. Huffman and C.F. Armstrong, CDMG, 1980.

4. "Liquefaction Susceptibility Map," R.C. Witter et al., United States Geologic Survey (USGS) in cooperation with CGS, 2006, accessed January 5, 2021 as a Google Earth file: https://earthquake.usgs.gov/education/geologicmaps/kml/liquefaction.kmz

On February 1, 2022, we were at the site to observe surface features exposed and explore subsurface conditions to the extent of four test pits at the approximate locations indicated on Plate 1. The test pits were excavated to depths ranging from about 3½ to 4½ feet with track-mounted, excavator equipment. Our project engineer observed the excavations, logged the conditions encountered, and performed in-place strength indicator determinations in the walls of the pits with a penetrometer. Logs of the test pits, showing the soil conditions encountered and field penetrometer data, are presented on Plate 2. The soils are classified in general accordance with the Unified Soil Classification System explained on Plate 3.

The test pit locations are approximate and were established by visually estimating from existing surface features. The locations of the test pits should be considered no more accurate than implied by the methods used to establish the data. At the completion of the exploration, the pits were backfilled with the excavated soils, without compaction.

SURFACE AND SUBSURFACE CONDITIONS

The project site is an approximate 8½-acre parcel located within very gently sloping terrain in northwest Cotati, California. The site is located at the terminus of Blodgett Street and is bordered by Laguna de Santa Rosa to the north, light industrial/manufacturing properties to the east, a government/public use parcel to the south, and an easement along Washoe Creek to the north. The proposed Building 2 will be located in the western portion of the parcel, about 500 feet into the property from Blodgett Street. In this area, the ground surface slopes very gently downward to the south and east, with a difference in elevation across the planned structure of about 3 feet. At the time of our exploration, the ground surface was covered with a moderate growth of grass and weeds.

The test pits indicate that the building site is underlain by a local layer of exiting fill and natural clayey soils. Existing fill materials consisting of medium stiff sandy clay were encountered to depths of about 6 to 18 inches in Pits 2 and 3, excavated on the northern side of the planned building. Previous testing indicates that these existing fills exhibit moderate to high expansion potential. That is, the soils would tend to undergo moderate to high strength and volume changes with seasonal variations in moisture content. Highly expansive, plastic clayey soils, locally termed *adobe*, were observed at the surface of the other pits and underlying the fills. The adobe extended to depths of about 3 to 4½ feet in the pits. All the pits bottomed in relatively firm, weakly cemented very sandy clays of low to moderate expansion potential.

Groundwater was not encountered in the test pits during our exploration. Groundwater levels can vary seasonally and can rise and fall several feet annually, depending on seasonal climatic conditions. Determination of precise depth to groundwater, extent of seasonal water level fluctuations, or the existence of perched groundwater conditions is beyond the scope of this investigation.

CONCLUSIONS

Based on the results of our field exploration, laboratory testing, engineering analyses, and experience on nearby projects, we conclude that, from a soil engineering standpoint, the site can be used for the proposed construction. We judge that the conclusions and recommendations for Building 1 would still be applicable to Building 2. The most significant soil engineering factors that must be considered in design and construction are the presence of existing fills and near-surface highly expansive clays.

We did not find evidence in the test pits to indicate that the existing fill materials on the site were properly placed and compacted under soil engineering observation and testing services.

Therefore, we conclude that the materials could be subject to significant total and/or differential settlements. The existing fills should be removed (overexcavated) from within building areas and replaced with properly compacted fill.

Highly expansive soils shrink and swell with seasonal changes in moisture content and can heave and/or distress lightly loaded footings or slabs. Our experience indicates that the depth of significant seasonal moisture change is typically in the range of about 2 to 3 feet. However, depending on factors such as seasonal rainfall totals, summer weather conditions, drought, and surface treatments, significant moisture variations in the adobe clays can occur to substantially deeper depths. The risk of future building damage caused by shrinking and swelling of the expansive adobe clays can be significantly reduced by initially moisture conditioning the soils to cause preswelling, then covering the soils with a sufficient depth of a moisture confining and protecting blanket of imported nonexpansive fill or lime treated on-site soils.

Most of the buildings with slab-on-grade floors in the site vicinity have been underlain by about 24 to 30 inches of imported fill and are performing satisfactorily. Some structures in the area have been built with as little as 12 inches of imported fill beneath floor slabs. However, our experience indicates that with this lesser amount of imported fill, the risk of future heave and resultant slab cracking and displacement is significant. For an imported fill thickness of 12 inches, 1 to 2 inches of future heave of the slab could occur. Therefore, we conclude that to adequately reduce the risk of future heaving and resultant cracking, a nonexpansive fill blanket at least 30 inches thick will be needed.

In driveway and parking areas, we believe that pavements consisting of asphalt concrete, aggregate base, and possibly subbase can be placed directly on properly prepared expansive soils. However, the pavement can be damaged where the expansive soils experience volume changes with seasonal changes in moisture content (i.e., shrink/swell). Periodic maintenance, including repair of edge cracking, will likely be needed. Future maintenance of paved areas could be significantly reduced by underlying the aggregate baserock with imported, nonexpansive fill and/or by providing a moisture cutoff barrier at pavement edges.

Liquefaction is a phenomenon in which loose, saturated, granular soils experience a loss in shear strength when subjected to seismic shaking. Densification occurs when a loose, granular soil, saturated or dry, experiences a reduction in void ratio during shaking. Both phenomena can result in unacceptable total and/or differential settlements of overlying structures. Whether such phenomena will occur, and to what extent, depends on complex factors such as earthquake depth and intensity, duration of earthquake shaking, and the underlying soil and groundwater conditions. Our analysis indicates that the on-site soils are sufficiently dense, contain a sufficient amount of clayey fines, or are overlain by a sufficiently thick surface layer of non-liquefiable soils such that the risk of building distress due to liquefaction and/or densification would be considered low.

Provided the site is prepared as subsequently recommended, we judge that minimum depth footings and conventional slab-on-grade floors supported on properly compacted fill could be used. For site preparation and building foundation design and installation in accordance with our recommendations, we judge that total settlements would be about 1-inch, or less. Post-construction settlements should be about 1/2-inch, or less.

SEISMIC DESIGN

The geologic maps reviewed did not indicate the presence of active faults at the site, and the parcel is not located within a presently designated Alquist-Priolo Earthquake Fault Zone. Therefore, we judge that there is little risk of fault-related ground rupture at the site during earthquakes. In a seismically active region such as Northern California, there is always some possibility for future faulting at any site. However, historical occurrences of surface faulting have generally closely followed the trace of the more recently active faults. Because of the proximity of active faults in the region and the potential for strong ground shaking, it will be necessary to design and construct the project in strict accordance with current standards for earthquake-resistant construction.

We have determined the site-specific seismic ground motion values in accordance with procedures outlined in Section 1613 of the 2019 California Building Code (CBC) and Chapter 21 of the American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI) Standard ASCE/SEI 7-16. Based on our field and laboratory testing, we judge that the site can be classified as Site Class D. Initially, mapped acceleration parameters, S_S and S_1, were obtained by inputting the approximate site location (38.34116938°N, 122.72070676°W) into seismic design mapping tools provided by the Structural Engineers Association of California/California's Office of Statewide Health Planning and Development (SEAOC/OSHPD). A probabilistic response spectrum with 1 percent probability of collapse within a 50-year period (ASCE/SEI 7-16 Section 21.2.1.2 Method 2) was obtained utilizing USGS's Uniform Hazard Tool and Risk-Targeted Ground Motion Calculator. An 84th-percentile deterministic response spectrum was obtained utilizing attenuation relationships compiled in the Pacific Earthquake Engineering Research Center's (PEER) NGA-West 2 spectrum model. The probabilistic and deterministic spectra were then scaled to the maximum direction in accordance with PEER Report 2013/15 by Shahi and Baker. The lesser of the probabilistic and deterministic ground motions at each period were chosen for the site-specific response spectrum, which was then scaled by two-thirds to generate the design response spectra per ASCE/SEI 7-16 Section 21.3. Detailed results of our site-specific ground motion analysis are presented on the attached Plate 4. Pertinent accelerations for use in design are present below.

2019 CBC Site-Specific Ground Motion Parameters

Site Class	D

Mapped Spectral Response Accelerations:

S_S	1.577 g
S_1	0.600g

Design Spectral Response Accelerations:

S_{DS}	1.245 g
S_{D1}	1.233 g

RECOMMENDATIONS

Site Grading

Areas to be developed should be cleared of debris and dense growths of grass and vegetation. The ground surface should then be stripped of the upper soils containing root growth and organic matter. We anticipate that the depth of stripping needed will average about 3 inches. The strippings should be removed from the site, stockpiled for reuse as topsoil, or be mixed with at least five parts of soil and used as fill at least 10 feet away from structures, walkways, and paved areas.

Wells, septic tanks, or other underground obstructions encountered during grading should be removed or abandoned in-place. The resultant voids should be capped with concrete or backfilled with soil or granular material, as determined by the appropriate regulatory agency or the soil engineer.

After stripping, excavations should be performed, as necessary. Within the planned building and adjacent concrete walkway areas, and extending to at least 5 and 3 feet, respectively, beyond their perimeter, the existing fills should be overexcavated for their full depth (up to about 1½ feet based on the test pits). The depth of the overexcavation should then be deepened, as needed, to provide space for a blanket of at least 30 inches of imported, nonexpansive fill or lime treated on-site soils over the highly expansive adobe clays. Furthermore, the overexcavation should be deepened, as necessary, to provide for at least 12 inches of properly compacted, imported nonexpansive fill or lime treated on-site soils below the bottom of all footings.

The surfaces exposed by overexcavation should be scarified at least 6 inches deep, moisture conditioned to at least 4 percentage points above optimum moisture content, and compacted to at least 87 percent relative compaction.[1] The moisture conditioning should be sufficient to close all shrinkage cracks for their full depth. Approved, nonexpansive fill should then be placed in layers no greater than 8 inches in loose thickness, moisture conditioned to near optimum moisture content, and similarly compacted to at least 90 percent.

Based on our laboratory testing of the on-site soils for Building 1, we believe that the on-site soils mixed with 6 percent high calcium quicklime, by dry weight, reduce the expansion potential of the on-site clays to an acceptable level for reuse as compacted fill of low expansion potential. Imported fill should be nonexpansive and have a Plasticity Index of 15 or less. The imported fill material should be free of organic material and rocks or hard fragments larger than 4 inches in diameter. The imported fill should be tested and approved by the soil engineer prior to importation to the site.

For grading performed in the driest time of the year, especially after winters of significantly less than normal total or springtime rainfall, shrinkage cracks in the near-surface expansive soils may be deep. Prolonged watering or controlled flooding with the possible use of wetting agents may be necessary to moisture condition the expansive soils to the high initial moisture content needed to close shrinkage cracks for their full depth. As a construction

1 Relative compaction refers to the in-place dry density of fill expressed as a percentage of maximum dry density of the same material determined in accordance with the American Society for Testing and Materials (ASTM) Standard ASTM D1557 laboratory compaction test procedure. Optimum moisture content refers to the moisture content at maximum dry density.

expediency, the grading contractor could elect to overexcavate a portion of the expansive soils to reduce the amount of moisture conditioning time needed. The overexcavated soils could be moisture conditioned and then replaced as properly compacted fill beneath the recommended imported, nonexpansive fill blanket.

For grading performed in the rainy season (e.g., late fall, winter, early spring), the soils may become fully expanded naturally and not require increased moisture conditioning. However, with winter grading, there are risks that include: 1) the site becoming too wet and soft to support construction equipment; 2) normally suitable imported fill becoming too wet to compact (requiring more expensive rocky fill); 3) excavation bottoms becoming unstable requiring overexcavation and/or use of geotextile fabrics or placement of granular working pads; and 4) procedures being required to eliminate the possibility of tracking mud onto adjacent public streets. Accordingly, we suggest that the contract documents contain provisions to account for such possible additional costs.

The test pits were backfilled with the excavated materials, but the soils were not well compacted. Therefore, the backfilled pits constitute local deep zones of highly compressible materials. Where encountered in planned improvement areas, the backfill should be removed for its entire depth and replaced as properly compacted fill.

Foundation Support

Provided the site is prepared as recommended above, spread footings should be underlain by at least 12 inches of properly compacted fill of low expansion potential. Footings should be at least 12 inches wide and bottomed at least 12 inches below lowest adjacent pad grade.

Spread footings can be designed to impose dead plus code live load and total design load (including wind or seismic forces) bearing pressures of 2,000 and 3,000 pounds per square foot (psf), respectively. Resistance to lateral loads can be obtained from a combination of passive earth pressures and soil friction. We recommend the following criteria for design:

Passive Earth Pressure	=	300 pounds per cubic foot (pcf) equivalent fluid, neglect the upper 1-foot, unless confined by pavement or slab
Soil Friction Factor	=	0.30

Slab-on-Grade

Provided the site is prepared as recommended above, the building floor slabs should be underlain by at least 30 inches of properly compacted fill of low expansion potential. The slab should be at least 4 inches thick and reinforced with bars to reduce cracking and help keep closed those cracks that do appear. The actual slab thickness and amount of reinforcing used should be determined by the structural design engineer. Slab-on-grade subgrade should not be allowed to dry prior to concrete placement. The slab should be underlain by a capillary moisture break and cushion layer consisting of at least 4 inches of free-draining, crushed rock or gravel (i.e., drainrock) at least 1/4-inch and no larger than 3/4-inch in size. Crushed rock should be used where the slab will be subjected to heavy vehicular traffic, such as forklifts or delivery trucks.

Moisture vapor will condense on the underside of slabs. Where migration of moisture vapor through slabs would be detrimental, a vapor retarder should be provided between the supporting base material and the slab. Two inches of moist, clean sand could be placed on top of the membrane to aid in curing and to help provide puncture protection. However, the actual use of sand should be determined by the architect or design engineer. The use of a less permeable and stronger membrane should be considered if sand is not to be placed for puncture protection, or where the flooring manufacturer requires a vapor barrier. Concrete design and curing specifications should recognize the potential adverse effects associated with placement of concrete directly on the membrane.

In general, where less than 30 inches of imported fill is used, floor slabs should be carefully separated from foundations. Positive, low friction separations, such as felt paper or expansion joint material, should be provided between the slab and foundations. Frequent joints should be provided in the slabs to permit movements to occur without distressing the slabs. Where at least 30 inches of imported nonexpansive fill is used, floor slabs could be tied to the foundation. To reduce possible slab cracking resulting from minor heave or settlement, closure pours should be considered adjacent to continuous and column footings after the footings have been fully loaded.

Loading Docks

Retaining walls may be needed for the loading docks. Prior to construction of the walls, the wall footings area and the area behind the wall that will have a concrete slab-on-grade should be prepared as recommended above for those areas, with properly compacted fill provided below footings. Where the walls can tilt slightly, active pressures can be developed and the walls should be designed for an equivalent fluid pressure of 40 pcf. If the tops of the walls are constrained from tilting, the pressures are higher and 60 pcf should be used.

Where retaining walls would be subject to heavy storage and/or vehicular loads, the walls should be designed to resist an added surcharge pressure equivalent to 2½ feet of additional backfill. Where an imaginary two horizontal to one vertical (2:1) line projected down from adjacent foundations intersects retaining walls, the portion of retaining walls below the intersection should be designed for an additional horizontal surcharge load of 100 psf. Wall foundations can be supported on spread footings using the criteria provided above.

Retaining walls should be fully backdrained. The backdrains should consist of 4-inch-diameter, perforated, rigid plastic pipe (SDR-35 or equivalent) sloped to drain to outlets by gravity and clean, free-draining crushed rock or gravel (i.e., drainrock). The drainrock should conform to the quality requirements for Class 2 Permeable Materials in accordance with the latest edition of the Caltrans Standard Specifications. As an alternative, any clean, washed durable rock product could be used if separated from the adjacent soil and covered by a nonwoven, geotextile fabric weighing at least 4 ounces per square yard (such as Mirafi 140N or equivalent). The drainrock should extend to within 12 inches of the finished surface, with the upper 12 inches backfilled with compacted soil to inhibit surface water infiltration, unless capped by a concrete slab. Where migration of moisture through retaining walls would be detrimental, the walls should be waterproofed.

Flexible Pavements

The flexible pavement materials and methods used should conform to the quality requirements of the Caltrans Standard Specifications and the requirements of the City of Cotati. Based on the California Test 301 procedure, we have calculated the following pavement sections for natural soil subgrade and lime-treated subgrade at several traffic indexes (T.I.). For design, we assumed a laboratory stabilometer Resistance (R-value) of 5 for the on-site soil subgrade. The results of previous R-value tests on local sites with similar soils indicate that adding 6 percent by dry weight of hydrated lime raises their R-value above 40.

General Area	Assumed T.I.	Thickness (inches) Asphalt Concrete	Class 2 Aggregate Base*	Lime-Treated Subgrade**
Heavy Truck and Storage Area	7.0	4	15.5	--
	7.0	4	6	12
	7.0	5	13.5	--
	7.0	5	4	12
Heavy Truck and Storage Area	5.5	3	12	--
	5.5	3	5	12
	5.5	5	8	--
	5.5	5.5	0	12
Automobile and Light Pickup Truck Driveways	3.7	2.5	8	--
	3.7	2.5	4	12
Automobile and Light Pickup Truck Parking	3.2	2.5	6	--
	3.2	2.5	4	12

* Minimum R-value 78
** Minimum R-value 40

Prior to subgrade preparation, all underground utilities in the paved areas should be installed and properly backfilled. Subgrade soils in highly expansive material areas should be uniformly moisture conditioned to at least 3 percent above optimum, compacted to at least 93 percent relative compaction, and provide a firm and nonyielding surface. The moisture conditioning should be sufficient to close any shrinkage cracks for their full depth. Scarifying and recompacting and/or overexcavation and replacement to achieve uniformity and proper moisture conditioning may be needed. The aggregate base materials should be placed in layers, moisture conditioned, and similarly compacted to at least 95 percent. The aggregate base should also be firm and nonyielding.

Future wetting and drying of the on-site expansive soils along pavement edges can occur. Pavement maintenance, especially repair of edge cracking, should be anticipated. Increased pavement performance and reduced future maintenance could be accomplished by underlying asphalt-paved areas with at least 12 inches of imported fill of low expansion potential or lime-treated on-site soil. Such materials, if used, should extend at least 3 feet beyond pavement edges, where attainable.

Conventional curb and sidewalk and/or adjacent landscaping with an automatic sprinkler system that provides an ample, fairly uniform distribution of water can also provide some benefit in reducing future maintenance. Where sidewalks or concrete driveway aprons are not immediately adjacent to the edge of pavement, a moisture cutoff barrier approximately 3 feet deep could be constructed behind the pavement edge. A typical cross-section of a moisture cutoff barrier is presented on Plate 5. Prior to the installation of moisture cutoff barriers, if used, on-site highly expansive soils adjacent to and within 3 feet of the pavement edges should be fully preswelled so as to close all shrinkage cracks for their full depth, as previously discussed.

