APPENDIX A

EIR SCOPING DOCUMENTS

- **May 18, 2016 Notice of Preparation (NOP)**
- **May 19, 2016 Notice of Public Meeting**
- **Distribution List**
- **May 25, 2016 Scoping Meeting Presentation**
- **California Department of Transportation Letter (March 30, 2016)**

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TOWN OF COLMA
PLANNING DEPARTMENT
1190 El Camino Real • Colma, California 94014
Phone: (650) 757-8888 • FAX: (650) 757-8890

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT And ENVIRONMENTAL ASSESSMENT FOR THE TOWN OF COLMA VETERANS VILLAGE PROJECT

POSTING ONLY

Date: May 19, 2016

To: California State Clearinghouse, California Environmental Quality Act (CEQA) responsible and trustee agencies, federal agencies, San Mateo County Clerk, and interested individuals and organizations

SHEILA ARKONCEL

Subject: **Notice of Preparation for the Veterans Village Project Environmental Impact Report (EIR)/Environmental Assessment (EA)**

MAY 18 2016

CEQA Lead Agency:	Town of Colma - 1190 El Camino Real, Colma, CA 94014-3212
Applicant:	Mercy Housing California 66, L.P.
Project Location:	1670-1692 Mission Road
Project Description:	A brief description of the project is attached.

The purpose of this Notice of Preparation (NOP) is to request comments on the scope and content of the environmental review the Town of Colma (Town) will conduct on the Veterans Village Project from state responsible and trustee agencies, federal agencies, and any other person or organization concerned with the environmental effects of the project. Pursuant to CEQA Guidelines §15082 (b), the Town is providing a 30-day period to respond to this NOP.

Please send your written response by the earliest possible date, but no later than 5 PM on June 20, 2016 to:

Mr. Michael Laughlin, City Planner
Town of Colma Planning Department
1190 El Camino Real, Colma, CA 94014-3212
or to michael.laughlin@colma.ca.gov (enter "Veterans Village NOP" in the 'Subject' line)

Agency responses should include the name of a contact person at the agency. Project information, including this NOP, is available on the Town's website: www.colma.ca.gov.

In addition, the Town of Colma City Council will be accepting comments on Wednesday, May 25, 2016 at 7:00 P.M., at the Colma Community Center, 1520 Hillside Boulevard, Colma, CA 94014

Signature: [signature] Date: 5/19/16

Title: City Planner

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VETERANS VILLAGE PROJECT

PROJECT DESCRIPTION

The Town of Colma is the CEQA lead agency for the proposed project and is preparing an EIR because the project may have the potential to result in one or more significant environmental effects. Additionally, the San Mateo County Housing Authority (Housing Authority) is preparing an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) because the applicant, Mercy Housing, is seeking federal funding through the U.S. Department of Housing and Urban Development (HUD). The Housing Authority is the local agency responsible for implementing HUD's NEPA requirements. Thus, the Town of Colma is the lead agency under CEQA and the Housing Authority is the lead agency under NEPA and a joint EIR/EA is being prepared.

The Veterans Village Project is a proposed 66-unit affordable housing community in the Town of Colma (Town). One of Mercy Housing's missions is to provide housing to underserved populations, including veterans. The project will provide affordable housing to veterans and provide on-site services to the residents.

The project proposal includes a new three story residential building and the preservation of a historic building for use by residents. Two large residential courtyards, a garden area, and park area are also planned as part of the proposed development. The project would provide a total of 69 parking spaces in two parking areas; one adjacent to Cypress Lawn Cemetery and another along the BART maintenance road immediately east of the project site.

Project Location and Site Description

The proposed affordable housing community would be located at 1670-1692 Mission Road in the Town of Colma (37°40'18" north latitude and 122°27'07" west longitude) (Figure 1). The project site is triangular shaped with frontage along Mission Road and is approximately 2.23 acres in size (Assessor's Parcel Number 011-370-220). The project is located within an area of the Town that contains a mix of land uses including cemetery, industrial (auto repair) and residential uses. A maintenance road to a BART ventatilation shaft bounds the project site on the east, travels behind the project site and terminates at the BART ventatilation shaft. In general, the project parcel is surrounded to the north and east by cemetery and BART uses and to the west and south by auto repair and commercial uses.

Access to the area is provided by nearby major roadways including Mission Road, El Camino Real, Junipero Serra Boulevard, Hickey Boulevard and Collins Avenue (Figure 2). Regional access to the project site is provided by State Route 280. The proposed project site contains vacant land, two unpaved areas used for automible parking by nearby auto repair shops, and five historic structures associated with the Holy Cross Cemetery pump station (no longer in use). The site contains unmanaged vegetated areas and numerous trees.

The project site is part of what is considered the Holy Cross Cemetery, although the site appears to be physically separate from the cemetery by an embankment and the BART access road. The site contains five small structures associated with the Holy Cross Cemetery irrigation system. The Holy Cross Catholic Cemetery was the first cemetery to be established in the town in 1886. The cemetery includes graves of persons exceptionally significant in California's economic and political history and contains a collection of historic buildings, grave monuments, and mausoleums for the period 1886-1945. Previous historic resources evaluations prepared in 1993-1994 for the BART San Francisco Airport Extension found that the cemetery is considered significant under National Historic Register Criteria B (association with significant persons) and C (significant design and architecture) at a state-wide significance level. Although determined to be eligible for designation as a historic district, the cemetery has not officially been designated at a state or federal level.