Soil Engineering Drainage

Ponding water will cause swelling of the site soils and would be detrimental to foundations. It is important that the area adjacent to the building be sloped to drain away from foundations. Positive surface drainage away from the building consisting of at least 1/4-inch per foot extending at least 4 feet out should be provided. The ground surface around the perimeter of the structure should be sloped to provide positive lateral drainage. The roof should be provided with gutters, and the downspouts should discharge onto paved areas or splash blocks draining at least 30 inches away from foundations or be connected to rigid plastic pipelines that discharge by gravity into planned storm drain facilities.

To help provide an outlet for water that could accumulate beneath the concrete floor slabs, perforated plastic pipes could be embedded in the grade below the slabs. The underslab subdrain system, if installed, should be configured so as to drain each bay created by interior and/or perimeter foundations. The underslab subdrain system should be connected to a nonperforated outlet pipe that extends through or beneath the perimeter foundation to a suitable discharge point. A typical cross-section of our recommended underslab subdrain is shown on Plate 6. We could provide additional consultation concerning the configuration and location of underslab subdrain systems during final design once foundation plans have been prepared. Roof downspouts and surface drains must be maintained entirely separate from underslab subdrains.

Where irrigated landscape areas abut the buildings, excess water can be trapped in soil layers along the edge of the buildings, increasing the risk of potential heave of the floor slab. We believe that the installation of the recommended compacted fill pad that extends to at least 5 feet beyond the building perimeter should provide an effective barrier to the infiltration of excess water from landscape areas. It should be recognized that concrete curbs and sidewalks, mowing strips, header boards, and raised berms can impede the flow of the surface water away from buildings, promote soil saturation, and contribute to seepage of water into underfloor areas. Where such landscaping elements are planned, surface and subsurface drainage features may need to be incorporated into the plans. We can provide specific recommendations, if desired. In addition, to further reduce the risk of moisture migration beneath floor slabs, any below grade cold joints in the perimeter foundations should be hot-mopped or waterproofed on the exterior side in some manner.

We have observed that the planting of trees close to foundations can result in significant loss of moisture in the soils adjacent to and beneath foundations from moisture uptake by the tree roots. Such loss of moisture can result in drying and shrinkage of the clayey soils and increase the risk of future distress to the building. Therefore, we recommend that, in general, trees be planted no closer to building foundations than one-half their maximum mature height. Studies have shown that some trees can remove moisture in the soils at even greater distances. Therefore, depending on the type of tree proposed, additional setbacks may be needed. We, along with a consulting arborist, can provide specific recommendations for planting of trees near the buildings, if desired.

Supplemental Geotechnical Services

We should review final grading and foundation plans for conformance with the intent of our recommendations. During site grading and foundation excavation operations, the soil engineer should provide intermittent observation and testing. The soil engineer should observe the conditions encountered, confirm needed overexcavation depths, and modify our recommendations, if warranted. Field and laboratory tests should be performed to ascertain that the recommended moisture contents and degrees of compaction are being attained. Concrete placement and reinforcing should be checked as stipulated on the project plans or as required by the Building Department. It is our understanding that approval from the Building Department must be obtained prior to the placement of concrete in foundation elements.

LIMITATIONS

We have performed the investigation and prepared this report in accordance with generally accepted standards of the soil engineering profession. No warranty, either express or implied, is given. It should be understood that our services were limited to the scope of work outlined above and specifically excluded other services including, but not limited to, an evaluation or analysis of soil chemistry, corrosion potential, mold, and soil/groundwater contamination.

Subsurface conditions are complex and may differ from those indicated by surface features or encountered at test pit locations. Therefore, variations in subsurface conditions not indicated on the logs could be encountered. If the project is revised, or if conditions different from those described in this report are encountered during construction, we should be notified immediately so that we can take timely action to modify our recommendations, if warranted.

Supplemental services as recommended herein are in addition to this investigation and are charged for on an hourly basis in accordance with our Standard Schedule of Charges. Such supplemental services are performed on an as-requested basis, and we can accept no responsibility for items we are not notified to check, nor for use or interpretation by others of information contained herein.

Site conditions and standards of practice change. Therefore, we should be notified to update this report if construction is not performed within 24 months.

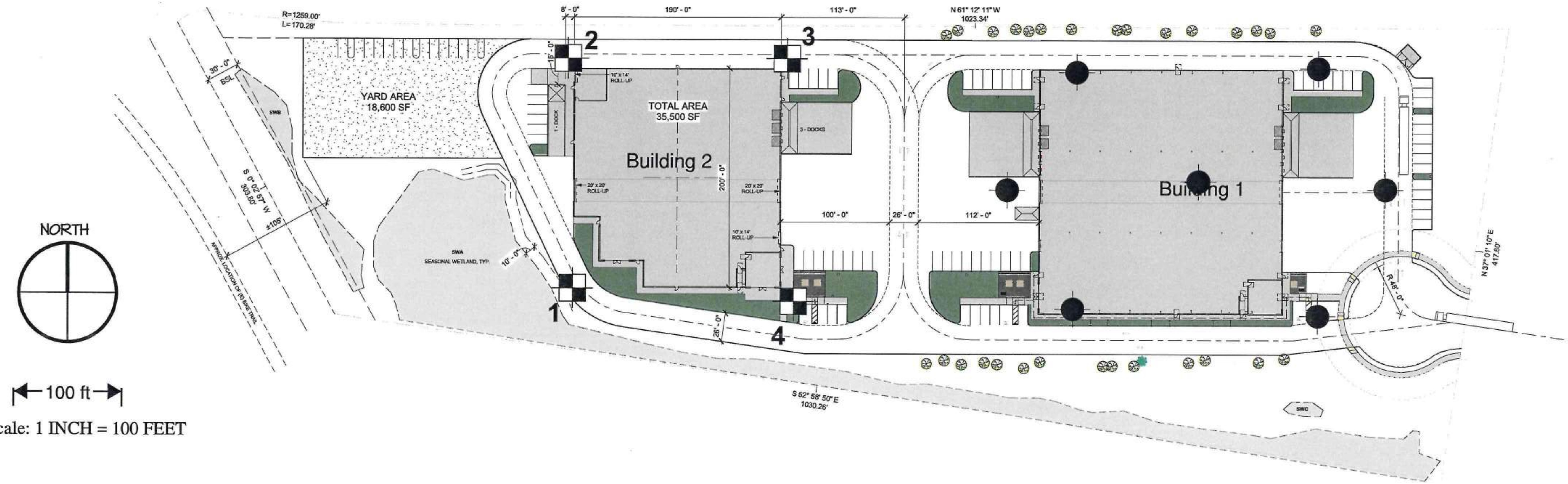
LIST OF PLATES

DISTRIBUTION

Copies submitted: 2

Sandell Holdings LLC
3348 Paradise Drive
Tiburon, CA 94920
Attention: Calvin Sandell
calvinsandell@gmail.com
bertsandell@gmail.com

JM/JKR: nay/ra/Job No. 2266.1.13



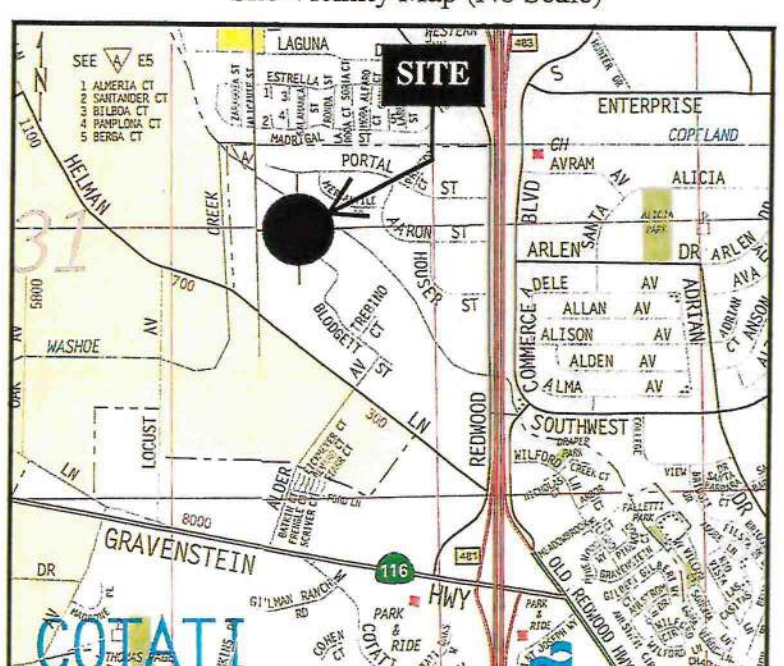
100 ft

Scale: 1 INCH = 100 FEET

= Approximate Test Pit Location (this investigation)

= Approximate Test Boring Location for Building 1

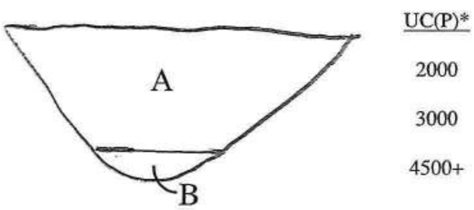
Site Vicinity Map (No Scale)



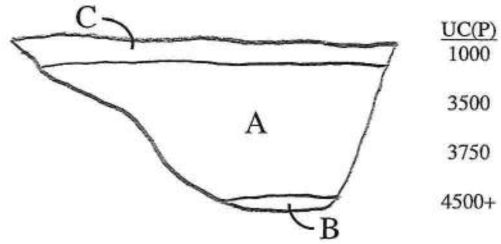
REESE & ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS	Job No: 2266.1.13 Date: 04-21-22 Appr:	TEST PIT AND LOCATION PLAN AND SITE VICINITY MAP SANDELL BUILDING 2 COTATI, CALIFORNIA	PLATE 1

Scale: 1" = 5'
(Horizontal and Vertical)

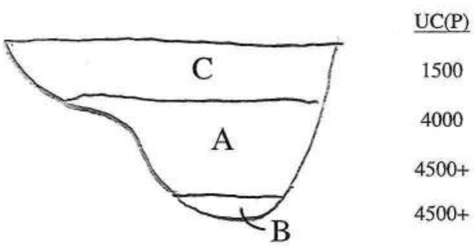
Log of Test Pit 1



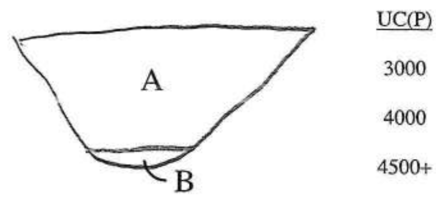
Log of Test Pit 3



Log of Test Pit 2



Log of Test Pit 4



Soil Descriptions

A = DARK GRAY CLAY (CH), medium stiff to stiff, saturated (Adobe)

B = LIGHT GRAY-BROWN FINE SANDY CLAY (CL), hard, moist, weakly cemented

C = MOTTLED DARK GRAY AND BROWN SANDY CLAY (CH), medium stiff, saturated, with occasional rounded gravel (Existing Fill)

*UC(P) = Penetrometer - strength indicator (pounds per square foot)

REESE & ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS	Job No: 2266.1.13 Date: 04-26-22 Appr: Jm	LOGS OF TEST PITS 1 THROUGH 4 SANDELL BUILDING 2 COTATI, CALIFORNIA	PLATE **2**

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			TYPICAL NAMES	
COARSE GRAINED SOILS MORE THAN HALF IS LARGER THAN No. 200 SIEVE	GRAVEL MORE THAN HALF OF COARSE FRACTION IS LARGER THAN No. 4 SIEVE SIZE	CLEAN GRAVEL WITH LESS THAN 5% FINES	GW	WELL GRADED GRAVEL, GRAVEL-SAND MIXTURE
			GP	POORLY GRADED GRAVEL, GRAVEL-SAND MIXTURE
		GRAVEL WITH OVER 12% FINES	GM	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURE
			GC	CLAYEY GRAVEL, GRAVEL-SAND-CLAY MIXTURE
	SAND MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN No. 4 SIEVE SIZE	CLEAN SAND WITH LESS THAN 5% FINES	SW	WELL GRADED SAND, GRAVELLY SAND
			SP	POORLY GRADED SAND, GRAVELLY SAND
		SAND WITH OVER 12% FINES	SM	SILTY SAND, GRAVEL-SAND-SILT MIXTURE
			SC	CLAYEY SAND, GRAVEL-SAND-CLAY MIXTURE
FINE GRAINED SOILS MORE THAN HALF IS SMALLER THAN No. 200 SIEVE	SILT AND CLAY LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILT, ROCK FLOUR, SANDY OR CLAYEY SILT WITH LOW PLASTICITY
			CL	INORGANIC CLAY OF LOW TO MEDIUM PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAY (LEAN)
			OL	ORGANIC CLAY AND ORGANIC SILTY CLAY OF LOW PLASTICITY
	SILT AND CLAY LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOIL, ELASTIC SILT
			CH	INORGANIC CLAY OF HIGH PLASTICITY, GRAVELLY, SANDY OR SILTY CLAY (FAT)
			OH	ORGANIC CLAY OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILT
HIGHLY ORGANIC SOILS			PT	PEAT AND OTHER HIGHLY ORGANIC SOILS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

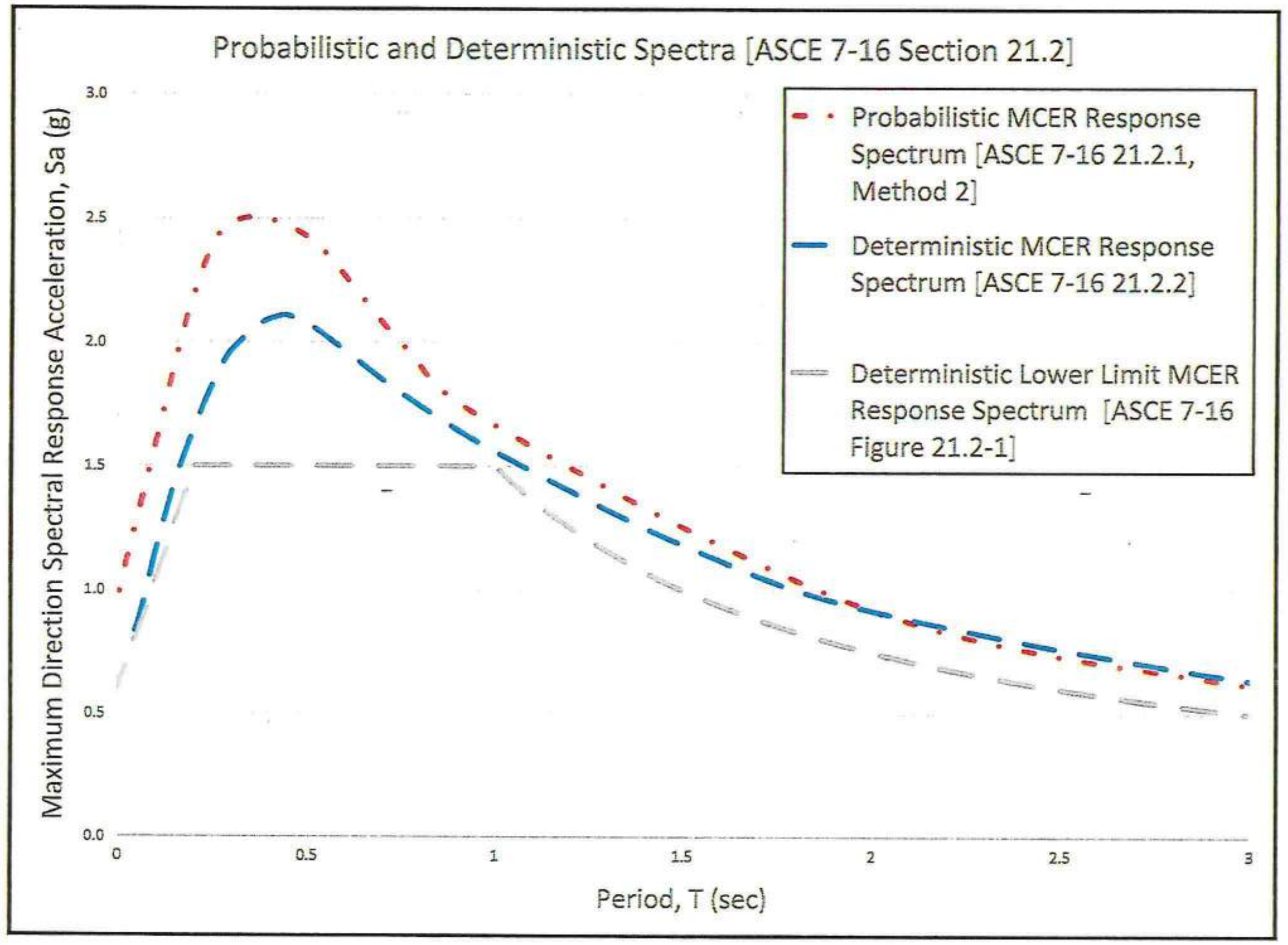
KEY TO TEST DATA

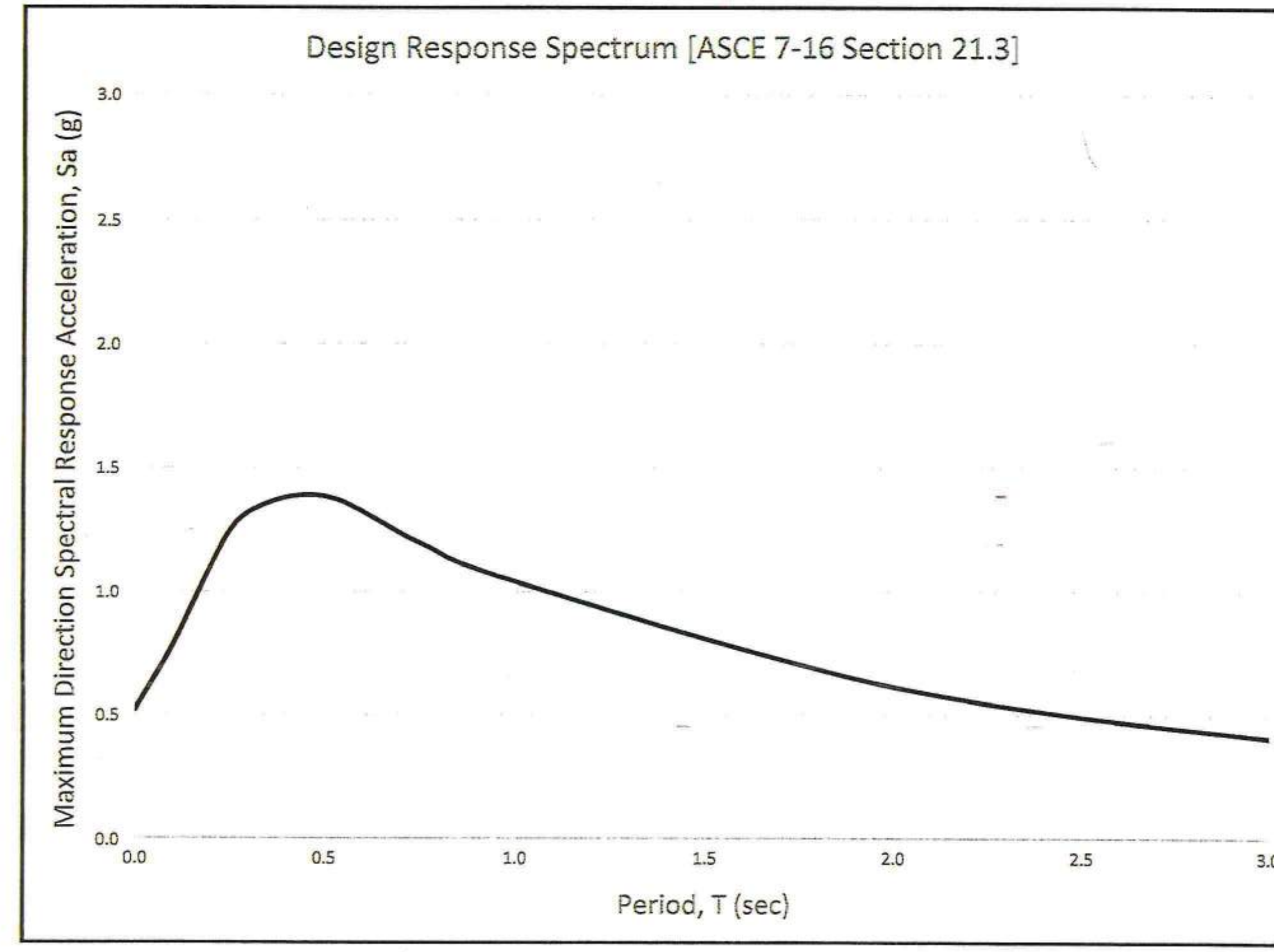
					Shear Strength, psf	Confining Pressure, psf
EI	– Expansion Index	TxUU	–	Unconsolidated Undrained Triaxial	320	(2600)
Consol	– Consolidation	TxCU	–	Consolidated Undrained Triaxial	320	(2600)
LL	– Liquid Limit (in %)	DSCD	–	Consolidated Drained Direct Shear	2750	(2000)
PL	– Plastic Limit (in %)	FVS	–	Field Vane Shear	470	
PI	– Plasticity Index	LVS	–	Laboratory Vane Shear	700	
SA	– Sieve Analysis	UC	–	Unconfined Compression	2000	*
G_s	– Specific Gravity	UC(P)	–	Laboratory Penetrometer	700	*
■	"Undisturbed" Sample					
□	Bulk Sample					

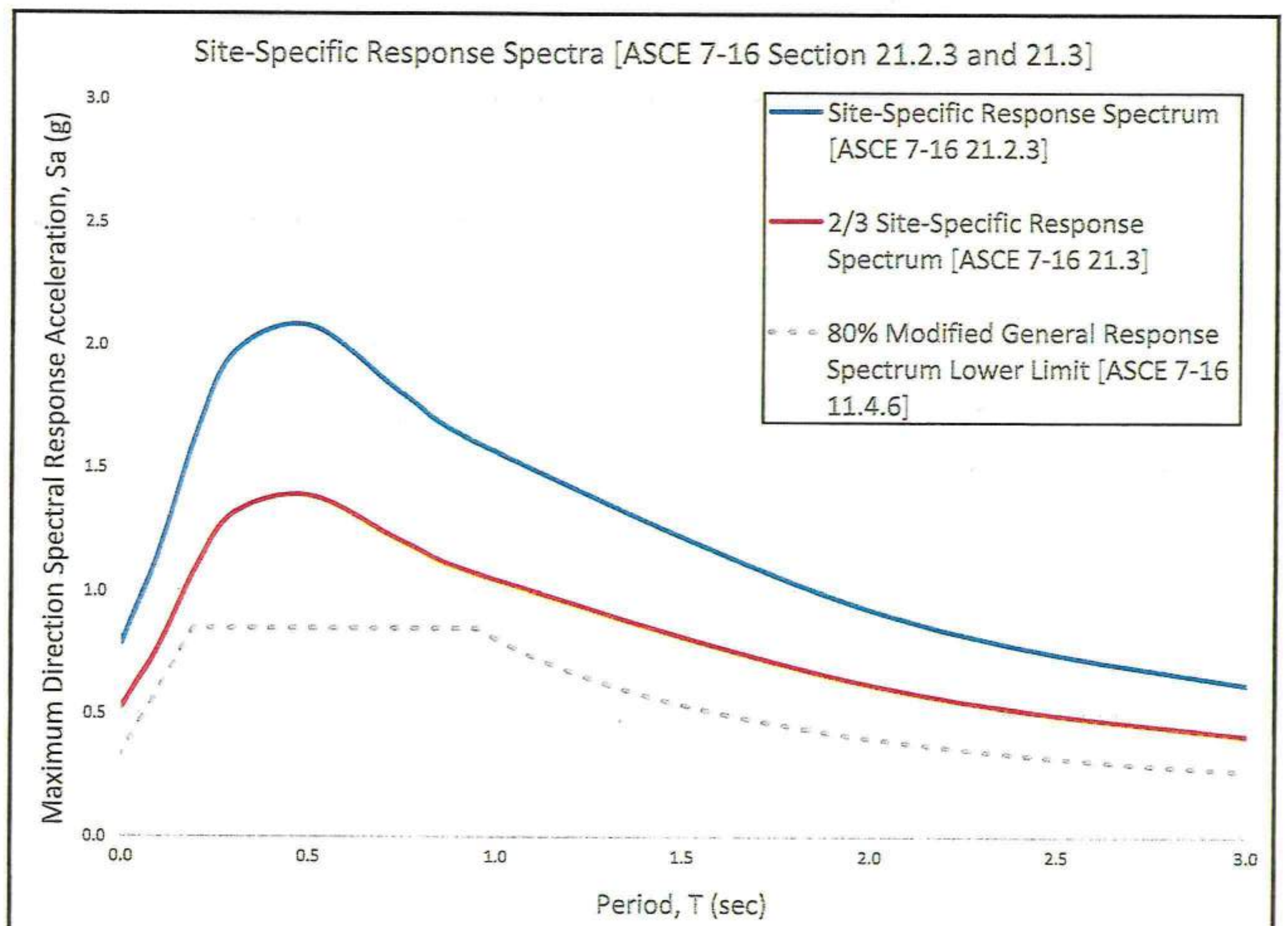
Notes: (1) All strength tests on 2.8" or 2.4" diameter samples unless otherwise indicated.

* Compressive Strength

REESE & ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS	Job No: 2266.1.13 Date: 4-26-22 Appr: Jm	SOIL CLASSIFICATION CHART AND KEY TO TEST DATA SANDELL BUILDING 2 COTATI, CALIFORNIA	PLATE **3**







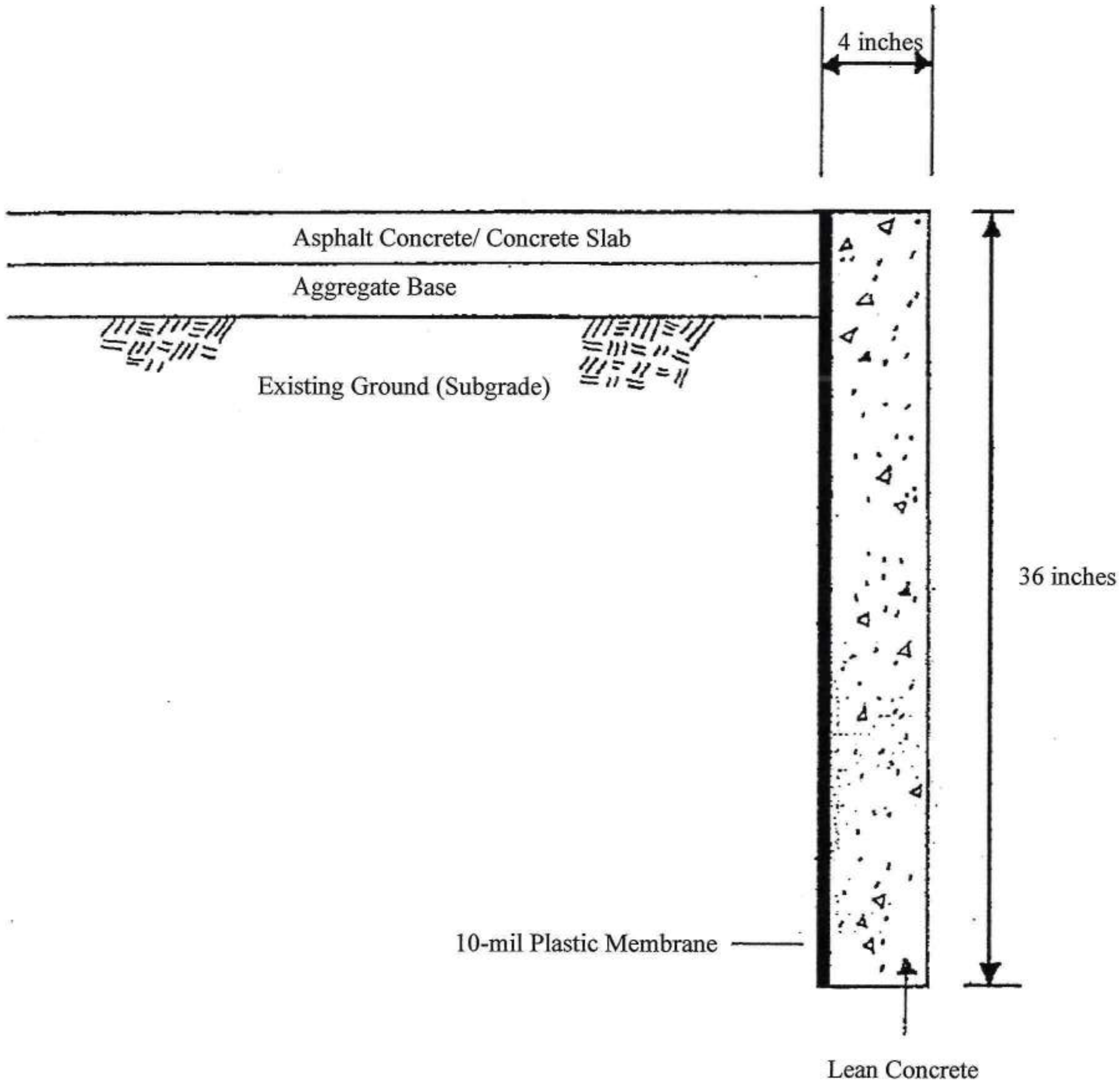
SUMMARY OF SITE-SPECIFIC GROUND MOTION HAZARD ANALYSIS

Period [sec]	1% Collapse-in-50-years Probabilistic Spectrum [g]	Max Direction Scaled Probabilistic MCE_R Spectrum [g]	84th-Percentile Deterministic Spectrum [g]	Max Direction Scaled Deterministic MCE_R Spectrum [g]	Site-Specific MCE_R Spectrum [g]	80% Modified General Response Spectrum [g]	Design Response Spectrum [g]
0	0.809	0.963	0.659	0.784	0.784	0.336	0.523
0.1	1.358	1.616	0.992	1.180	1.180	0.602	0.787
0.2	1.824	2.207	1.370	1.657	1.657	0.841	1.105
0.3	2.038	2.486	1.619	1.975	1.975	0.841	1.317
0.5	1.969	2.422	1.687	2.075	2.075	0.841	1.383
0.75	1.606	1.991	1.446	1.793	1.793	0.841	1.195
1	1.339	1.660	1.258	1.560	1.560	0.800	1.040
2	0.743	0.921	0.743	0.921	0.921	0.400	0.614
3	0.493	0.616	0.509	0.637	0.616	0.267	0.411
4	0.353	0.445	0.361	0.455	0.445	0.200	0.297
5	0.268	0.338	0.265	0.334	0.334	0.160	0.223

S_S=	1.577 g	S_1=	0.600 g	T_S =	0.990
S_{DS}=	1.245 g	S_{D1}=	1.233 g		

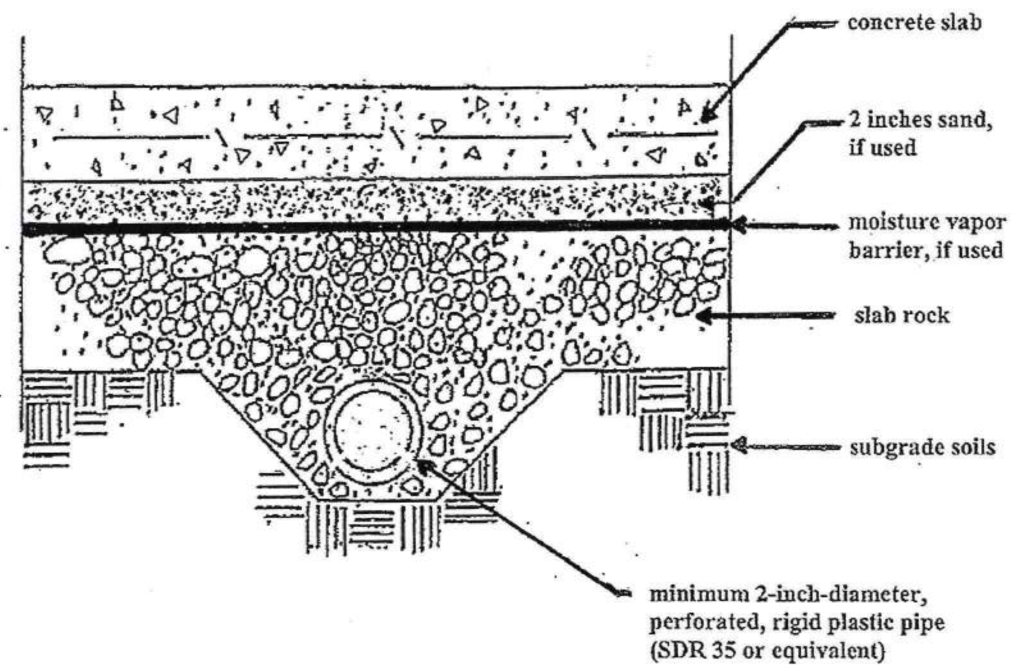
Latitude, Longitude: 38.34116938, -122.72070676

REESE & ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS	Job No: 2266.1.13 Date: 04-26-22 Appr: Jm	SITE-SPECIFIC GROUND MOTION HAZARD ANALYSIS SANDELL BUILDING 2 COTATI, CALIFORNIA	PLATE 4



Not to Scale

REESE & ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS	Job No: 2266.1.13 Date: 04-26-26 Appr:	TYPICAL CROSS-SECTION MOISTURE CUTOFF BARRIER SANDELL BUILDING 2 COTATI, CALIFORNIA	PLATE **5**



REESE & ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS	Job No: 2266.1.13 Date: 04-18-22 Appr:	TYPICAL CROSS-SECTION UNDERSLAB SUBDRAIN SANDELL BUILDING 2 COTATI, CALIFORNIA	PLATE **6**

APPENDIX E: SANTA ROSA LOW IMPACT DEVLEOPMENT DOCUMENTS

BMP Selection Table

Project Name: 380 Blodgett - Building 2

	Best Management Practice (BMP)	Detail Sheet	Detail Title	Can be used with...	High Ground Water	Contamination	Slope Constraints	Achieves...	Treatment	Volume Capture	Runoff Reduction Measure	BMP in priority selected?	Yes	No	Unique Identifier of BMP per planes	Explanation of selection	Other notes:
Universal BMP- to be considered on all projects.	Living Roof	N/A	N/A		X	X	X		X	X							
	Rainwater Harvesting	N/A	N/A		X	X	X			X							
Runoff Reduction Measures	Interceptor Trees	N/A	N/A		X	X	X				X						
	Bovine Terrace	RRM-01	Bovine Terrace		X						X						
	Vegetated Buffer Strip	RRM-02	Vegetated Buffer Strip								X						
	Impervious Area Disconnection	N/A	N/A		X	X	X				X						
Priority 1- to be installed with no underdrains or liners. Must drain all stading water within 72 hours.	Bioretention	P1-02	Roadside Bioretention - no C & G						X	X							
	Vegetated Swale- with Bioretention	P1-06	Swale with Bioretention						X	X							
	Constructed Wetlands	N/A	N/A						X	X							
Priority 2 BMPs- with subsurface drains installed above the capture volume.	Bioretention	P2-02	Roadside Bioretinton - Flush Design Roadside						X	X							
		P2-03	Roadside Bioretenion- Contiguous SW						X	X							
		P2-04	Roadside Bioretenion- Curb Opening						X	X			✓				
		P2-05	Roadside Bioretenion- No C & G						X	X							
	Constructed Wetlands	N/A	N/A						X	X							

Date: _______________ Page _____ of _____

BMP Selection Table

	Best Management Practice (BMP)	Detail Sheet	Detail Title	Can be used with…	High Ground Water	Contamination	Slope Constraints	Achieves…	Treatment	Volume Capture	Runoff Reduction Measure	BMP in priority selected?	Yes	No	Unique Identifier of BMP per planes	Explanation of selection	Other notes:
Priority 3 BMPs- installed with subdrains and/or impermeable liner. Does not achieve volume capture and must be used as part of a treatment train.	Bioretention	P3-02	Roadside Bioretinton - Flush Design Roadside		X	X	X		X								
		P3-03	Roadside Bioretenion- Contiguous SW		X	X	X		X								
		P3-04	Roadside Bioretenion- Curb Opening		X	X	X		X								
	Flow Through Planters	P3-05	Flow Through Planters		X	X	X		X								
	Vegetated Swale	P3-06	With Bioretention		X	X	X		X	X							
		P3-07	Vegetated Swale		X	X	X		X								
Priority 4 BMPs- does not achieve volume capture and must be used as part of a	Tree Filter Unit				X	X	X		X								
	Modular Bioretention				X	X	X		X								
Priority 5 BMPs- does not achieve volume capture and must be used as part of a treatment train.	Chambered Separator Units				X	X	X		X								
	Centrifugal Separator Units				X	X	X		X								
	Trash Excluders				X	X	X		X								
	Filter Inserts				X	X	X		X								
Priority 6 BMPs- see the "Offset Program" chapter for details.	Offset Program								N/A	N/A	N/A						
Other	Detention				X												

Project Name: 380 Blodgett Street - building 2

Date: 04/07/2022

City of Santa Rosa

Storm Water Low Impact Development Submittal Coversheet

To be submitted with all SW LID submittals

1. **Submittal Information:**

Submittal Date: 04-07-2022

Initial SW LIDS ☐ **Final SW LIDS** ☑

Design Manual Used for design:

☐ 2005 Standard Urban Storm Water Mitigation Plan

☐ 2011 Storm Water Low Impact Development Technical Design Manual

☑ 2017 Storm Water Low Impact Development Technical Design Manual

2. **Applicant Information:**

Applicant Name (Owner or Developer): Reco Prianto

Mailing Address: 3240 Peralta St.