The project site is currently designated as commercial for both zoning and land use designations. The commercial land use allows residential development, including multiple dwellings with approval of a Use Permit. The Town's Housing Element identifies the project site for Planned Development rezoning, which is required for multi-family projects over 5 units. The Planned Development permit process and rezoning allows the Town the flexibility to develop site specific standards for height, setbacks, parking, ingress and egress and landscaping to allow for the site's unique nature and specific constraints.

Project Components

The project would demolish all on site features except for the main pump house building which will be restored and used either for workshop and classroom or general storage space for the development. A portion of the building will be utilized for bicycle storage. The project would construct 65-1 bedroom units and one two bedroom manager's unit in a single residential building varying between two to three stories in height (maximum 36 feet, 4 inches tall) and would include an indoor fitness center and laundry facility (Figure 3). The massing of the development steps down to one-story moving south across the site including offices for on-site staff, a community meeting space and the rehabilitated/restored pump house building. Landscaping included in the project plans generally surround the project site to screen off-site views of the development. Project plans also show several outdoor courtyards and green space areas. A total of 69 parking spaces are provided by the project in two lots, one on the north side of the project site (34 spaces) and one on the south east side along and in the BART right of way (35 spaces).

Project activities will require that the commercial activities of the existing machine shop and auto storage activities on the project site cease, and require the demolition of four existing small structures on the site. After removal of these structures and land uses, development would proceed with the construction of the proposed residential building, parking areas, a garden and a park area and a dog park area. The Town has determined the project is consistent with the current General Plan and zoning designation for the parcel. Impacts of the project would be related to the demolition of the existing small structures, tree removal and short-term construction impacts as the project is constructed.

Probable Environmental Effects

The Town of Colma is preparing an EIR/EA for the proposed project because the project may have the potential to result in one or more significant environmental effects, including potential effects on and/or from, but not limited to, cultural resources and traffic. Cumulative effects and alternatives that could reduce or minimize the proposed project's potentially significant effects will be discussed in the EIR/EA.TheVeterans Village Project could result in the following potentially significantenvironmental affects:

Cultural and Historic Resources

The project site contains structures which date back to the early days of the Holy Cross Cemetery and have historical significance. In addition to the requirements of CEQA, the project is also required to comply with Section 106 of the National Historic Preservation Act because the project is applying for HUD funding. A historic architecture evaluation of the existing structures on the site concluded that the existing built features at the site are eligible for both the National and California Registers of Historic Resources, as such, their removal or alteration are considered significant impacts under CEQA and NEPA. Project plans include the removal of all built features on site except the main Holy Cemetery pump house building which will be rehabilitated and used as classroom and shop space or for storage in the proposed development. Section 106 requires consultation with the Sate Historic Preservation Officer (SHPO) which is currently underway. The EIR will discuss the project's potentially significant impacts relating to the contribution of the buildings to Holy Cross and the historic structures found on site. The EIR/EA will describe proposed mitigation measures to minimize the project's impacts.

Traffic Impact Analysis

The EIR/EA will present the findings of a traffic report prepared for the project by a qualified transportation engineering firm. The purpose of the traffic analysis is to satisfy the requirements of the Town of Colma and the requirements of CEQA. The study will determine the traffic impacts of the proposed project including the two access drives to the proposed development on Mission Road and traffic impacts on two key intersections in the vicinity of the site: Mission Road/El Camino Real and Mission Road/Lawndale Boulevard. The traffic report will also discuss multi-model transit opportunities. A Congestion Management Agency (CMA) analysis is not required because the project would generate fewer than 100 peak-hour trips.

The traffic report would rely upon recent peak-hour traffic volume counts. Intersection operations would be evaluated using the 2000 Highway Capacity Manual (HCM) level of service methodology for signalized and unsignalized intersections during the peak hours. Vehicle queuing would be evaluated for the project's site access driveways.

The traffic report will analyze the following scenarios:

1 Existing Conditions
2 Existing + Project Conditions
3 Cumulative Conditions
4 Cumulative + Project Conditions

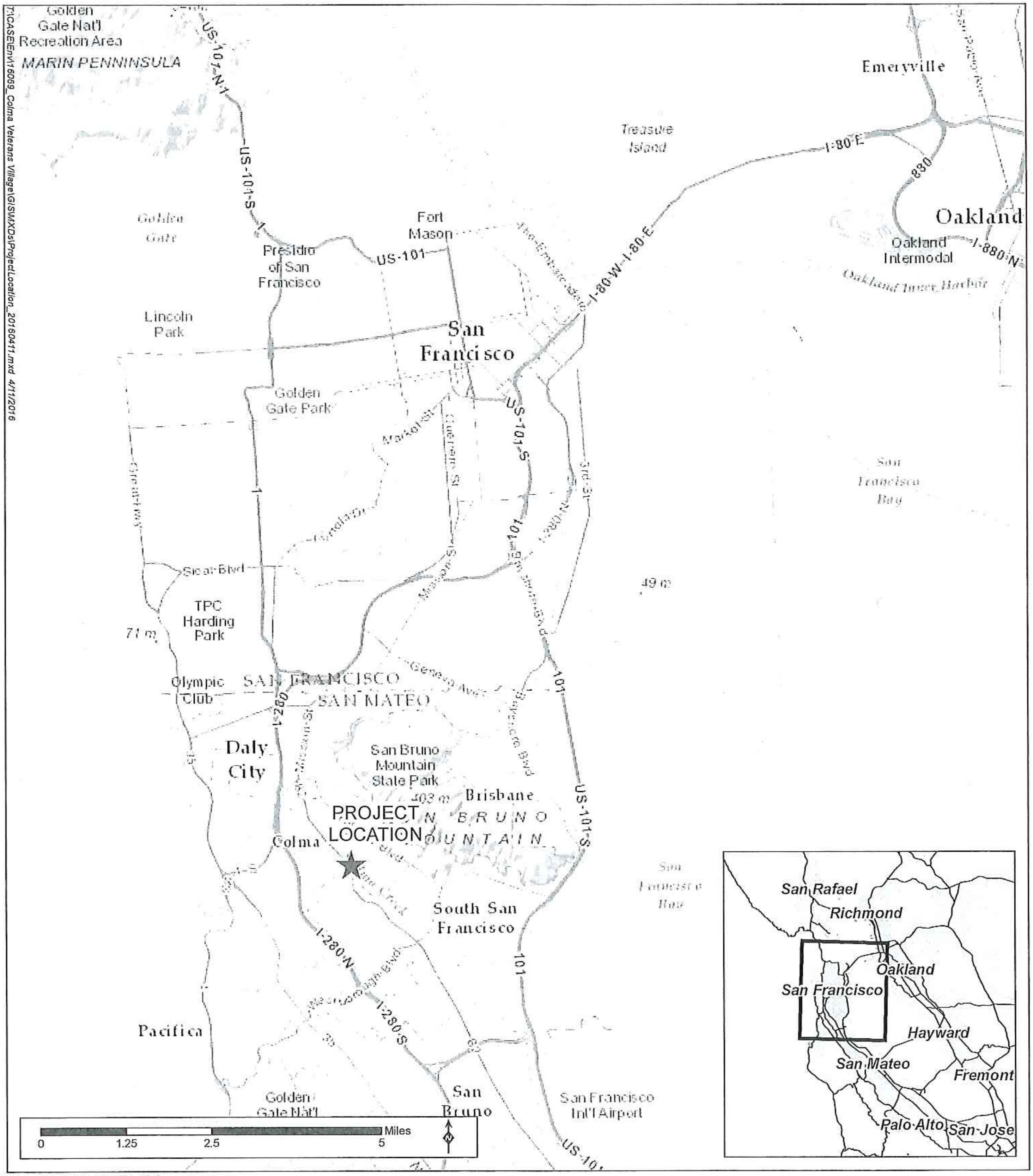
The traffic report and the EIR/EA will discuss: the existing transportation setting (roadways, bike and pedestrian facilities, transit service, existing intersection geometry and traffic volumes, observed existing traffic and parking conditions, project traffic estimates, intersection level of service analysis, vehicle queuing, impacts to transit, bikes, and pedestrians, site access, circulation and parking).

Additional Resource Areas

Several environmental resource areas could have less than significant impacts or potentially significant impacts that can be reduced to less than significant levels through the application of mitigation measures, or standard construction Best Management Practices (BMPs), or standard conditions of approval. These resource areas include:

- Aesthetics
- Land Use
- Air Quality
- Biological Resources
- Geology and Seismicity
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Greenhouse Gases
- Noise
- Public Services
- Recreation
- Utilities and Service Systems

The project site does not contain agricultural or forestery lands or mineral resources and thus would not result in environmental effects to these natural resource areas.

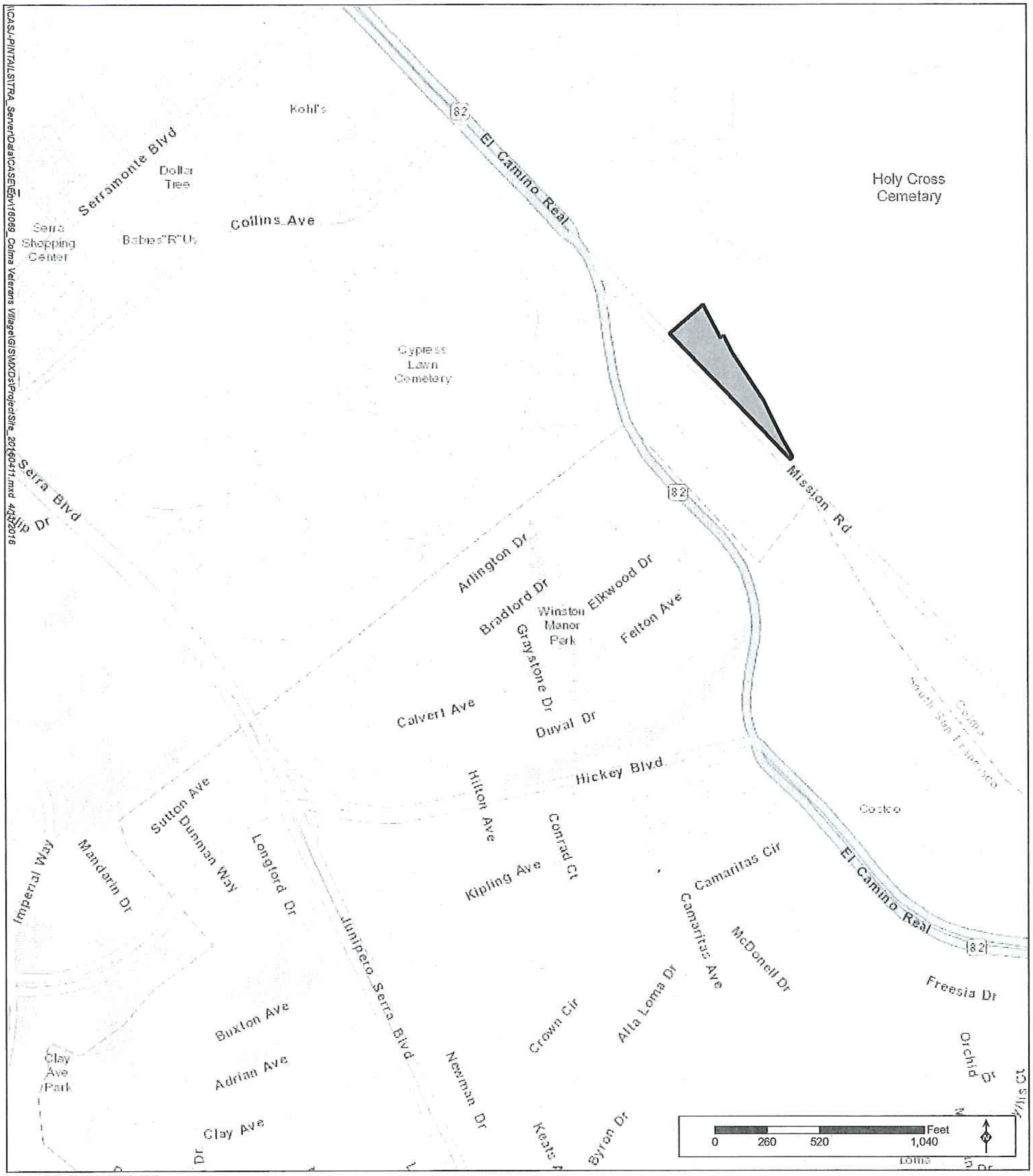


Source: ESRI, 2016; MIG|TRA, 2016

★ Project Location

Figure 1 Project Location

Veterans Village Project



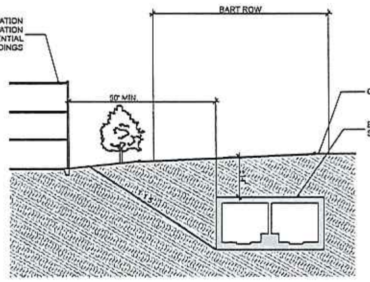
Source: ESRI, 2016; MIG|TRA, 2016

Project Boundary

Figure 2 Project Site

Veterans Village Project

MIG | TRA ENVIRONMENTAL SCIENCES



BUILDING AREA

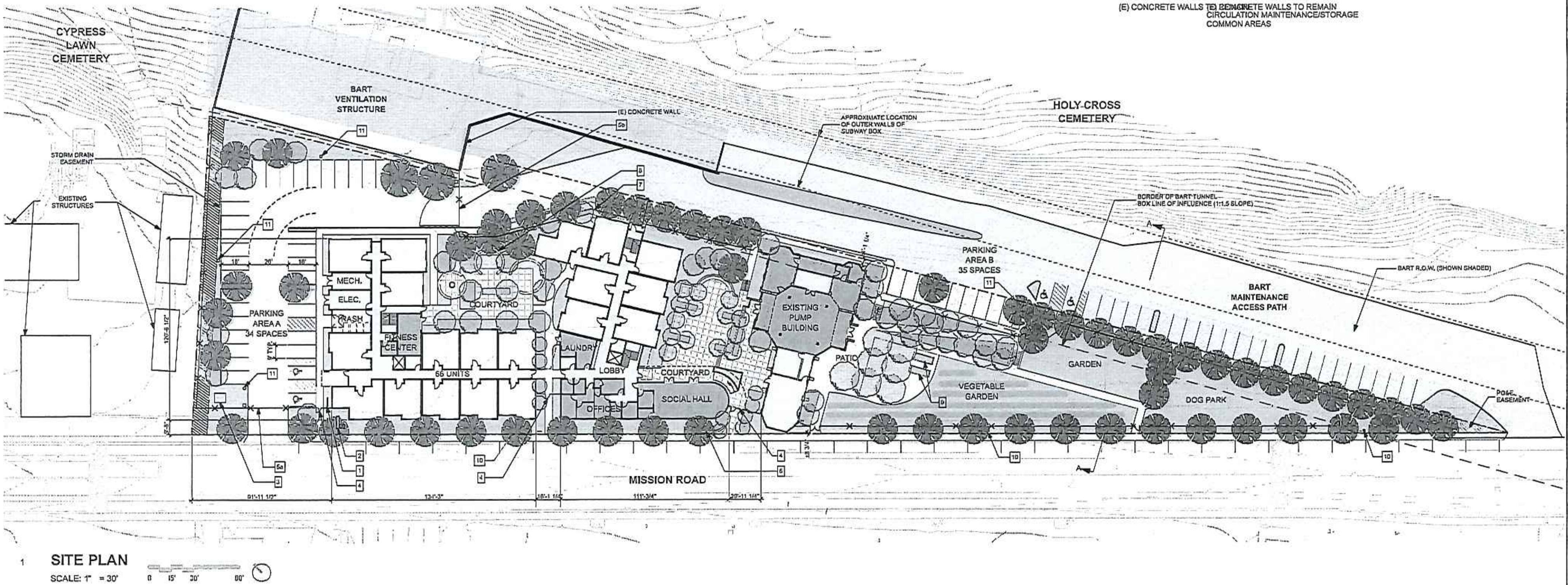
	NUMBER OF UNITS			SQUARE FOOTAGE				
	BUILDING A			BUILDING A				PUMP BUILDING
	STUDIOS	1 BEDROOMS	2 BEDROOMS	RESIDENTIAL GROSS	COMMON	CIRCULATION/ UTILITY*	TOTAL BLDG. A	COMMON
	0.0%	98.5%	1.5%					
3RD FLOOR		22	1	14,753	346	4,051	19,150	
2ND FLOOR		24		15,374	0	4,408	19,782	
GROUND FLOOR		19		11,982	3,531	5,381	20,894	5,106
SUBTOTAL	0	65	1					
TOTALS	66			42,109	3,877	13,840	59,826	5,106

SHEET NOTES

1 GAS METER
2 BACK FLOW PREVENTERS
3 PAD MOUNTED TRANSFORMER
4 ENTRY GATE W/ PERFORATED ALUMINUM PANEL
5a MOTORIZED SLIDING VEHICLE GATE
5a MOTORIZED SWING VEHICLE GATE
6 LOW CONCRETE WALL WITH BUILDING SIGNAGE, SEE A5.1
7 CONCRETE RETAINING WALL, SEE CIVIL DRAWINGS
8 CONCRETE SEAT WALLS, SEE LANDSCAPE DRAWINGS
9 RAISED ACCESSIBLE PLANTERS
10 EXISTING HYDRANT
11 PARKING POLE LIGHT FIXTURE, SEE A5.1. SEE LANDSCAPE DRAWINGS FOR SITE FIXTURES & A2.1 FOR EXTERIOR BUILDING FIXTURES

LEGEND

PROPERTY LINE
BART TUNNEL LINE OF INFLUENCE
OUTER WALLS OF SUBWAY BOX
(N) METAL FENCE, S.L.D.
ACCESSIBLE PARKING SPACE
EASEMENT, SEE SURVEY