City/State/Zip: Oakland

Phone/Email/Fax: ______

Project Name: 380 Blodgett Street - building 2

Date: 04/07/2022

City of Santa Rosa

Storm Water Low Impact Development Submittal Coversheet

To be submitted with all SW LID submittals

3. Project Information:

Project Name: 380 Blodgett Street - building 2

Site Address: 380 Blodgett Street - building 2

City/State/Zip: Cotati, CA 94931

APN (s): 046-073-006

Permit # (s):

Subdivision ☐ Grading Permit ☐ Building Permit ☐ Design Review ☐

Use Permit ☐ Hillside Development ☐ Encroachment ☐ Time Extension ☐

Other: Entitlements

Project Name: 380 Blodgett Street - building 2

Date: 04/07/2022

City of Santa Rosa

Storm Water Low Impact Development Submittal Coversheet

To be submitted with all SW LID submittals

4. Design Information:

Narrative:

Project Description

- ✔ Description of proposed project type, size, location, and any specific uses or features.
- ✔ Description of any sensitive features (creeks, wetlands, trees, etc.) and whether they are going to be preserved, removed or altered.
- ✔ Description of the existing site.
- ✔ Description of how this project triggers these requirements (impervious area, CALGreen, 401 Permit, etc.).
- ✔ Describe any "on-site offset" used.

Pollution Prevention and Runoff Reduction Measures

- ✔ Description of all proposed pollution prevention measures (street sweeping, covered trash enclosures, indoor uses, etc).
- ✔ Description of all Runoff Reduction Measures (Interceptor Trees, Impervious Area Disconnection, and/or Alternative Driveway Design).

Type of BMPs Proposed

- ✔ Description of the types of BMPs selected including priority group that each is in.
- ✔ Description of level of treatment and volume capture achieved for each BMP.

Maintence

- ✔ Description of maintenance for each type of BMP.
- ✔ Description of funding mechanism.
- ✔ Designation of Responsible Party.

Project Name: 380 Blodgett Street - buildin

Date: 04/07/2022

City of Santa Rosa

Storm Water Low Impact Development Submittal Coversheet

To be submitted with all SW LID submittals

Exhibits:

Proposed SW LID Exhibit:

- [x] Exhibit should include: street names, property lines, strom drainage system, waterways, title block, scale and north arrow.
- [x] Tributary areas shown for all inlets (including off-site drainage areas).
- [x] C value for each tributary area.
- [x] Soil Type of existing site.
- [x] New or replaced impervious area shown.
- [x] All inlets and BMP, shown (including unique identifier).
- [x] All interceptor trees shown.
- [x] All proposed BMPs shown including dimensions.

Existing Condition Exhibit

- [x] Exhibit should include: street names, property lines, proposed storm drainage system, waterways, title block, scale, and north arrow.
- [x] Soil Type of existing site.
- [x] Proposed tributary areas shown for all proposed inlets (including offsite drainage areas). Existing impervious areas.
- [x] Existing impervious area.

BMP Details:

- [x] Detail for each type of BMP selected- provide a preliminary 8.5"x11" detail for each BMP type or include on submitted drawings. These can be taken straight from the Fact Sheets if no significant changes are proposed.

On Plans:

- [x] Show all applicable elements of the selected BMPs on the appropriate plan sheets.

Calculations:

- [x] Calculations, for each inlet, and summary sheet using the Storm Water Calculator found at *www.srcity.org/stormwaterLID*
- [x] Supplemental or supporting calculation if applicable.

2017 Storm Water LID Determination Worksheet

PURPOSE AND APPLICABILITY: This determination worksheet is intended to satisfy the specific requirements of "ORDER NO. R1-2015-0030, NPDES NO. CA0025054 NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT AND WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES FROM THE MUNICIPAL SEPARATE STORM SEWER SYSTEMS." Additional design requirements imposed by Governing Agencies, such as local grading ordinances, CAL Green, CEQA, 401 permitting, and hydraulic design for flood control still apply as appropriate. Additionally, coverage under another regulation may trigger the requirement to design in accordance with the Storm Water LID Technical Design Manual.

Part 1: Project Information

380 Blodgett - Building 2	Bert Sandell
Project Name	Applicant (owner or developer) Name
380 Blodgett Street	3348 Paradise Drive
Project Site Address	Applicant Mailing Address
Cotati, CA 94931	Tiburon, CA 94920
Project City/State/Zip	Applicant City/State/Zip
	650.224.3274
Permit Number(s) - (if applicable)	Applicant Phone/Email/Fax
Reco Prianto	3240 Peralta St., #3
Designer Name	Designer Mailing Address
Oakland, CA 94608	510.225.6465
Designer City/State/Zip	Designer Phone/Email

Type of Application/Project:

☐ Subdivison ☐ Grading Permit ☐ Building Permit ☐ Hillside Development

☐ DesignReview ☐ Use Permit ☐ Encroachment ☐ Time Extensions ☑ Other : Entitlements

PART 2: Project Exemptions

1. Is this a project that creates or replaces *less than* 10,000 square feet of impervious surface[1], including all project phases and off-site improvements?

   ☐ Yes ☑ No

1 Impervious surface replacement, such as the reconstruction of parking lots or excavation to roadway subgrades, is not a routine maintenance activity. Reconstruction is defined as work that replaces surfaces down to the subgrade. Overlays, resurfacing, trenching and patching are defined as maintenance activities per section VI.D.2.b.

2. Is this project a routine maintenance activity[2] that is being conducted to maintain original line and grade, hydraulic capacity, and original purpose of facility such as resurfacing existing roads and parking lots?

☐ Yes ☑ No

3. Is this project a stand alone pedestrian pathway, trail or off-street bike lane?

☐ Yes ☑ No

4. **Did you answer "YES" to any of the questions in Part 2?**

☐ **YES:** This project will *not* need to incorporate permanent Storm Water BMP's as required by the NPDES MS4 Permit. **Please complete the "Exemption Signature Section" on Page 4.**

☑ **NO:** Please complete the remainder of this worksheet.

Part 3: Project Triggers

Projects that Trigger Requirements:
Please answer the following questions to determine whether this project requires permanent Storm Water BMP's and the submittal of a SW LIDs as required by the NPDES MS4 Permit order No. R1-2015-0030.

1. Does this project create or replace a combined total of 10,000 square feet or more of impervious surface[1] including all project phases and off-site improvements?

☑ Yes ☐ No

2. Does this project create or replace a combined total or 10,000 square feet or more of impervious streets, roads, highways, or freeway construction or reconstruction[3]? ☑ Yes ☐ No

3. Does this project create or replace a combined total of 1.0 acre or more of impervious surface[1] including all project phases and off-site improvements? ☑ Yes ☐ No

4. **Did you answer "YES" to any of the above questions in Part 3?**

☑ **YES:** This project will need to incorporate permanent Storm Water BMP's as required by the NPDES MS4 Permit. **Please complete remainder of worksheet and sign the "Acknowledgement Signature Section" on Page 4.**

☐ **NO:** This project will *not* need to incorporate permanent Storm Water BMP's as required by the NPDES MS4 permit. **Please complete the "Exemption Signature Section" on Page 4.**

---

1 Imprevious surface replacement, such as the reconstruction of parking lots or excavation to roadway subgrades, is not a routine maintence activity. Reconstruction is defined as work that replaces surfaces down to the subgrade. Overlays, resurfacint, trenching and patching are defined as maintenance activities per section VI.D.2.b.

2 "Rountine Maintenance Activity" includes activities such as overlays and/or resurfacing of existing roads or parking lots as well as trenching and patching activities and reroofing activities per section VI.D.2.b.

3 "Reconstruction" is defined as work that extends into the subgrade of a pavement per section VI.D.2.b.

Part 4: Project Description

1. Total Project area: 126,034

(●) square feet
( ) acres

2. Existing land use(s): (check all that apply)

☑ Commercial ☑ Industrial ☐ Residential ☐ Public ☐ Other

Description of buildings, significant site features (creeks, wetlands, heritage trees), etc.:

The existing site is an empty flag lot covered with grass. It is bordered by the Laguna de Santa Rosa to its North. To the South and East there is commercial development. To the west there is an empty lot.

3. Existing impervious surface area: 0

(●) square feet
( ) acres

4. Proposed Land Use(s): (check all that apply)

☐ Commercial ☑ Industrial ☐ Residential ☐ Public ☐ Other

Description of buildings, significant site features (creeks, wetlands, heritage trees), etc.:

The proposed project consists of a new 35,879 industrial warehouse building with a surrounding parking lot, drive aisle, grading, water quality, retention and utility improvements. The proposed building will have two truck docks; the larger one on the east and a smaller, more elongated one on the west side. A trash enclosure is proposed on the Southeast corner of the parking lot. This site will be connected to the first building to the East. The two sites will share a drive aisle and entrance to the lot. The FEMA 100-year floodplain has been amended with an approved LOMA and the new limits will be avoided during construction as well.

5. Existing impervious surface area: 0

(●) square feet
( ) acres

Project Name

2017 Storm Water LID Determination Worksheet | Distribution Warehouse

Acknowledgment Signature Section:

As the property owner or developer, I understand that this project is required to implement permanent Storm Water Best Management Practices and provide a Storm Water Low Impact Development Submittal (SW LIDS) as required by the City's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer Systems (MS4) Permit Order No. R1-2015-0030. *Any unknown responses must be resolved to determine if the project is subject to these requirements.

Applicant Signature Trustee, Sandell Holdings LLC

February 18, 2021

Date

Exemption Signature Section:

As the property owner or developer, I understand that this project as currently designed does not require permanent Storm Water BMP's nor the submittal of a Storm Water Low Impact Development Submittal (SW LIDS) as required by the City's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer Systems (MS4) Permit*. I understand that redesign may require submittal of a new Determination Worksheet and may require permanent Storm Water BMP's.

Applicant Signature

Date

* **This determination worksheet is intended to satisfy the specific requirements of "ORDER NO. R1-2015-0030, NPDES NO. CA0025054 NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT AND WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES FROM THE MUNICIPAL SEPARATE STORM SEWER SYSTEMS." Additional design requirements imposed by Governing Agencies, such as local grading ordinances, CAL Green, CEQA, 401 permitting, and hydraulic design for flood control still apply as appropriate. Additionally, coverage under another regulation may trigger the requirement to design in accordance with the Storm Water LID Technical Design Manual.**

Implementation Requirements: *All calculations shall be completed using the "Storm Water Calculator" available at: www.srcity.org/stormwaterLID*

Hydromodification Control/100% Volume Capture: Capture (infiltration and/or reuse) of 100% of the volume of runoff generated by a 1.0" 24-hour storm event, as calculated using the "Urban Hydrology for Small Watersheds" TR-55 Manual method. This is a retention requirement.

Treatment Requirement: Treatment of 100% of the flow calculated using the modified Rational Method and a known intensity of 0.20 inches per hour.

Delta Volume Capture Requirement: Capture (infiltration and/or reuse) of the increase in volume of storm water due to development generated by a 1.0" 24-hour storm event, as calculated using the "Urban Hydrology for Small Watersheds" TR-55 Manual method. This is a retention requirement.

Preliminary Hydraulics and Hydrology Report

For

Distribution Warehouse

380 Blodgett Street Phase II

Cotati, CA 94931

Prepared for:
Sandell Holdings LLC
3348 Paradise Drive
Tiburon, CA 94920

Prepared by:
CaliChi Design Group
Reco V. Prianto, P.E., QSD+QSP, LEED AP
3240 Peralta Street #3
Oakland, CA 94608
(510) 250-7877

January 10, 2022

Table of Contents

List of Appendices

1.0 Project Narrative

1.0 Project Description

The proposed project is located on an undeveloped parcel, APN: 046-073-006, adjacent to the Laguna de Santa Rosa, a sediment impaired waterbody, and a recognized wetland. The total parcel area is approximately 356,810 square feet (8.191 acres).

The proposed project consists of a 2nd Building to the West of the already entitled Warehouse Building at the termination of Blodgett Street. The new building will be a 35,500-sf industrial warehouse building with a surrounding parking lot, drive aisle, grading, water quality, retention and utility improvements. The site will have two truck docks on the east and west sides of the building. This site will share an entrance with the already entitled Building 1 Warehouse.

1.1 Methodologies Analysis

The design of this project's drainage infrastructure will use the Sonoma County Flood Management Design Manual, which may be referred to as the "Flood Manual". Any figures quoted in this report will come from that document unless specified otherwise.

This site's drainage capacity and design will be based off the Incremental Rational Method, as this project is less than 200 acres. The design discharge for this site will be the 10-year peak flow since the site is under 1 sq mile (Table 4-2, Flood Manual). In addition, conveyance for the 100-year flow condition will also be considered and factored into the design.

1.2 Assumptions

Throughout the design, several assumptions were made using engineering judgment. They are as follows:

- Time of concentration from roof to surface is 5-minutes
- Treatment time through flow-through planters is 5-minutes
- Hydraulic radius assumes the pipes are flowing 80% full
- Time of Concentration from roof to gutter is 5 minutes
- Time it takes for runoff to infiltrate through the flow-through planter is 5 minutes

1.3 Existing Conditions

The existing site is a flag lot off of Helman Lane and is currently undeveloped and is covered with native grasses. The site is bordered by the Laguna de Santa Rosa to the North, an industrial office park to the East, the Marin-Sonoma Mosquito Control building to the South, and farmland to the west.

The site has less than 1-acre of wetlands located along the South and West property line and will not be disturbed or impacted during the construction of this project. In addition, there is a Letter of Map Amendment (LOMA) that was approved by FEMA that reduces the actual 100-year floodplain limits to small areas in the Northwest and Northeast corners of the site totaling approximately 20,468 sf. No construction is proposed within these limits. The approved Letter of Map Amendment has been included in ***Appendix C*** of this report.

The existing site has soils with the following classifications accompanied with average depth, respectively. Type C, Clay Loam (CH), 0-1.5 ft, Type D, Clay (CH), 1.5-3.5 ft, and Type B, Sandy Loam, 3.5-10 ft.

Per the Soil Investigation Report performed by Reese & Associates on March 26, 2021, "Groundwater was not encountered in the test borings during our exploration. However, saturated soils were noted at a depth of about 15 feet in our deep test boring. The groundwater, if present, was likely sealed-off from the borehole by the clay cuttings. Groundwater levels can vary seasonally and can rise and fall several feet annually, depending on seasonal climatic conditions."

1.4 Existing Drainage

The existing site is relatively level with an average slope of approximately 0.5% and generally drains towards various low points throughout the parcel. A high point, at approximately 98 ft above sea level, exists near the middle of the Northern property line and the site drains to the south and west. The site's storm water mainly pools on-site and infiltrates into the soils. In addition, a small portion on each side of the property has offsite runoff from adjacent parcels. Finally, a small amount of runoff along the Northeastern property line flows directly into the Laguna De Santa Rosa. In summary, the entirety of any excess runoff that does not infiltrate into the on-site soils ultimately outfalls into Laguna De Santa Rosa.

1.5 Impacts of Proposed Drainage

The storm system has been designed to treat, retain and restrict the 10-year peak flow prior to releasing it at or below historic conditions via existing storm infrastructure located in landscape areas on the Southwest, Southeast, and Northeast corners of the property and discharges to an existing outfall on the industrial property to the east which ultimately outfalls to the Laguna De Santa Rosa. The proposed conditions will not adversely affect the downstream conditions. The water quality & retention ponds, discussed in more detail in Section 2 of this report, are sized to retain the 10-year peak storm and detain the 100-year storm. Any additional flow will overtop overflow inlets set at 0.50 feet above the top of media and will ultimately outfall into the Laguna De Santa Rosa via overland release as is done in the existing condition.

2.0 Hydrology & Hydraulic Calculations

2.1 Pre- & Post-development Analysis

For the existing condition, we used the survey that was prepared by Sousa Land Surveys on February 22, 2021 to create a Pre-Construction Drainage Map with a single drainage basin delineated to depict the runoff from the limits of disturbance since the entire site ultimately flows to the Laguna De Santa Rosa. This basin is denoted as *EX-1* for calculations and reference.

For the proposed condition, the site was separated into ten drainage basins. Each basin has been paired with a flow-through planter which were determined to be the Best Management Practice denoted as *BMP-1* through *BMP-4*. These basins incorporate surface flow along with roof drainage for both treatment and hydromodification by flowing into the same BMP prior to being conveyed to the water quality & retention ponds. Along with using the typical sheet flow, concentrated flow and pipe flow to calculate Time of Concentration, CDG included 5-minutes of roof drainage and 5-minutes of infiltration time through the flow-through planters. Hydrology Calculations outlining the Time of Concentration and the Flow Rate which both can be found in ***Appendix B*** of this report. The water quality and retention ponds are combined into a single BMP with a flow through planter at the top and drain rock with an imported soil porosity of

0.4 or larger. Detailed calculations outlining the Retention Calculations beneath the Flow-Through Planters can be found in the Santa Rosa Low Impact Development (LID) Report to be submitted at the time of a grading permit.

In general, the basins all flow via gutter to their respective bio-swale planters where the 10-year storm is treated and then flows lower to the drain rock section below the perforated pipe which is to be retained and ultimately infiltrated into the ground below. Any excess water beyond the required infiltration volume or the treatment volume either enters straight to the storm drain conveyance system via overflow inlet in the bio-swale or via the perforated pipe at the boundary between bio-swale treatment media and the drain rock below. Each bio-swale planter is designed to capture and convey runoff above the required 10-year storm event up to the 100-year storm event. There are four of these combined bio-swale and retention trenches spread throughout the site and referenced as RET-1, RET-2 and RET-3, RET-4. See ***Appendix A*** for the Pre-Construction Drainage Map and Stormwater Control Plan included with this report that outlines these locations and delineate the drainage basins. Any flows above the 100-year event will overflow any drainage elements and flow to the Laguna De Santa Rosa via overland flow.

The proposed subject site does not currently flow into the public storm sewer system, but rather ultimately flows into the Laguna De Santa Rosa directly. The proposed design ensures that the total flow that enters the existing storm system is not exceeded. In order to bring clarity to the Proposed Drainage Area Map, the following descriptions break down the drainage areas.

PR-1A: Basin PR-1A includes the southwest quadrant of the building. The runoff is conveyed via roof drain which splashes at grade and flows to BMP-1 bio-swale for treatment and then is infiltrated via infiltration trench RET-1 below the bio-swale soil media. Any excess flows enter overflow inlets or perforation pipe at the bottom of the soil media in the bio-swale and flows via the on-site storm drain system West to the existing outfall into Laguna De Santa Rosa.

PR-1B: Basin PR-1B includes the southeast quadrant of the building. The runoff is conveyed via roof drain which splashes at grade and flows to BMP-1 bio-swale for treatment and then is infiltrated via infiltration trench RET-1 below the bio-swale soil media. Any excess flows enter overflow inlets or perforation pipe at the bottom of the soil media in the bio-swale and flows via the on-site storm drain system West to the existing outfall into Laguna De Santa Rosa.

PG-1C: Basin PG-1C includes the drainage area just south of the building and includes concrete walkways and landscape areas only. The runoff surface flows to BMP-1 bio-swale for treatment and then is infiltrated via infiltration trench RET-1 below the bio-swale soil media. Any excess flows enter overflow inlets or perforation pipe at the bottom of the soil media in the bio-swale and flows via the on-site storm drain system West to the existing outfall into Laguna De Santa Rosa.

PR-2A: Basin PR-3A includes the Northeast quadrant of the building. The runoff is conveyed via roof drain which splashes at grade and flows to BMP-2 bio-swale for treatment and then is infiltrated via infiltration trench RET-2 below the bio-swale soil media. Any excess flows enter overflow inlets or perforation pipe at the bottom of the soil media in the bio-swale and flows via the on-site storm drain system West to the existing outfall into Laguna De Santa Rosa.

PG-2B Basin PG-2B includes the southeast drainage area of the site. The runoff surface flows generally South to BMP-2 bio-swale for treatment and then is infiltrated via infiltration trench RET-2 below the bio-swale soil media. Any excess flows enter overflow inlets or perforation pipe at the bottom of the soil media in the bio-swale and flows via the on-site storm drain system West to the existing outfall into Laguna De Santa Rosa.

PG-2C: Basin PG-2C is the proposed truck dock on the east side of the building. The truck dock is 4 feet lower than the building 2 finish floor elevation and is infeasible to rout to a BMP or RET for treatment or infiltration. However, BMP-2 and RET-2 was designed to treat and retain / infiltrate an equivalent quantity of water as if PG-2C was being routed to it. The drainage from the truck dock is captured via trench drain and then is routed to the Northwest to the existing outfall into Laguna De Santa Rosa.

PG-3A: Basin PG-3A is the drainage area to the northeast of the building that includes the drive aisle north of the proposed building, parking, walkways, and some landscape areas in the Northeast corner of the site. The runoff surface flows to BMP-3 bio-swale for treatment and then is infiltrated via infiltration trench RET-3 below the bio-swale soil media. Any excess flows enter overflow inlets or perforation pipe at the bottom of the soil media in the bio-swale and flows via the on-site storm drain system West to the existing outfall into Laguna De Santa Rosa.

PR-4A: Basin PR-4A includes the Northwest quadrant of the building. The runoff is conveyed via roof drain which splashes at grade and flows to BMP-4 bio-swale for treatment and then is infiltrated via infiltration trench RET-4 below the bio-swale soil media. Any excess flows enter overflow inlets or perforation pipe at the bottom of the soil media in the bio-swale and flows via the on-site storm drain system West to the existing outfall into Laguna De Santa Rosa.

PG-4B: Basin PG-4B includes the entire area west of the building. The runoff surface flows to BMP-4 bio-swale for treatment and then is infiltrated via infiltration trench RET-4 below the bio-swale soil media. Any excess flows enter overflow inlets or perforation pipe at the bottom of the soil media in the bio-swale and flows via the on-site storm drain system West to the existing outfall into Laguna De Santa Rosa.

PG-5A: Basin PR-5B is located at the northeast corner of the site. Because of how the grading of Building 2 interfaces with the grading of Building 1 in this area, it is infeasible to treat the runoff from this area in any of the adjacent bio-swales and it instead sheet flows to the East to the catch basin in the Northwest corner of the parking area for Building 1 where it is collected and piped to Building 1 BMP-3 bio-swale for treatment and then is infiltrated via infiltration trench RET-3 below the bio-swale soil media. Any excess flows enter overflow inlets or perforation pipe at the bottom of the soil media in the bio-swale and flows via the on-site storm drain system West to the existing outfall into Laguna De Santa Rosa.

Existing Pipe Analysis

Design Storm	10-Year
Area (ac)	4.69
C	0.33
I (in/hr)	.85
Q10 (cfs)	1.32
Capacity (cfs)	120
Excess Capacity (cfs)	118.68

2.2 Hydraulic Calculations

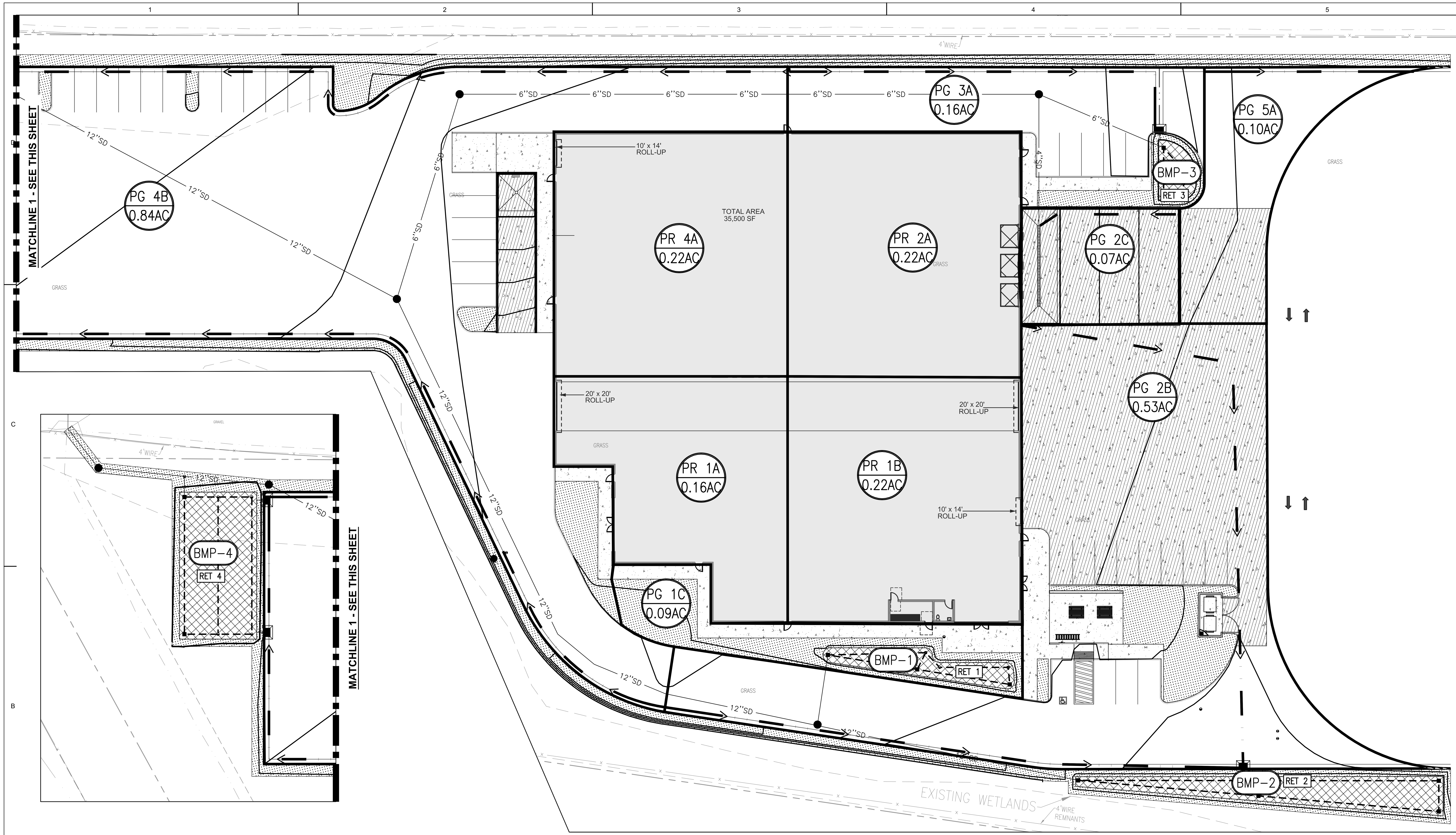
For hydraulic calculations, the time of concentrations, 10-year peak design storm flow rates and 100-year check storm for each individual drainage basin were determined using the county provided requirements and data. This information was then used in Civil 3D's Hydraflow Storm Sewers Extension to determine the size and slope of the entire storm network.

2.3 Post Development Storm Water Levels and Pollutant Discharges

Post development discharge will not exceed existing discharge per design storm. Additionally, the required amount of treatment has been achieved through the use of flow-through planters (*BMP-1, BMP-2, BMP-3, and BMP-4*) and 100% volume capture within the retention drain rock beneath the flow-thru planters (*RET-1, RET-2, RET-3, and RET-4*).

For additional information regarding treatment and retention of the stormwater, see the SWLID Report to be submitted with the grading permit.

APPENDIX A: Proposed Drainage Maps



STORMWATER CONTROL LEGEND

- APPROXIMATE BOUNDARY OF DRAINAGE MANAGEMENT AREA
- PROPOSED OVERFLOW DRAIN
- PROPOSED STORMWATER CLEANOUT
- GRND 1 / BMP-1 — PROPOSED DRAINAGE MANAGEMENT AREA, AND BMP DESIGNATION
- PATH OF WATER
- TRASH CAPTURE INLETS TO BE INSTALLED AT TRUCK DOCK TRENCH DRAINS

PROPOSED FLOW - RATIONAL METHOD

	C10	I10	A(ac)	Q10 (cfs)	C100	I100	A(ac)	Q100 (cfs)
PR-1A	0.90	1.50	0.16	0.22	0.90	2.21	0.16	0.32
PR-1B	0.90	1.52	0.22	0.30	0.90	2.27	0.22	0.45
PG-1C	0.55	1.66	0.09	0.08	0.55	2.71	0.09	0.13
PR-2A	0.90	1.23	0.22	0.24	0.90	1.37	0.22	0.27
PG-2B	0.86	1.37	0.54	0.64	0.86	1.83	0.54	0.85
PG-2C	0.90	1.50	0.12	0.16	0.90	2.23	0.12	0.24
PG-3A	0.85	1.64	0.23	0.32	0.85	2.65	0.23	0.51
PR-4A	0.90	1.96	0.22	0.39	0.90	3.65	0.22	0.72
PG-4B	0.89	2.26	0.83	1.65	0.89	4.56	0.83	3.34
PG-5A	0.90	2.33	0.10	0.21	0.90	5.12	0.10	0.46
PR-5 TO BE TREATED BY BUILDING 1 BMP-1.								

RETENTION CHAMBER VOLUME

Retention Basin	Drainage Basins Flowing to Retention	Area (ac)	REQUIRED VOLUME (CF)	ACHIEVED VOLUME (CF)
RET-1	PR-1A, PR-1B & PR-1C	0.47	576.00	584.00
RET-2	PR-2A, PR-2B & PR-2C	0.87	1275.00	1290.00
RET-3	PR-3A	0.23	301.00	320.00
RET-4	PR-4A & PR-4B	1.15	1708.00	1890.00
TOTAL		2.72	3860.00	4084.00

INSPECTION AND MAINTENANCE

RESPONSIBLE PARTY FOR BMP MAINTENANCE: PROPERTY OWNER

SOIL CLASSIFICATION

EXISTING SOIL TO BE INFILTRATED INTO (3.5' BELOW EG SURFACE) DETERMINED TO BE TYPE B – SANDY LOAM

- INFILTRATION RATE FOR THIS SOIL TYPE IS DETERMINED TO BE 0.8 IN/HR

BMP NOTE

- ALL TREATMENT REQUIREMENTS ARE MET USING FLOW THROUGH PLANTERS.
- ALL VOLUME CAPTURE REQUIREMENTS ARE MET USING UNDERGROUND BIO-SWALES.

CONSULTANTS

CALICHI DESIGN GROUP
CIVIL ENGINEERS
3240 PERALTA STREET, #3
OAKLAND, CA 94608
(510) 250-7877
WWW.CALICHI.COM

SEAL

REGISTERED PROFESSIONAL ENGINEER
REGO VICENTE PRIANTO
C 69670
EXP. 6-30-2022
CIVIL
STATE OF CALIFORNIA
2022/01/10

DISTRIBUTION WAREHOUSE BUILDING TWO

380 BLODGETT STREET
COTATI, CA 94931

#	DESCRIPTION	DATE
1	INITIAL PLANNING SUBMITTAL	1/10/22

DATE:	01/10/2022
PROJECT NUMBER:	2021.338.001
PROJECT PHASE:	PLANNING
DRAWN BY:	KS
CHECKED BY:	RP

SHEET TITLE

STORM WATER CONTROL PLAN

SHEET NUMBER

C4.0

APPENDIX B: Hydrology Calculations

TIME OF CONCENTRATION - PROPOSED CONDITIONS 10-YEAR

	Pervious Area (sf)	Impervious Area (sf)	Total Area (sf)	Impervious %	Weighted C	Area (ac)	Roof Travel Time, t_r (min)*	Overland Slope (ft/ft)	Overland Flow, L (ft)	Overland time, t_o (min)	Concentrated Slope (ft/ft)	Shallow Concentrated Length, L_s (ft)	Concentrated Velocity, V_c (ft/s)	Concentrated Travel Time, t_s (min)	Treatment Time, t_{tr} (min)**	Hydraulic Radius, R_h (ft)***	Velocity in Pipe, V_p (ft/s)	Pipe Length, L_p (ft)	Pipe Travel Time, t_p (min)	Total Travel Time, t_c (min)****	i (in/yr)
PR-1A	0	7,105	7,105	100	0.90	0.16	5.00				0.003	20	1.11	0.30	5.00	1.22	1.14	665	9.72	20.02	1.50
PR-1B	0	9,617	9,617	100	0.90	0.22	5.00				0.015	15	2.49	0.10	5.00	1.22	1.14	665	9.72	19.82	1.52
PG-1C	2,598	1,295	3,893	33	0.55	0.09		0.010	30	2.85	0.003	50	1.11	0.75	5.00	1.22	1.14	665	9.72	18.32	1.66
PR-2A	0	9,541	9,541	100	0.90	0.22	5.00				0.020	212	2.87	1.23	5.00	1.22	1.14	800	11.70	22.93	1.23
PG-2B	1,766	21,620	23,386	92	0.86	0.54		0.020	100	3.99	0.020	112	2.87	0.65	5.00	1.22	1.14	800	11.70	21.34	1.37
PG-2C	0	5,120	5,120	100	0.90	0.12		0.012	52	3.09	0.060	57	4.98	0.19	5.00	1.22	1.14	800	11.70	19.97	1.50
PG-3A	859	8,970	9,829	91	0.85	0.23		0.012	25	2.03	0.022	215	3.01	1.19	5.00	1.22	1.14	705	10.31	18.53	1.64
PR-4A	0	9,517	9,517	100	0.90	0.22	5.00				0.018	491	2.73	3.00	5.00	1.22	1.14	142	2.08	15.08	1.96
PG-4B	975	35,034	36,009	97	0.89	0.83		0.012	25	2.00	0.018	466	2.73	2.85	5.00	1.22	1.14	142	2.08	11.93	2.26
PG-5A	0	4,366	4,366	100	0.90	0.10		0.012	85	4.14	0.018	0	0.00	0.00	5.00	1.22	1.14	142	2.08	11.22	2.33

TIME OF CONCENTRATION - PROPOSED CONDITIONS 100-YEAR

	Pervious Area (sf)	Impervious Area (sf)	Total Area (sf)	Impervious %	Weighted C	Area (ac)	Roof Travel Time, t_r (min)*	Overland Slope (ft/ft)	Overland Flow, L (ft)	Overland Time, t_o (min)	Concentrated Slope (ft/ft)	Shallow Concentrated Length, L_s (ft)	Concentrated Velocity, V_c (ft/s)	Concentrated Travel Time, t_s (min)	Treatment Time, t_{tr} (min)**	Hydraulic Radius, R_h (ft)***	Velocity in Pipe, V_p (ft/s)	Pipe Length, L_p (ft)	Pipe Travel Time, t_p (min)	Total Travel Time, t_c (min)****	i (in/yr)
PR-1A	0	7,105	7,105	100	0.90	0.16	5.00				0.00	20	1.11	0.30		1.22	1.14	665	9.72	15.02	2.21
PR-1B	0	9,617	9,617	100	0.90	0.22	5.00				0.02	15	2.49	0.10		1.22	1.14	665	9.72	14.82	2.27
PG-1C	2,598	1,295	3,893	33	0.55	0.09		0.01	30	2.85	0.00	50	1.11	0.75		1.22	1.14	665	9.72	13.32	2.71
PR-2A	0	9,541	9,541	100	0.90	0.22	5.00				0.02	212	2.87	1.23		1.22	1.14	800	11.70	17.93	1.37
PG-2B	1,766	21,620	23,386	92	0.86	0.54		0.02		3.99	0.02	112	2.87	0.65		1.22	1.14	800	11.70	16.34	1.83
PG-2C	0	5,120	5,120	100	0.90	0.12				3.09	0.06	57	4.98	0.19		1.22	1.14	800	11.70	14.97	2.23
PG-3A	859	8,970	9,829	91	0.85	0.23		0.01	25	2.03	0.02	215	3.01	1.19		1.22	1.14	705	10.31	13.53	2.65
PR-4A	0	9,517	9,517	100	0.90	0.22	5.00				0.02	491	2.73	3.00		1.22	1.14	142	2.08	10.08	3.65
PG-4B	975	35,034	36,009	97	0.89	0.83		0.01	25	2.00	0.02	466	2.73	2.85		1.22	1.14	142	2.08	6.93	4.56
PG-5A	0	4,366	4,366	0	0.90	0.10		0.01	85	4.14	0.00	0	0.00	0.00		1.22	1.14	0	0.00	5.00	5.12

*Assumes 5-minutes of travel time for roof runoff

**Assumes 5-minutes of treatment time through flow-thru planters. No treatment for Basins PR8 & PR9. 100-year storm by-passes treatment and flows directly to sub-surface retention chambers

***Hydraulic Radius shown is for an 8" pipe from planters to retention chambers and assumes 80% full pipe flow and uses Figure D.2-2 from the Flood Management Design Manual

****Per Flood Management Design Manual, the minimum Time of Concentration = 5 minutes

TIME OF CONCENTRATION - PRE-CONSTRUCTION 10-YEAR

	Impervious %	C	Area (ac)	Overland Slope (ft/ft)	Overland Flow, L (ft)	Overland Time, t_o (min)	Concentrated Slope (ft/ft)	Shallow Concentrated Length, L_s (ft)	Concentrated Velocity, V_c (ft/s)	Concentrated Travel Time, t_s (min)	Total Travel Time, t_c (min)	i (in/yr)
EX1	0	0.33	4.69	0.006	300	16.24	0.005	727	1.14	10.62	26.86	0.85

TIME OF CONCENTRATION - PRE-CONSTRUCTION 100-YEAR

	Impervious %	C	Area (ac)	Overland Slope (%)	Overland Flow, L (ft)	Overland Time, t_o (min)	Concentrated Slope (ft/ft)	Shallow Concentrated Length, L_s (ft)	Concentrated Velocity, V_c (ft/s)	Concentrated Travel Time, t_s (min)	Total Travel Time, t_c (min)	i (in/yr)

	NOAA Storm Frequency	
Duration (min)	10	100
5	3.41	5.12
10	2.44	3.67
15	1.97	2.96