RESIDENTIAL
CIRCULATION/MAINTENANCE
COMMON AREAS



Source: Van Meter Williams Pollack LLP, 2016

Figure 3 Site Plan

Veterans Village Project

MIG | TRA ENVIRONMENTAL SCIENCES

NOTICE OF PUBLIC MEETING

Wednesday
May 25, 2016 at 7:00 PM
Community Center, Colma, California

Veteran's Village Project Scoping Meeting

Summary: The purpose of this scoping meeting is to request comments on the scope and content of the environmental review that the Town of Colma will be conducting and preparing for the Veteran's Village project. The proposed project is a 66-unit housing project for Veterans, proposed to be located at 1670-1692 Mission Road.

NOTICE IS HEREBY GIVEN to the public that the City Council of the Town of Colma will hold a public meeting at the date and time shown above at the Colma Community Center, 1520 Hillside Boulevard, Colma, California, on the above-described matter.

Anyone desiring further details may contact the Planning Department, City Hall, Colma, California, and inspect the application.

Reasonable Accommodation: Upon request, this notice will be made available in appropriate alternative formats to persons with disabilities. Any person with a disability, who requires a modification or accommodation to view the agenda, should direct such a request to Brian Dossey, ADA Coordinator, at 650-997-8300 or brian.dossey@colma.ca.gov Please allow 2 business days for your request to be processed.