PROPOSED FLOW - RATIONAL METHOD

	C10	I10	A(ac)	Q10 (cfs)	C100	I100	A(ac)	Q100 (cfs)
PR-1A	0.90	1.50	0.16	0.22	0.90	2.21	0.16	0.32
PR-1B	0.90	1.52	0.22	0.30	0.90	2.27	0.22	0.45
PG-1C	0.55	1.66	0.09	0.08	0.55	2.71	0.09	0.13
PR-2A	0.90	1.23	0.22	0.24	0.90	1.37	0.22	0.27
PG-2B	0.86	1.37	0.54	0.64	0.86	1.83	0.54	0.85
PG-2C	0.90	1.50	0.12	0.16	0.90	2.23	0.12	0.24
PG-3A	0.85	1.64	0.23	0.32	0.85	2.65	0.23	0.51
PR-4A	0.90	1.96	0.22	0.39	0.90	3.65	0.22	0.72
PG-4B	0.89	2.26	0.83	1.65	0.89	4.56	0.83	3.34
	0.90	2.33	0.10	0.21	0.90	5.12	0.10	0.46

PRE-CONSTRUCTION FLOW - RATIONAL METHOD

	C10	I10	A(ac)	Q10 (cfs)	C100	I100	A(ac)	Q100 (cfs)

RETENTION CHAMBER DESIGN - 10-YEAR

Retention Basin	Drainage Basins Flowing to Retention	C	i (in/hr)	Area (ac)	Longest Total Travel Time, T_c (min)	Q10 (cfs)
RET-1	PR-1A, PR-1B & PR-1C	0.85	1.50	0.47	20.02	0.60
RET-2	PR-2A, PR-2B & PR-2C	0.89	1.23	0.87	22.93	0.95
RET-3	PR-3A	0.90	1.64	0.23	18.53	0.33
RET-4	PR-4A & PR-4B	0.89	1.96	1.15	15.08	2.00

Total release from these retention ponds not to exceed existing Q10 that enters Laguna De Santa Rosa

RETENTION CHAMBER DESIGN - 100-YEAR

Retention Basin	Drainage Basins Flowing to Retention	C	i (in/hr)	Area (ac)	Longest Total Travel Time, T_c (min)	Q100 (cfs)
RET-1	PR-1A, PR-1B & PR-1C	0.85	2.21	0.47	15.02	0.89
RET-2	PR-2A, PR-2B & PR-2C	0.89	1.37	0.87	17.93	1.07
RET-3	PR-3A	0.90	2.65	0.23	13.53	0.54
RET-4	PR-4A & PR-4B	0.89	3.65	1.15	10.08	3.72

The Q100 is used in determining the overflow elevations within the retention ponds

CONSULTANTS

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SEAL

REGISTERED PROFESSIONAL ENGINEER
RECO VICENTE PRIANTO
C 69670
EXP. 6-30-2022
CIVIL
STATE OF CALIFORNIA

2022/01/10

DISTRIBUTION WAREHOUSE BUILDING TWO

380 BLODGETT STREET
COTATI, CA 94931

#	DESCRIPTION	DATE
1	INITIAL PLANNING SUBMITTAL	1/10/22

DATE:	01/10/2022
PROJECT NUMBER:	2021.338.001
PROJECT PHASE:	PLANNING
DRAWN BY:	KS
CHECKED BY:	RP

SHEET TITLE

HYDROLOGY CALCULATIONS

SHEET NUMBER

C4.1

APPENDIX C: LOMA and Flood Map

Federal Emergency Management Agency
Washington, D.C. 20472

March 18, 2021

MR. LANDON ODOM
CALICHI DESIGN GROUP
240 N BROADWAY
#308B
PORTLAND, OR 97227

CASE NO.: 21-09-0709A
COMMUNITY: CITY OF COTATI, SONOMA COUNTY, CALIFORNIA
COMMUNITY NO.: 060377

DEAR MR. ODOM:

This is in reference to a request that the Federal Emergency Management Agency (FEMA) determine if the property described in the enclosed document is located within an identified Special Flood Hazard Area, the area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood), on the effective National Flood Insurance Program (NFIP) map. Using the information submitted and the effective NFIP map, our determination is shown on the attached Letter of Map Amendment (LOMA) Determination Document. This determination document provides additional information regarding the effective NFIP map, the legal description of the property and our determination.

Additional documents are enclosed which provide information regarding the subject property and LOMAs. Please see the List of Enclosures below to determine which documents are enclosed. Other attachments specific to this request may be included as referenced in the Determination/Comment document. If you have any questions about this letter or any of the enclosures, please contact the FEMA Map Information eXchange (FMIX) toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, Engineering Library, 3601 Eisenhower Ave Ste 500, Alexandria, VA 22304-6426.

Sincerely,

Luis V. Rodriguez, P.E., Director
Engineering and Modeling Division
Federal Insurance and Mitigation Administration

LIST OF ENCLOSURES:
LOMA DETERMINATION DOCUMENT (REMOVAL)

cc: State/Commonwealth NFIP Coordinator
Community Map Repository
Region

Federal Emergency Management Agency
Washington, D.C. 20472

ADDITIONAL INFORMATION REGARDING LETTERS OF MAP AMENDMENT

When making determinations on requests for Letters of Map Amendment (LOMAs), the Department of Homeland Security's Federal Emergency Management Agency (FEMA) bases its determination on the flood hazard information available at the time of the determination. Requesters should be aware that flood conditions may change or new information may be generated that would supersede FEMA's determination. In such cases, the community will be informed by letter.

Requesters also should be aware that removal of a property (parcel of land or structure) from the Special Flood Hazard Area (SFHA) means FEMA has determined the property is not subject to inundation by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood). This does not mean the property is not subject to other flood hazards. The property could be inundated by a flood with a magnitude greater than the base flood or by localized flooding not shown on the effective National Flood Insurance Program (NFIP) map.

The effect of a LOMA is it removes the Federal requirement for the lender to require flood insurance coverage for the property described. The LOMA *is not* a waiver of the condition that the property owner maintain flood insurance coverage for the property. *Only* the lender can waive the flood insurance purchase requirement because the lender imposed the requirement. *The property owner must request and receive a written waiver from the lender before canceling the policy*. The lender may determine, on its own as a business decision, that it wishes to continue the flood insurance requirement to protect its financial risk on the loan.

The LOMA provides FEMA's comment on the mandatory flood insurance requirements of the NFIP as they apply to a particular property. A LOMA is not a building permit, nor should it be construed as such. Any development, new construction, or substantial improvement of a property impacted by a LOMA must comply with all applicable State and local criteria and other Federal criteria.

If a lender releases a property owner from the flood insurance requirement, and the property owner decides to cancel the policy and seek a refund, the NFIP will refund the premium paid for the current policy year, provided that no claim is pending or has been paid on the policy during the current policy year. The property owner must provide a written waiver of the insurance requirement from the lender to the property insurance agent or company servicing his or her policy. The agent or company will then process the refund request.

Even though structures are not located in an SFHA, as mentioned above, they could be flooded by a flooding event with a greater magnitude than the base flood. In fact, more than 25 percent of all claims paid by the NFIP are for policies for structures located outside the SFHA in Zones B, C, X (shaded), or X (unshaded). More than one-fourth of all policies purchased under the NFIP protect structures located in these zones. The risk to structures located outside SFHAs is just not as great as the risk to structures located in SFHAs. Finally, approximately 90 percent of all federally declared disasters are caused by flooding, and homeowners insurance does not provide financial protection from this flooding. Therefore, FEMA encourages the widest possible coverage under the NFIP.

The NFIP offers two types of flood insurance policies to property owners: the low-cost Preferred Risk Policy (PRP) and the Standard Flood Insurance Policy (SFIP). The PRP is available for 1- to 4-family residential structures located outside the SFHA with little or no loss history. The PRP is available for townhouse/rowhouse-type structures, but is not available for other types of condominium units. The SFIP is available for all other structures. Additional information on the PRP and how a property owner can quality for this type of policy may be obtained by calling the Flood Insurance Information Hotline, toll free, at 1-800-427-4661. Before making a final decision about flood insurance coverage, FEMA strongly encourages property owners to discuss their individual flood risk situations and insurance needs with an insurance agent or company.

FEMA has established "Grandfather" rules to benefit flood insurance policyholders who have maintained continuous coverage. Property owners may wish to note also that, if they live outside but on the fringe of the SFHA shown on an effective NFIP map and the map is revised to expand the SFHA to include their structure(s), their flood insurance policy rates will not increase as long as the coverage for the affected structure(s) has been continuous. Property owners would continue to receive the lower insurance policy rates.

LOMAs are based on minimum criteria established by the NFIP. State, county, and community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction in the SFHA. If a State, county, or community has adopted more restrictive and comprehensive floodplain management criteria, these criteria take precedence over the minimum Federal criteria.

In accordance with regulations adopted by the community when it made application to join the NFIP, letters issued to amend an NFIP map must be attached to the community's official record copy of the map. That map is available for public inspection at the community's official map repository. Therefore, FEMA sends copies of all such letters to the affected community's official map repository.

When a restudy is undertaken, or when a sufficient number of revisions or amendments occur on particular map panels, FEMA initiates the printing and distribution process for the affected panels. FEMA notifies community officials in writing when affected map panels are being physically revised and distributed. In such cases, FEMA attempts to reflect the results of the LOMA on the new map panel. If the results of particular LOMAs cannot be reflected on the new map panel because of scale limitations, FEMA notifies the community in writing and revalidates the LOMAs in that letter. LOMAs revalidated in this way usually will become effective 1 day after the effective date of the revised map.

 | Date: March 18, 2021 | Case No.: 21-09-0709A | LOMA

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP AMENDMENT
DETERMINATION DOCUMENT (REMOVAL)

COMMUNITY AND MAP PANEL INFORMATION		LEGAL PROPERTY DESCRIPTION
COMMUNITY	CITY OF COTATI, SONOMA COUNTY, CALIFORNIA COMMUNITY NO.: 060377	A portion of Lot 172, Subdivision No. 7, Rancho Cotati, and a parcel of land, as described in the Short Form Deed of Trust and Assignment of Rents recorded as Document No. 2020058934, in the Office of the Recorder, Sonoma County, California The portion of property is more particularly described by the following metes and bounds:
AFFECTED MAP PANEL	NUMBER: 06097C0878E; 06097C0879E DATE: 12/2/2008; 12/2/2008	
FLOODING SOURCE: LAGUNA DE SANTA ROSA		APPROXIMATE LATITUDE & LONGITUDE OF PROPERTY:38.341040, -122.720538 SOURCE OF LAT & LONG: LOMA LOGIC DATUM: NAD 83

DETERMINATION

LOT	BLOCK/ SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 88)
172	--	No. 7, Rancho Cotati	597 Helman Lane	Portion of Property	X (unshaded)	--	--	92.3 feet

Special Flood Hazard Area (SFHA) - The SFHA is an area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood).

ADDITIONAL CONSIDERATIONS (Please refer to the appropriate section on Attachment 1 for the additional considerations listed below.)

LEGAL PROPERTY DESCRIPTION
PORTIONS REMAIN IN THE SFHA
STATE LOCAL CONSIDERATIONS

This document provides the Federal Emergency Management Agency's determination regarding a request for a Letter of Map Amendment for the property described above. Using the information submitted and the effective National Flood Insurance Program (NFIP) map, we have determined that the described portion(s) of the property(ies) is/are not located in the SFHA, an area inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood). This document amends the effective NFIP map to remove the subject property from the SFHA located on the effective NFIP map; therefore, the Federal mandatory flood insurance requirement does not apply. However, the lender has the option to continue the flood insurance requirement to protect its financial risk on the loan. A Preferred Risk Policy (PRP) is available for buildings located outside the SFHA. Information about the PRP and how one can apply is enclosed.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, Engineering Library, 3601 Eisenhower Ave Ste 500, Alexandria, VA 22304-6426.

Luis V. Rodriguez, P.E., Director
Engineering and Modeling Division
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP AMENDMENT DETERMINATION DOCUMENT (REMOVAL)

ATTACHMENT 1 (ADDITIONAL CONSIDERATIONS)

LEGAL PROPERTY DESCRIPTION (CONTINUED)

COMMENCING AT THE EAST CORNER OF LOT 172 AT POINT OF BEGINNING, THENCE North 61°09'53" West, 1,177.20 feet to a point of non-tangency; THENCE South 39°10'34" West, 13.68 feet to a point of non-tangency; THENCE North 24°54'55" East, 13.50 feet to a point of non-tangency; THENCE North 60°55'52" West, 32.92 feet to a point of non-tangency; THENCE South 0°02'57" East, 303.80 feet to a point of non-tangency; THENCE South 52°58'50" East, 1,030.26 feet to a point of non-tangency; THENCE North 37°01'10" East, 324.08 feet to a point of non-tangency; THENCE North 16°56'01" West, 27.83 feet to a point of non-tangency; THENCE North 31°59'43" East, 16.67 feet to a point of non-tangency; THENCE North 54°57'02" East, 10.39 feet to a point of non-tangency; THENCE North 57°57'04" East, 39.49 feet to a point of non-tangency; THENCE North 10°31'28" East, 12.48 feet TO THE POINT OF BEGINNING.

PORTIONS OF THE PROPERTY REMAIN IN THE SFHA (This Additional Consideration applies to the preceding 1 Property.)

Portions of this property, but not the subject of the Determination/Comment document, may remain in the Special Flood Hazard Area. Therefore, any future construction or substantial improvement on the property remains subject to Federal, State/Commonwealth, and local regulations for floodplain management.

STATE AND LOCAL CONSIDERATIONS (This Additional Consideration applies to all properties in the LOMA DETERMINATION DOCUMENT (REMOVAL))

Please note that this document does not override or supersede any State or local procedural or substantive provisions which may apply to floodplain management requirements associated with amendments to State or local floodplain zoning ordinances, maps, or State or local procedures adopted under the National Flood Insurance Program.

This attachment provides additional information regarding this request. If you have any questions about this attachment, please contact the FEMA Map Information eXchange (FMIX) toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, Engineering Library, 3601 Eisenhower Ave Ste 500, Alexandria, VA 22304-6426.

Luis V. Rodriguez, P.E., Director
Engineering and Modeling Division
Federal Insurance and Mitigation Administration

Your property has been reclassified as moderate-to-low flood risk. Your flood risk has been reduced but not removed.

You may now qualify for a Preferred Risk Flood Insurance Policy with annual rates starting as low as $325. Keep your home—and everything inside of it—covered for less money. Contact your insurance agent to secure a lower-cost policy today.

Protect the life you've built.

Call **800-427-4661** or visit
www.FloodSmart.gov

U.S. DEPARTMENT OF HOMELAND SECURITY

FEMA

NATIONAL FLOOD
INSURANCE PROGRAM

DETAIL A
SCALE: 1"=5'

0 5 10 15
GRAPHIC SCALE IN FEET SCALE: 1"=5'

CALICHI DESIGN GROUP

LEGEND

	EXISTING
PROPERTY LINE	
EASEMENT LINE	
1-FOOT CONTOUR	9
5-FOOT CONTOUR	10
WATER LINE	WTR
FIRE PROTECTION WATER LINE	WTR
IRRIGATION WATER LINE	WTR
SANITARY SEWER LINE	SAN
STORM DRAIN LINE	SD
UNDERGROUND ELECTRIC	UE
GAS LINE	G
OVERHEAD ELECTRIC	OE
FENCE	x
APPROXIMATE LIMIT OF DISTURBANCE	
TREE	
WATER VALVE	WV
FIRE HYDRANT/CONNECTION	FDC
WATER METER OR BOX	WM
SEWER MANHOLE	
SANITARY SEWER CLEANOUT	SSCO
STORM DRAIN MANHOLE	
STORM DRAIN CLEANOUT	
CATCH BASIN	
LIGHT POLE, UTILITY POLE, OR PULLBOX	
GAS VALVE	GV
ELECTRIC VAULTS	
ELECTRIC BOX	
SIGN	
TRENCH DRAIN	
TRANSFORMER	
STANDARD PCC PAVEMENT.	
STANDARD AC PAVEMENT.	
STANDARD LANDSCAPE	
STANDARD BIOTREATMENT PLANTER.	

ACTUAL 100-YEAR BASE FLOOD ELEVATION (BFE) WITHIN PROPERTY LIMITS
BFE (WEST) = 92' PER FEMA FIRM 06097C0878E (EFFECTIVE: 12/02/2008)
BFE (EAST) = 94' PER FEMA FIRM 06097C0878E (EFFECTIVE: 12/02/2008)

EXISTING FEMA 100-YEAR FLOODPLAIN LIMITS

DATUM NOTE
THE ELEVATIONS SHOWN ON THIS EXHIBIT ARE FROM A SURVEY FROM SOUSA LAND SURVEYS PREFORMED ON FEBRUARY 22, 2021. THOSE ELEVATIONS ARE NAVD88, BASED UPON FOUND COUNTY OF SONOMA BENCHMARK MONUMENT JT9619, LOCATED IN THE NORTHWEST CORNER OF THE CALTRANS PARK AND RIDE LOT IN THE SOUTHWEST QUADRANT OF THE U.S. HIGHWAY 101 AND ROHNERT PARK EXPRESSWAY INTERCHANGE. THAT ELEVATION WAS TAKEN AS 100.70'.

0 50 100 150
GRAPHIC SCALE IN FEET SCALE: 1"=50'

CALICHI DESIGN GROUP

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OAKLAND, CA 94608
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SEAL

REGISTERED PROFESSIONAL ENGINEER
RENO VICENTE PRIANTO
C 69670
EXP. 6-30-2022
CIVIL
STATE OF CALIFORNIA
2021/03/15

DISTRIBUTION WAREHOUSE
597 HELMAN LANE
COTATI, CA 94931

1	PLANNING SUBMITTAL	02/17/2021

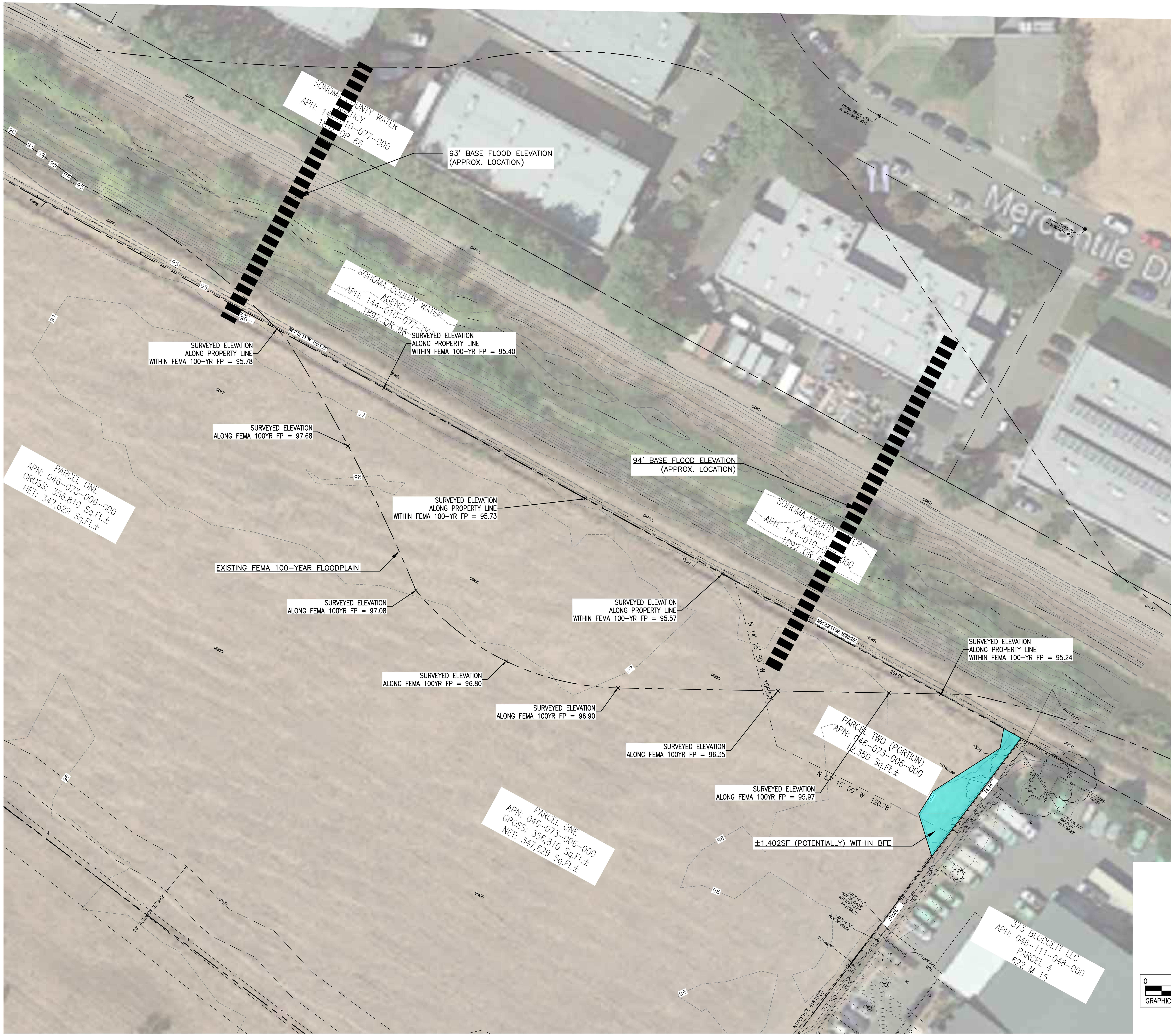
DATE:	02/17/2021
PROJECT NUMBER:	2021.338.001
PROJECT PHASE:	ENTITLEMENTS
DRAWN BY:	LMO
CHECKED BY:	RP

SHEET TITLE

BASE FLOOD ELEVATION EXHIBIT

SHEET NUMBER

BFE-EX01



LEGEND

	EXISTING
PROPERTY LINE	
EASEMENT LINE	
1-FOOT CONTOUR	9
5-FOOT CONTOUR	10
WATER LINE	WTR
FIRE PROTECTION WATER LINE	WTR
IRRIGATION WATER LINE	WTR
SANITARY SEWER LINE	SAN
STORM DRAIN LINE	SD
UNDERGROUND ELECTRIC	UE
GAS LINE	G
OVERHEAD ELECTRIC	OE
FENCE	x
APPROXIMATE LIMIT OF DISTURBANCE	
TREE	
WATER VALVE	WV
FIRE HYDRANT/CONNECTION	FDC
WATER METER OR BOX	WM
SEWER MANHOLE	
SANITARY SEWER CLEANOUT	SSCO
STORM DRAIN MANHOLE	
STORM DRAIN CLEANOUT	
CATCH BASIN	
LIGHT POLE, UTILITY POLE, OR PULLBOX	
GAS VALVE	GV
ELECTRIC VAULTS	
ELECTRIC BOX	
SIGN	
TRENCH DRAIN	
TRANSFORMER	
STANDARD PCC PAVEMENT.	
STANDARD AC PAVEMENT.	
STANDARD LANDSCAPE	
STANDARD BIOTREATMENT PLANTER.	

ACTUAL 100-YEAR BASE FLOOD ELEVATION (BFE) WITHIN PROPERTY LIMITS
BFE (WEST) = 92' PER FEMA FIRM 06097C0878E (EFFECTIVE: 12/02/2008)
BFE (EAST) = 94' PER FEMA FIRM 06097C0878E (EFFECTIVE: 12/02/2008)

EXISTING FEMA 100-YEAR FLOODPLAIN LIMITS

DATUM NOTE

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0 30 60 90
GRAPHIC SCALE IN FEET SCALE: 1"=30'

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EXP. 6-30-2022
CIVIL
STATE OF CALIFORNIA

2021/03/15

DISTRIBUTION WAREHOUSE

597 HELMAN LANE
COTATI, CA 94931

1	PLANNING SUBMITTAL	02/17/2021

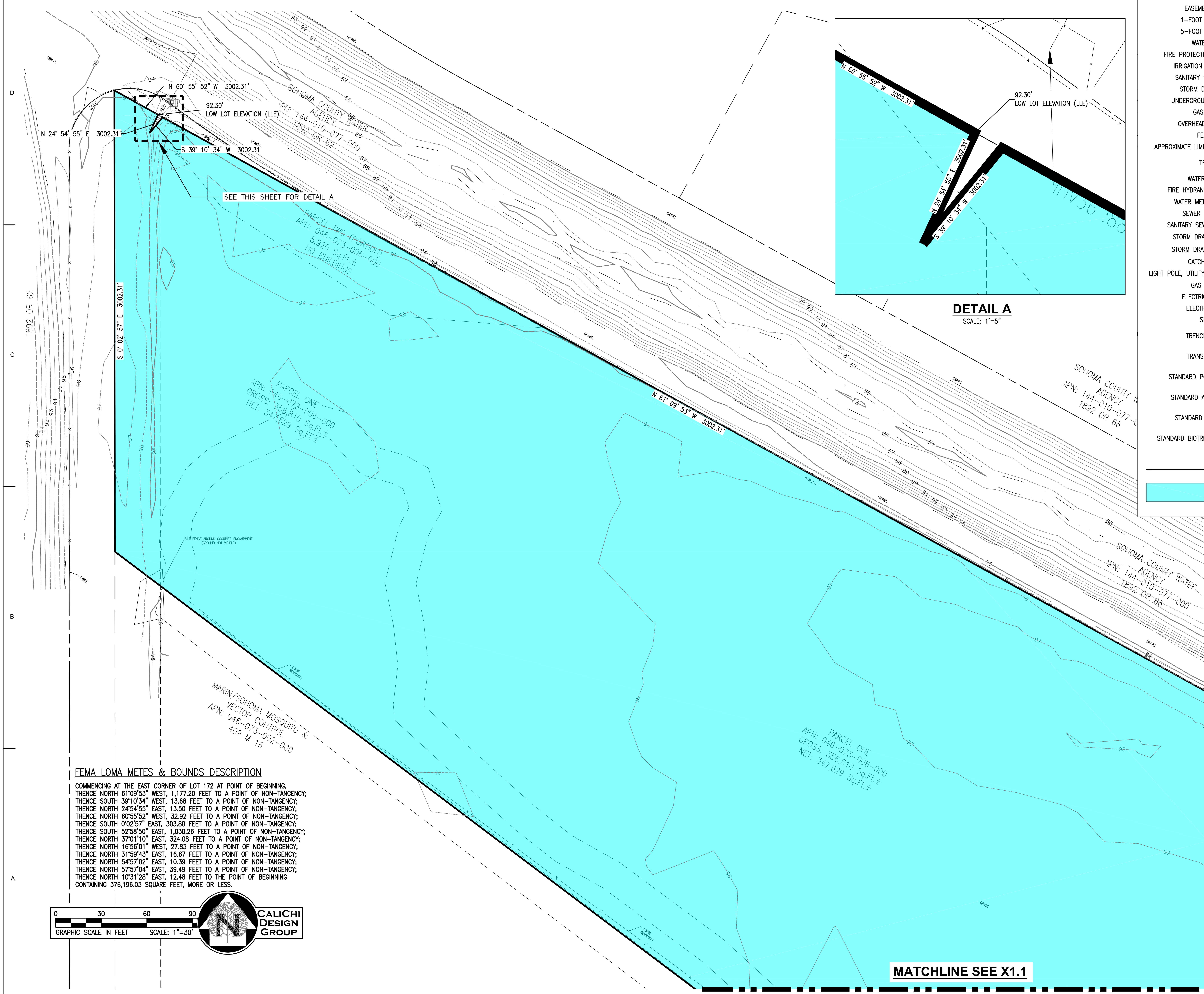
DATE:	02/17/2021
PROJECT NUMBER:	2021.338.001
PROJECT PHASE:	ENTITLEMENTS
DRAWN BY:	LMO
CHECKED BY:	RP

SHEET TITLE

BASE FLOOD ELEVATION EXHIBIT

SHEET NUMBER

BFE-EX02



DETAIL A
SCALE: 1"=5"

LEGEND

	EXISTING
PROPERTY LINE	
EASEMENT LINE	
1-FOOT CONTOUR	9
5-FOOT CONTOUR	10
WATER LINE	WTR
FIRE PROTECTION WATER LINE	WTR
IRRIGATION WATER LINE	WTR
SANITARY SEWER LINE	SAN
STORM DRAIN LINE	SD
UNDERGROUND ELECTRIC	UE
GAS LINE	G
OVERHEAD ELECTRIC	OE
FENCE	x
APPROXIMATE LIMIT OF DISTURBANCE	
TREE	
WATER VALVE	
FIRE HYDRANT/CONNECTION	FDC
WATER METER OR BOX	
SEWER MANHOLE	
SANITARY SEWER CLEANOUT	SSCO
STORM DRAIN MANHOLE	
STORM DRAIN CLEANOUT	
CATCH BASIN	
LIGHT POLE, UTILITY POLE, OR PULLBOX	
GAS VALVE	
ELECTRIC VAULTS	
ELECTRIC BOX	
SIGN	
TRENCH DRAIN	
TRANSFORMER	
STANDARD PCC PAVEMENT.	
STANDARD AC PAVEMENT.	
STANDARD LANDSCAPE	
STANDARD BIOTREATMENT PLANTER.	

FEMA LOMA METES & BOUNDS LIMITS

PORTION OF PROPERTY OUTSIDE OF THE FEMA BASE FLOOD ELEVATION

FEMA LOMA METES & BOUNDS DESCRIPTION

COMMENCING AT THE EAST CORNER OF LOT 172 AT POINT OF BEGINNING,
THENCE NORTH 61°09'53" WEST, 1,177.20 FEET TO A POINT OF NON-TANGENCY;
THENCE SOUTH 39°10'34" WEST, 13.68 FEET TO A POINT OF NON-TANGENCY;
THENCE NORTH 24°54'55" EAST, 13.50 FEET TO A POINT OF NON-TANGENCY;
THENCE NORTH 60°55'52" WEST, 32.92 FEET TO A POINT OF NON-TANGENCY;
THENCE SOUTH 0°02'57" EAST, 303.80 FEET TO A POINT OF NON-TANGENCY;
THENCE SOUTH 52°58'50" EAST, 1,030.26 FEET TO A POINT OF NON-TANGENCY;
THENCE NORTH 37°01'10" EAST, 324.08 FEET TO A POINT OF NON-TANGENCY;
THENCE NORTH 16°56'01" WEST, 27.83 FEET TO A POINT OF NON-TANGENCY;
THENCE NORTH 31°59'43" EAST, 16.67 FEET TO A POINT OF NON-TANGENCY;
THENCE NORTH 54°57'02" EAST, 10.39 FEET TO A POINT OF NON-TANGENCY;
THENCE NORTH 57°57'04" EAST, 39.49 FEET TO A POINT OF NON-TANGENCY;
THENCE NORTH 10°31'28" EAST, 12.48 FEET TO THE POINT OF BEGINNING
CONTAINING 376,196.03 SQUARE FEET, MORE OR LESS.

0 30 60 90
GRAPHIC SCALE IN FEET SCALE: 1"=30'

CALICHI DESIGN GROUP

DATUM NOTE

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STATE OF CALIFORNIA
2021/03/15

DISTRIBUTION WAREHOUSE

597 HELMAN LANE
COTATI, CA 94931

1	PLANNING SUBMITTAL	02/17/2021

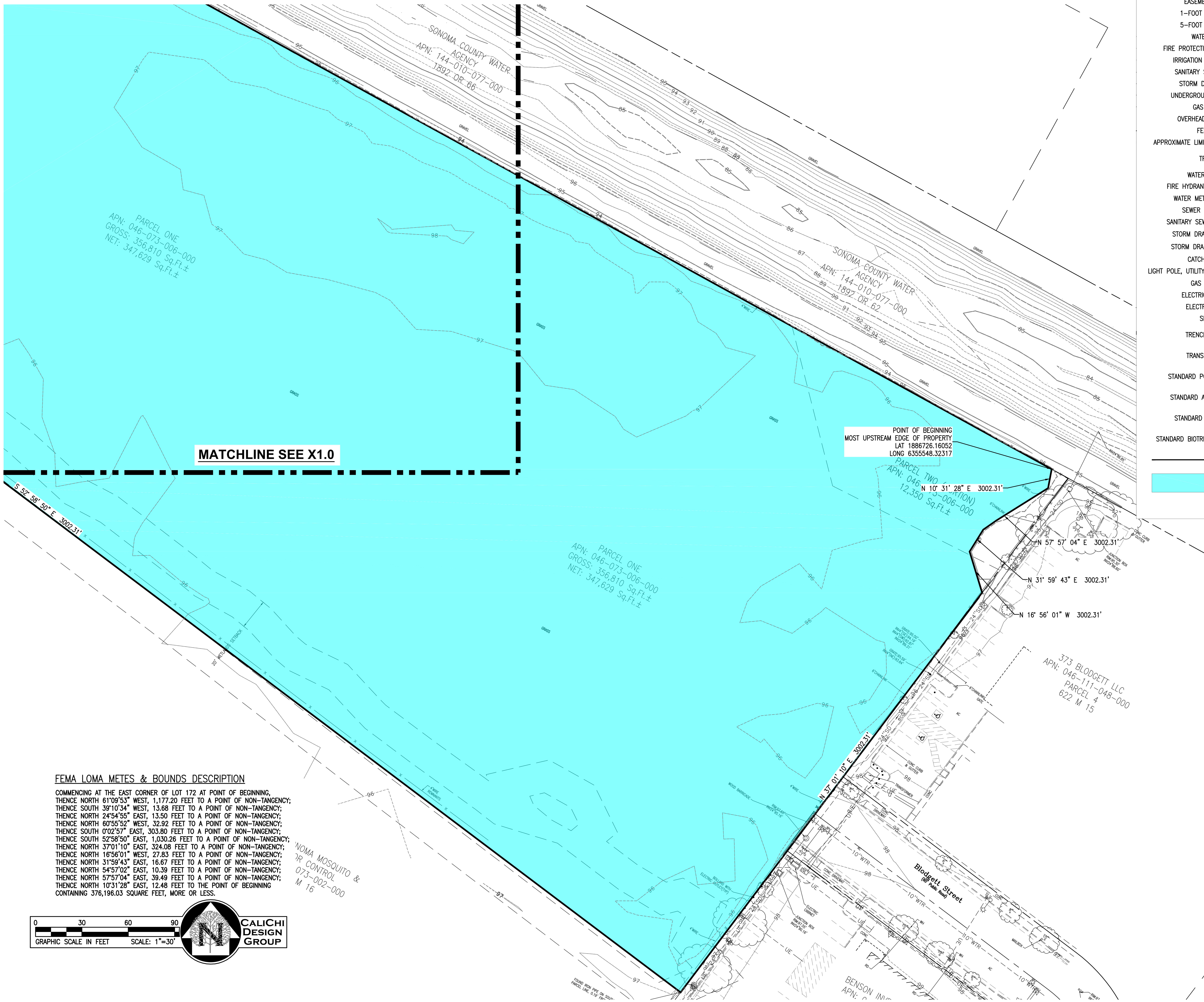
DATE:	02/17/2021
PROJECT NUMBER:	2021.338.001
PROJECT PHASE:	ENTITLEMENTS
DRAWN BY:	LMO
CHECKED BY:	RP

SHEET TITLE

FEMA LETTER OF MAP AMENDMENT METES & BOUNDS

SHEET NUMBER

X1.0



LEGEND

	EXISTING
PROPERTY LINE	
EASEMENT LINE	
1-FOOT CONTOUR	9
5-FOOT CONTOUR	10
WATER LINE	WTR
FIRE PROTECTION WATER LINE	WTR
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STANDARD AC PAVEMENT.	
STANDARD LANDSCAPE	
STANDARD BIOTREATMENT PLANTER.	
FEMA LOMA METES & BOUNDS LIMITS	
PORTION OF PROPERTY OUTSIDE OF THE FEMA BASE FLOOD ELEVATION	

FEMA LOMA METES & BOUNDS DESCRIPTION

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CHECKED BY:	RP

SHEET TITLE

FEMA LETTER OF MAP AMENDMENT METES & BOUNDS

SHEET NUMBER

X1.1

25 April 2022

Mr. Bert Sandell
Sandell Holdings LLC
3348 Paradise Drive
Tiburon, CA 94920
Email: bertsandell@gmail.com

Subject: Acoustical Analysis of Operational Noise
Proposed Warehouse at 380 Blodgett St, Cotati, CA 94931

Dear Mr. Sandell:
This report presents an acoustical analysis of the expected levels of noise to be produced by operations at the proposed warehouse building #2 to be located at 380 Blodgett St. in Cotati of the applicable legislation regulating such noise and a comparison of the expected noise to allowable levels.

Applicable legislation

The City of Cotati regulates noise through their Municipal Code, Section 17.30.050 *Noise standards*[1]. These Standards applicable to this project state, under subsection (C):

> ***Noise Source Standards.***
> 1. *Noise Level Limitations. No use, activity, or process within the city shall generate noise in excess of the levels identified by Tables 3-3 and 3-4, as the noise is measured at the property line of a noise sensitive land use identified in Tables 3-3 and 3-4.*
>   a. *If the measured ambient noise level exceeds the applicable noise level standard in any category shown in Table 3-3, the applicable standards shall be adjusted to equal the ambient noise level.*
>   b. *If the intruding noise source is continuous and cannot reasonably be discontinued or stopped to allow measurement of the ambient noise level, the noise level measured while the source is in operation shall be compared directly to the applicable noise level standards identified in Table 3-3.*
>
> *Notwithstanding the above requirements, no person shall allow or cause the generation of any noise of a type, volume, pitch, tone, repetition, or duration that would be found to be a nuisance by a reasonable person beyond the boundaries of the property where the noise is generated.*

[1] https://www.codepublishing.com/CA/Cotati/html/Cotati17/Cotati1730.html#17.30.050

Table 3-3: Maximum Allowable Noise Level by Receiving Land Use

Noise Sensitive Land Use	Outdoor Activity Areas(1)(2)	Interior Spaces	
	dBA Ldn	dBA Ldn	dBA Leq
Residential	65	45	N.A.
Transient lodging	65	45	N.A.
Hospitals, extended care	65	45	N.A.
Theater, auditorium	(3)	45	35
Meeting facility, public or private	65	45	40
Offices	75	45	45
School, library, museum	65	45	45
Playground park	70	N.A.	N.A.