Dated: 5/19/16

Michael P. Laughlin, AICP, City Planner

San Francisco Bay Region Water
Quality Control District
1515 Clay Street, #1400
Oakland, CA 94612

Mr. Patrick Sweetland
No. San Mateo County Sanitation District
153 Lake Merced Boulevard
Daly City, CA 94015

Jefferson Union High School District
699 Serramonte Boulevard, # 100
Daly City, CA 94015

San Francisco Water Department
1990 Newcomb Avenue
San Francisco, CA 94124

Executive Officer
San Bruno Mountain Watch
P.O. Box 53
Brisbane, CA 94005

Director of Planning
CalTrans District 4
P.O. Box 23660
Oakland, CA 94623-0660

South San Francisco Sewer Department
400 Grand Avenue
South San Francisco, CA 94080

City of Daly City
Planning Department
333 - 90th Street
Daly City, CA 94015

City Engineer
City of South San Francisco
P.O. Box 711, 400 Grand Avenue
South San Francisco, CA 94083

BART
Real Estate & Property Dev.Dept.
300 Lakeside Drive, 22nd Floor
Oakland, CA 94612

Planning Director
San Mateo County Planning Dept.
455 County Center, 4th Floor
Redwood City, CA 94063

Service Planning Department
PG&E
275 Industrial Road
San Carlos, CA 94070

Jefferson Elementary School District
101 Lincoln Avenue
Daly City, CA 94014

Eugene Ma
AT&T
359 Washington St
Daly City, CA 94015

South San Francisco
Sewer Department
400 Grand Avenue
South San Francisco, CA 94080

Ms. Ann Stillman
Colma Lighting District, San Mateo
Public Works
555 County Center, 5th Floor
Redwood City, CA 94063

PG&E
450 Eastmoor Avenue
Daly City, CA 94015

Planning Division
Association of Bay Area Governments
101 Eighth Street
Oakland, CA 94604

Mr. Geoff Balton
Colma Fire Protection District
50 Reiner Street
Colma, CA 94014

State Clearinghouse
1400 Tenth Street
Sacramento, CA 95814

So. San Francisco Unified School Dist.
398 B Street
South San Francisco, CA 94080

City of South San Francisco
Planning Department
315 Maple Avenue
South San Francisco, CA 94080

Regional Clearinghouse Coordinator
c/o ABAG
P.O. Box 2050
Oakland, CA 94604-2050

Mr. Francisco Gomez
County of San Mateo Department of Housing
264 Harbor Boulevard, Bldg. A
Belmont, CA 94002

District Manager
California Water Service
341 North Delaware Street
San Mateo, CA 94401-1727

Leigh Jordan
Northwest Info. Ctr. Sonoma State University
150 Professional Center Drive, Suite E
Rohnert Park, CA 94928

Transportation Planning
C/CAG
455 County Center, 5th Floor
Redwood City, CA 94063

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

San Mateo County
Environmental Health Director
2000 Alameda de las Pulgas, Suite 100
San Mateo, CA 94403

CERTIFICATE OF POSTING AND MAILING
Mercy Housing Scoping Meeting

I certify that (*initial each applicable line*):

____ I posted a true copy of the attached notice on each of the three (3) official bulletin boards of the Town of Colma on _______________ *[date]* as follows:

One copy on the Official Bulletin Board at City Hall, 1198 El Camino Real, and

One copy on the Official Bulletin Board situated on the east side of Clark Avenue at the intersection with E Street, and

One copy on the Official Bulletin Board situated at the Sterling Park Community Center at 427 F Street

____ I mailed a true copy of the attached notice to each of the addresses shown on the attached list, on

____________________ *[date]*:

Executed at Colma, California on _______________________*[date]*.

____
Signature

____
Typed Name and Title

Attachment: Names and Addresses for Emailed Notices

VETERAN'S VILLAGE PROJECT CEQA SCOPING

1670-1692 MISSION ROAD

City Council Meeting
May 25, 2016

TOWN OF COLMA
"It's great to be alive in Colma."

Presentation Overview

- Consultant Introduction
- Meeting Goals
- Proposed Project
- Review CEQA Process
- EIR/EA Contents
- How to Comment and Questions

Consultant Introduction

- Barbara Beard, Director
- Christina Lau, Project Manager

MIG

Meeting Goals

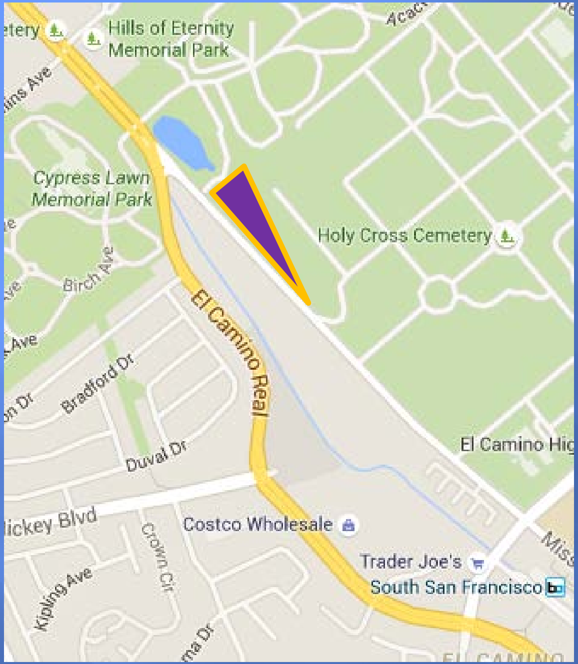
- Inform/Promote Understanding of the Project
- Receive input on the scope and content of the Environmental Impact Report

- *Not a Meeting to Discuss Merits of the Project*
- *Not a Meeting to Make a Decision on the Project*

Scoping Comments

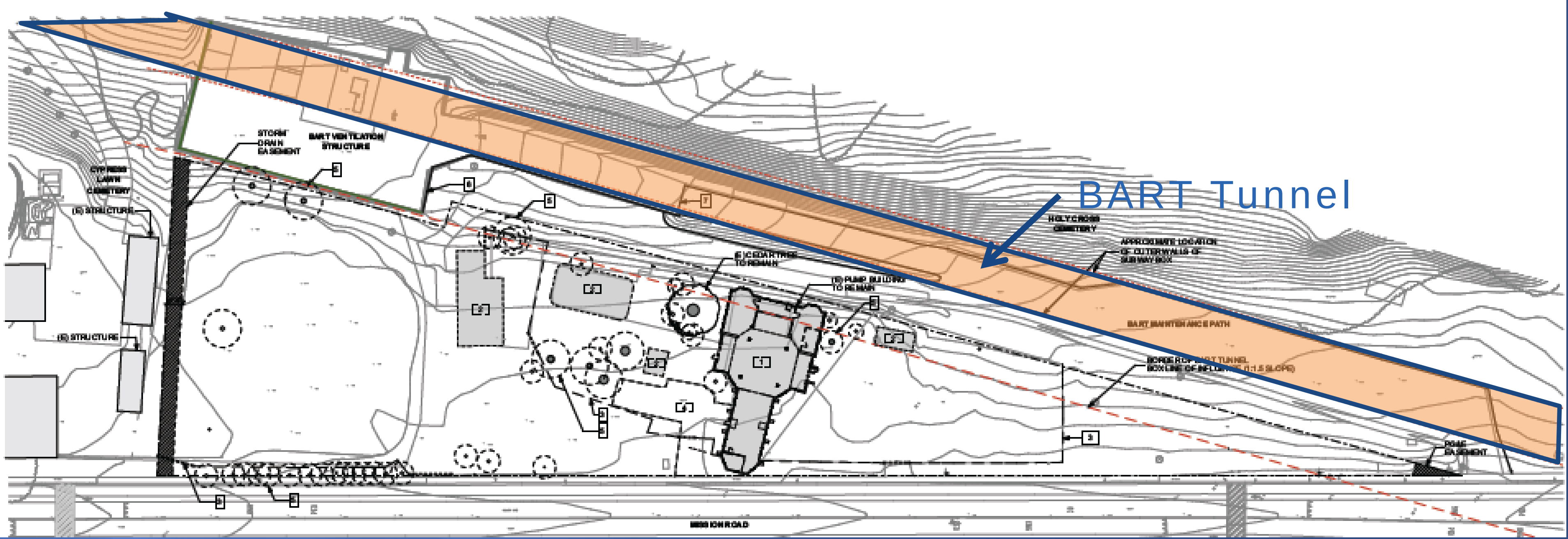
Please limit comments to the scope and content of the EIR. For example:

- The EIR should consider construction impacts…
- The EIR should consider traffic impacts….