Notes:
(1) Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.
(2) Where it is not possible to reduce noise in outdoor activity areas to 65 dB Ldn/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 70 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.
(3) Subject to an acoustical analysis in compliance with subsection (C)(2) of this section.

The site is currently surrounded by similar Commercial/Industrial land uses to the south, east and west and by General Industrial ones to the north, as revealed by the *City of Cotati Zoning Map*[2]. Hence, the applicable noise limits by the property boundaries are those of Office buildings, namely 75 dBA L_{dn} in outdoor areas. No land uses with higher noise sensitivity surround the site.

In addition, the Noise Element of the Cotati General Plan, adopted March 24, 2015[3] provides *Action Items* regarding the development of new projects to avoid these being exposed to excessive levels of noise. Specifically, Action N1b states:

> *Review land use and development proposals, including use permits, for compliance with the noise requirements established in this element, including the standards established in Tables N-1 and N-2.*
>
> *For uses along the SMART corridor, the Federal Transit Administration vibration impact criteria shall be used to evaluate the compatibility of sensitive uses using the best available information (e.g. 2005 SMART DEIR) or site-specific measurements and analyses (assuming active operations).*
>
> *Where necessary, require mitigation measures to achieve the noise standards identified in Tables N-1 and N-2 and, where applicable to minimize exposure of sensitive uses to existing or potential vibration levels to the maximum feasible extent.*

However, as the proposed operations will be of the commercial/industrial type, which can tolerate significant levels of noise, and the site is already surrounded by similar land uses, the current noise exposure at the site is not likely to interfere with the operations to be carried out by the project.

[2] http://www.cotaticity.org/UserFiles/Servers/Server_9669113/File/ZoningMap.pdf
[3] http://www.cotaticity.org/UserFiles/Servers/Server_9669113/File/CotatiGeneralPlan.pdf

Predicted operational noise levels by the project boundaries

Based on the operational information provided and the results of measurements conducted at a similar facility, we have made predictions of expected levels of noise resulting from those operations. The operations will consist of the arrival of individual containers by small local delivery trucks and by larger Tractor/Trailer trucks which are capable of handling three containers at one time. After arrival, the trucks park in designated areas and turn their engines off. Propane-gas powered forklifts then remove and replace containers off/onto the trucks and store them inside the warehouse for long-term storage or temporarily outside. After the loading/unloading of the trucks takes place, they start their engines, idle for a few seconds and then leave the facility.

Measurements of the noise produced by these operations were conducted at a facility similar to the one proposed located in the city of Benicia. Based on the result of these measurements and on the expected frequency of operations at the Cotati facility, predictions were made of the expected future level of noise by the nearest receiving land uses to the project. The approximate center points of the middle and rear yards were used as the reference locations from which the distances to the nearest property lines were calculated, as those areas are where most of the activities are expected to take place. Please see Figure 1 below for a graphical description of the expected activity areas and of the distances to the nearest property lines.

The expected levels of noise at the three points studied located at approximately 225 feet and 258 feet to the north, and 391 feet to the south are 33 L_{dn}, 32 L_{dn},, and 29L_{dn} respectively. See table below for the list of locations, distances, and predicted L_{dn} values. These levels are significantly lower than the 75 dBA L_{dn} in outdoor areas allowed by the Municipal Code for Office land uses and even the 65 L_{dn} allowed for Residential and other noise-sensitive land uses. This is due to the very brief duration of noise-producing events such as trucks entering and then parking, forklifts moving containers for very short distances which were observed to last between 10 and 15 seconds, and for the modest number of operations that are expected to take place on a given day. Please see the worksheet in Figure 2 for a summary of the assumptions made, observed noise elves produced by each equipment at short distances and resulting noise levels at the three property line points studied.

Location of Receiver	**Receiver Distance**	**Predicted L_{dn} Values**
Commercial A	225 ft	33 L_{dn}
Commercial B	258 ft	32 L_{dn}
Commercial C	391 ft	29 L_{dn}

Conclusions

Based on the results from the measurements conducted at a similar facility, the expected volume of operations at the future facility and the distances to the property lines, the predicted operational noise to be produced by the proposed facility is expected to fully comply with current City of Cotati legislation requirements.

Please do not hesitate to contact me if you have any questions.

Very truly yours

WILSON, IHRIG

Pablo A. Daroux, MS (Acoustics)	Nicole A. Kolak
Principal Consultant	Assistant Consultant

Principal

Figure 1: Approximate distances to nearest property lines from center of yards where most operations are expected to take place

# of Employees at any one time =	12			
# Hours in operation =	10	7 am - 5pm		
Delivery hours =	7 am - 5pm			
# of LOCAL delivery trucks =	6			
# of trips/day/truck =	14			
# of Tractor/Trailers/day=	5			
# of forklift events/day =	39			
	Leq	**Distance**		
Tractor/Trailer idle noise level=	69.3 dBA	20 ft.		
Tractor/Trailer idle event duration=	15 sec.			
Tractor/Trailer accel noise level=	80.0 dBA	20 ft.		
Tractor/Trailer accel event duration=	7 sec.			
# of Tractor/Trailers events/day =	5			
	Leq	**Distance**		
Local delivery truck idle noise level =	69.0 dBA	20 ft.		
Local delivery truck idle event duration =	15 sec.			
Local delivery truck accel noise level =	77.4 dBA	20 ft.		
Local delivery truck accel event duration =	10 sec.			
# of delivery truck events/day =	6			
	Leq	**Distance**		
Forklift noise level (w/backup alarm on) =	77.2 dBA	10 ft.		
Forklift event duration =	30 sec.			
# of forklift events/day =	39			
Daytime Leq due to ALL sources at a reference distance of		20 ft =	**56.4 dBA**	
Nighttime Leq due to ALL sources at reference distance =			**0.0 dBA**	
Ldn due to ALL sources at reference distance =			**54 Ldn**	
Predicted Ldn at receiver distance of	225 ft =	**33 Ldn**	Commercial A	
Predicted Ldn at receiver distance of	258 ft =	**32 Ldn**	Commercial B	
Predicted Ldn at receiver distance of	391 ft =	**29 Ldn**	Commercial c	

Figure 2: Operational assumptions and resulting noise levels at the three nearest property line points studied.

March 16, 2022

Mr. Calvin Sandell
3348 Paradise Drive
Tiburon, CA 94920

Draft Traffic Study for the 380 Blodgett Street Project

Dear Mr. Sandell;

As requested, W-Trans has prepared a focused traffic study for the 380 Blodgett Street Project in the City of Cotati. The purpose of this letter is to address potential traffic impacts associated with the proposal to construct a single-story 35,500 square foot warehouse.

Existing Conditions

The study area consists of Blodgett Street, which terminates at the frontage of the project site. Blodgett Street is classified as a collector street in the Cotati General Plan, is generally 40 feet wide and has two 12-foot travel lanes.

Project Description

The proposed project includes the construction of a 35,500 square foot warehouse on an undeveloped parcel as well as paved parking areas and internal roadways consistent with typical warehouse land uses. To accommodate employees and customers the project would provide 36 vehicle parking spaces and six bicycle parking spaces.

Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 11th Edition, 2021, for Warehousing (ITE Land Use 150). Based on application of these rates, the proposed project is expected to generate an average of 61 trips per day, including six a.m. peak hour trips and six trips during the p.m. peak hour. These results are summarized in Table 1.

Table 1 – Trip Generation Summary

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Warehousing	35.5 ksf	1.71	61	0.17	6	5	1	0.18	6	2	4

Note: ksf = 1,000 square feet

Given the nominal number of peak hour trips that the project would be expected to generate, it is reasonable to conclude that it would have an imperceptible effect on traffic operation and further analysis is therefore unwarranted.

Vehicle Miles Traveled (VMT) Evaluation

Senate Bill (SB) 743 established the increase in Vehicle Miles Traveled (VMT) as a result of a project as the basis for determining transportation impacts of development projects. The City of Cotati adopted a VMT policy on September 22, 2020, in their document titled "Guidelines for Analysis of Vehicle Miles Traveled (VMT)". Guidance provided in this document recommends the use of screening thresholds to quickly identify when a project should be expected to cause a less-than-significant impact in terms of VMT without conducting a detailed study. This document indicates that small infill projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact.

The project is expected to generate 61 daily trips which satisfies the criteria for consideration as a small infill project. As a small infill project, the impact on vehicle miles traveled can be assumed to be less than significant.

Alternative Modes

Pedestrian Facilities

Sidewalks are generally present on both sides of Blodgett Street, though gaps are present in the sidewalk network along Alder Avenue as well as Helman Lane. Internal pedestrian access within the site would be provided via a network of sidewalks and curb ramps. All pedestrian facilities are presumed to be built to satisfy current City of Cotati standards.

Finding – Existing and proposed pedestrian facilities serving the project site would be adequate since current design standards would be satisfied, and pedestrian access would be provided between the building access points and the surrounding public street network.

Bicycle Facilities

Limited bicycling facilities are present in the vicinity of the project site, including an approximate 0.8-mile segment of bike lane on Redwood Drive approximately one-half mile away. According to the *Cotati Bicycle and Pedestrian Master Plan,* 2014, a Class I path is proposed along the Laguna de Santa Rosa north of the project site.

Finding – Existing and planned bicycle facilities serving the project site would be adequate since the project would be in an area with a network of facilities available to bicycle users.

Transit Facilities

Development sites which are located within a one-half mile walk to a transit stop are generally considered to be adequately served by transit.

Transit services throughout Sonoma County are provided by Sonoma County Transit (SCT). There are no transit routes that stop within one-half mile. The closest transit access is approximately 0.7 mile from the project site on Gravenstein Highway at Alder Avenue. SCT Route 26 provides service between Sonoma State University and the Sebastopol Transit Hub on school days only and serves stops on Gravenstein Highway at Alder Avenue. While these bus stops are not within an acceptable walking distance of the project site, employees could reasonably ride a bicycle between the project site and each bus stop. Two to three bicycles can be carried on most SCT buses. Bike rack space is on a first come, first served basis. Additional bicycles are allowed on SCT buses at the discretion of the driver.

Dial-a-ride, also known as paratransit, or door-to-door service, is available for those who are unable to independently use the transit system due to a physical or mental disability. SCT Paratransit is designed to serve the needs of individuals with disabilities within the greater Sonoma County area. Trips for travel can be reserved Monday through Friday from 8:00 a.m. to 5:00 p.m., Saturday and Sunday from 9:00 a.m. and 5:00 p.m.

Finding – The lack of existing transit service within an acceptable walking distance of the project site is typical for such remote locations and is therefore considered acceptable, though employees could use a bicycle to reach nearby transit stops.

Site Access and Circulation

As proposed, access to the site would occur via a pair of shared driveways located at the western and northern sides of a planned cul-de-sac at the western terminus of Blodgett Street. Based on a review of the site plan, all internal drive aisles and driveways are expected to provide acceptable circulation for all vehicles. As demonstrated in the enclosed site plan, articulated trucks would be able to navigate the internal roadways, recessed loading docks and project driveways without striking any permanent fixtures. It is assumed that emergency vehicles can also navigate all areas of the site since these are typically smaller and more nimble than articulated trucks. Given the nominal number of new trips associated with the project it is reasonable to anticipate that it would have an imperceptible and therefore less-than-significant impact on emergency response times. Separate turn lanes are generally not necessary within a cul-de-sac since vehicle speeds within the circular area are relatively low and there is no opposing traffic to delay movements into the driveways from the cul-de-sac.

Sight Distance

At typical driveways a substantially clear line of sight should be maintained between the driver of a vehicle waiting on the driveway and the driver of an approaching vehicle. Adequate time should be provided for the waiting vehicle to either cross, turn left, or turn right, without requiring the through traffic to radically alter their speed.

The site would be accessed via the two shared driveways located on a future cul-de-sac at the western terminus of Blodgett Street. The future cul-de-sac would be located on land with level terrain suggesting the future cul-de-sac would also be generally level. Further, cul-de-sacs are typically free of obstructions which may hinder sight distances and vehicle operating speeds within cul-de-sacs are normally relatively slow at 20 mph or slower. Based upon this assessment, it is expected that the sight distance at the project driveways would be adequate if parking is prohibited within the cul-de-sac and adjacent vegetation is properly trimmed.

Site Circulation

In terms of on-site circulation, all interior drive aisles should provide connections to buildings and parking lots within the project site. The project site plan should be designed to comply with the City of Cotati standard plans and specifications, such that on-site circulation would function acceptably for all vehicles, including fire trucks.

Finding – On-site vehicle (including commercial and emergency vehicles) access is expected to be adequate. Adequate sight distance would be available at each driveway to accommodate all turns leaving the site if parking is prohibited within the cul-de-sac and adjacent vegetation is properly trimmed.

Conclusions and Recommendations

- The proposed project is expected to generate an average of 61 trips per day, including six trips during the weekday a.m. peak hour and six during the p.m. peak hour.

- The limited access for pedestrians, bicyclist, and transit is acceptable for the rural location of the site and type of project proposed.

- The proposed project would have a less-than-significant transportation impact on vehicle miles traveled.

- The site plan demonstrates that adequate access for vehicles (including commercial and emergency vehicles) would be provided.

Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

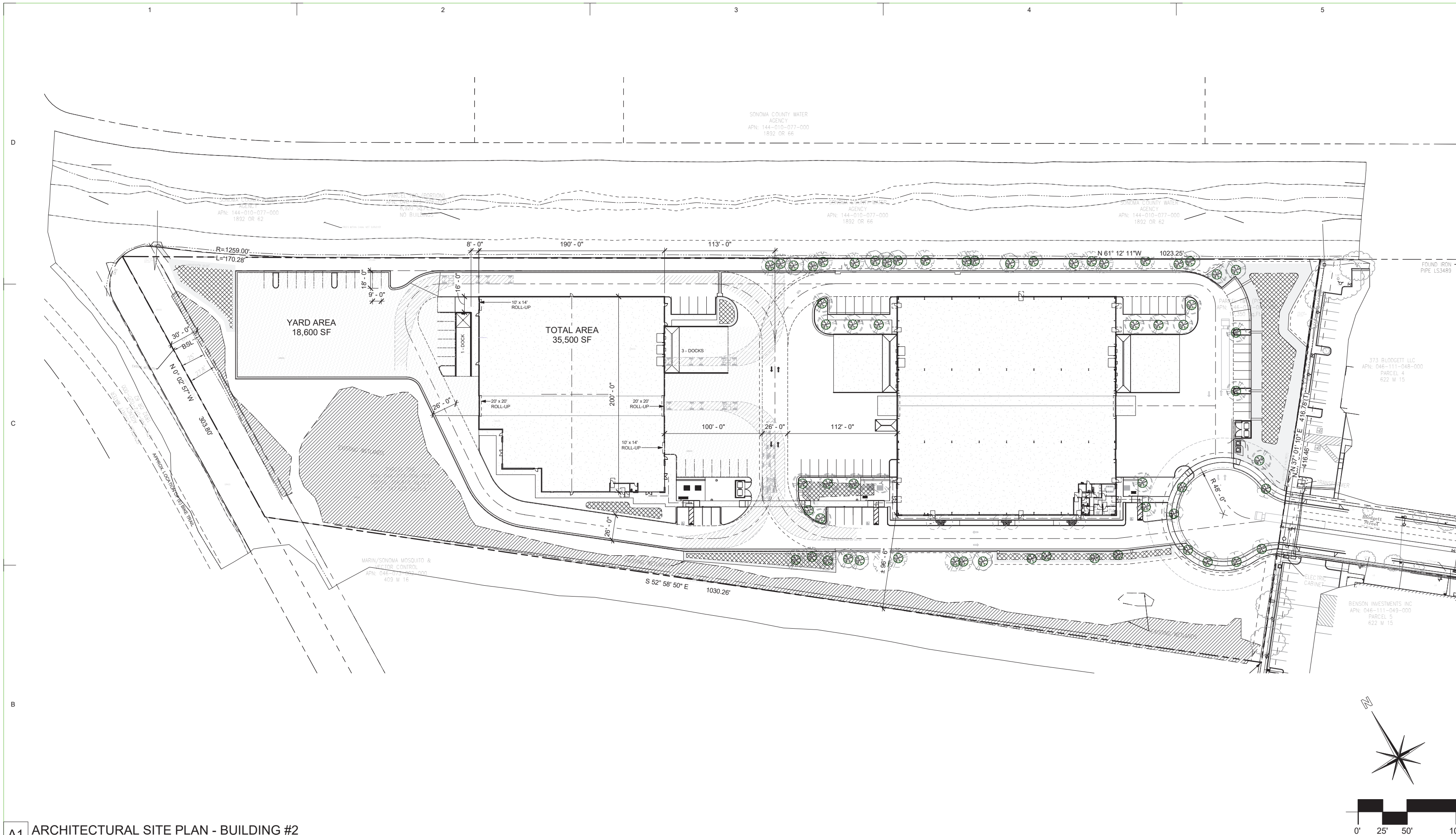
Sincerely,

Kenny Jeong, TE
Senior Engineer

Dalene J. Whitlock, PE, PTOE
Senior Principal

DJW/kbj/COT096-1.L1

Enclosure: Site Plan



A1 ARCHITECTURAL SITE PLAN - BUILDING #2
1" = 50'-0"

GENERAL NOTES

1. THE TOPOGRAPHIC INFORMATION IS BASED ON SURVEY DATED JANUARY 27, 2021 BY SOUSA LAND SURVEYS
2. THE SEASONAL WETLAND AREAS INDICATED ARE BASED ON A CAD MAP DATED JANUARY 28, 2021 BY SOL ECOLOGY

GRAPHICAL NOTATION

KEY NOTES

CODE NOTES

SEE SHEET G-003, G-004: Code Notes Reference "Paragraph.Item #"

CALIFORNIA BUILDING CODE

LOCAL ORDINANCE

SONOMA COUNTY

COTATI

o'malleywilsonwestphal
DANIEL A. WESTPHAL
Box 2484
Santa Rosa
California 95405
tel 707 636 0828
fax 707 636 0829

CONSULTANTS

SEAL

LICENSED ARCHITECT
DANIEL A. WESTPHAL
No. C 24722
REN. 1/30/23
STATE OF CALIFORNIA

Sandell

DISTRIBUTION WAREHOUSE

380 Blodgett Street (formerly 597 Helman Lane)
Cotati, CA 94931

No.	Description	Date

DATE:	01/12/2022
PROJECT NUMBER:	20-054
PROJECT PHASE:	CD
DRAWN BY:	Author
CHECKED BY:	Checker

SHEET TITLE

ARCHITECTURAL SITE PLAN

SHEET NUMBER

A-101-II