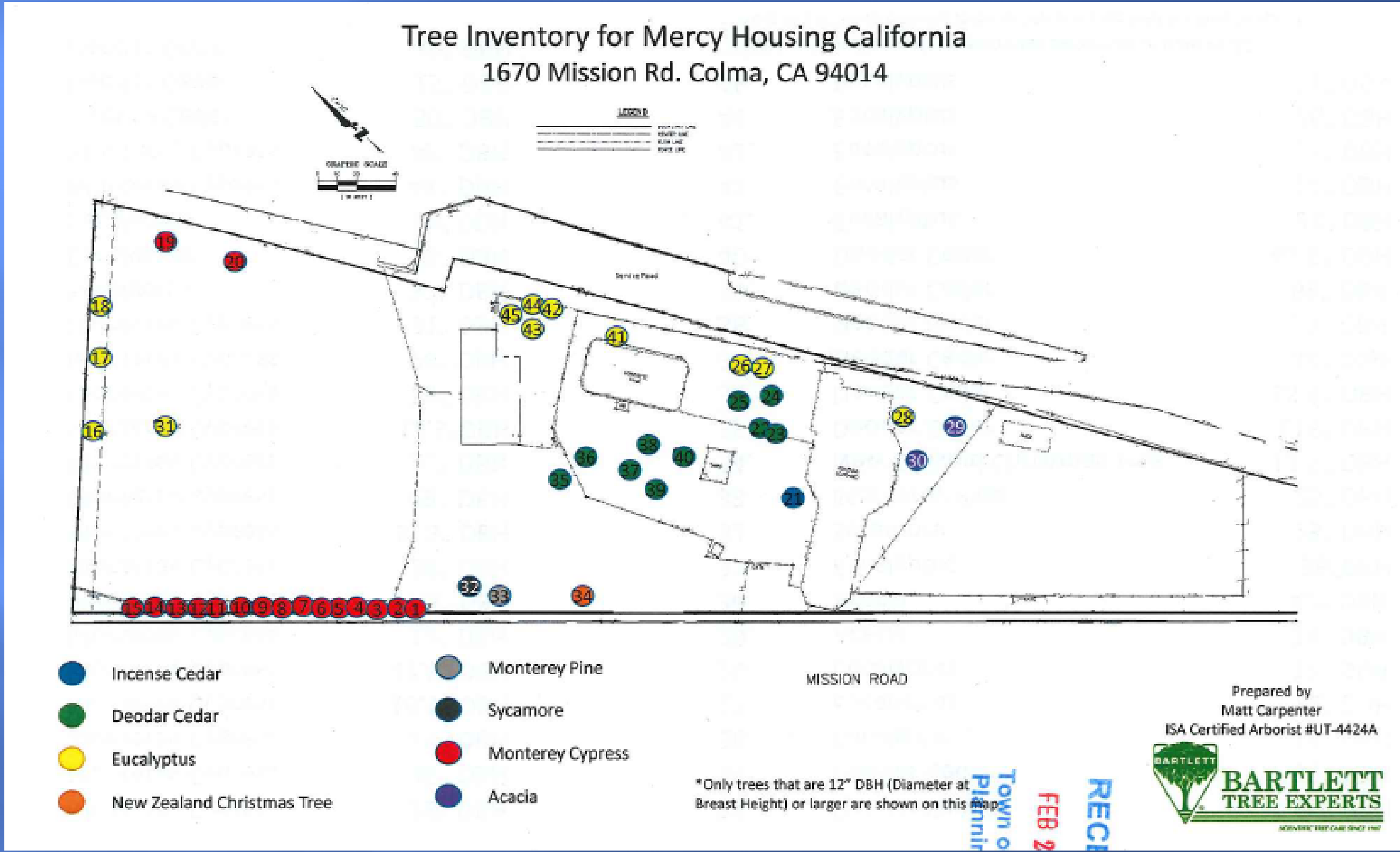
Proposed Project Location

Town of Colma



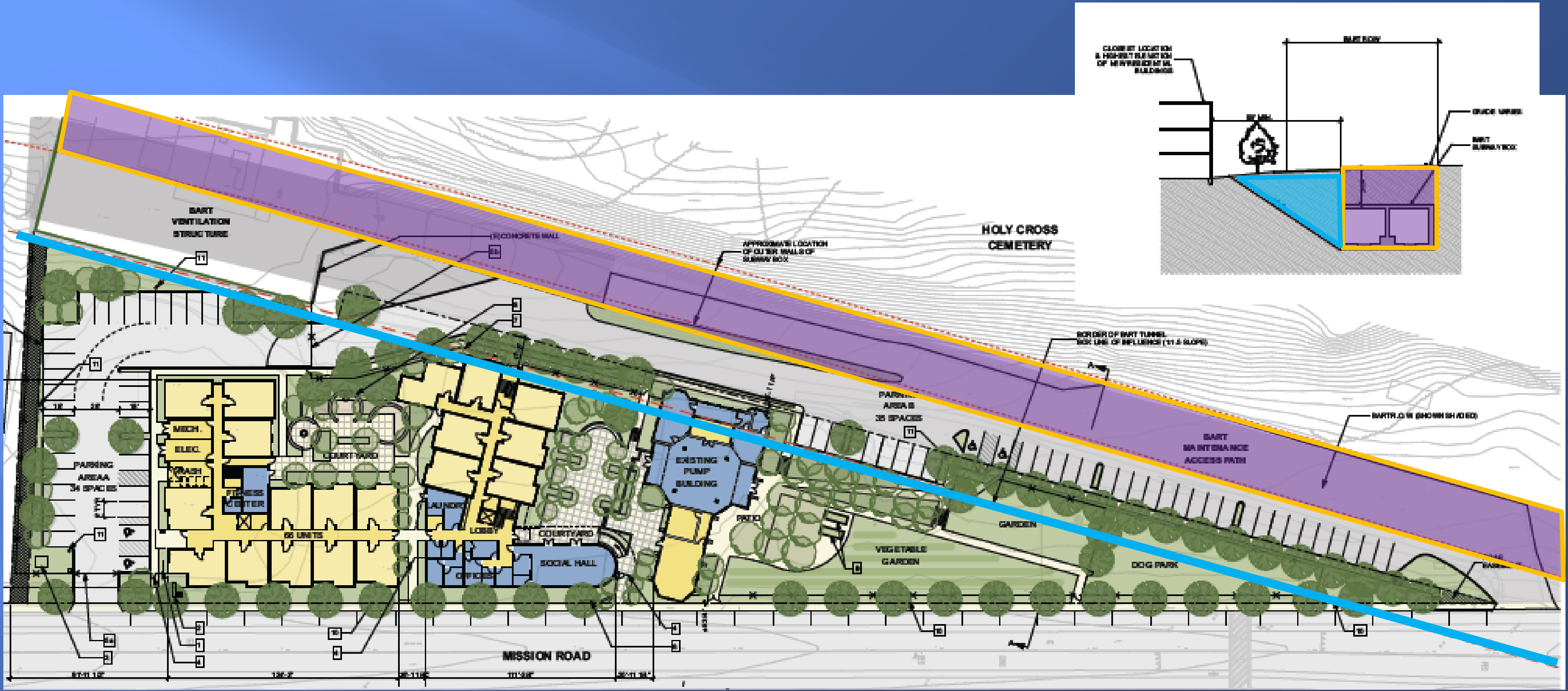
Existing Site Plan

TOWN OF COLMA



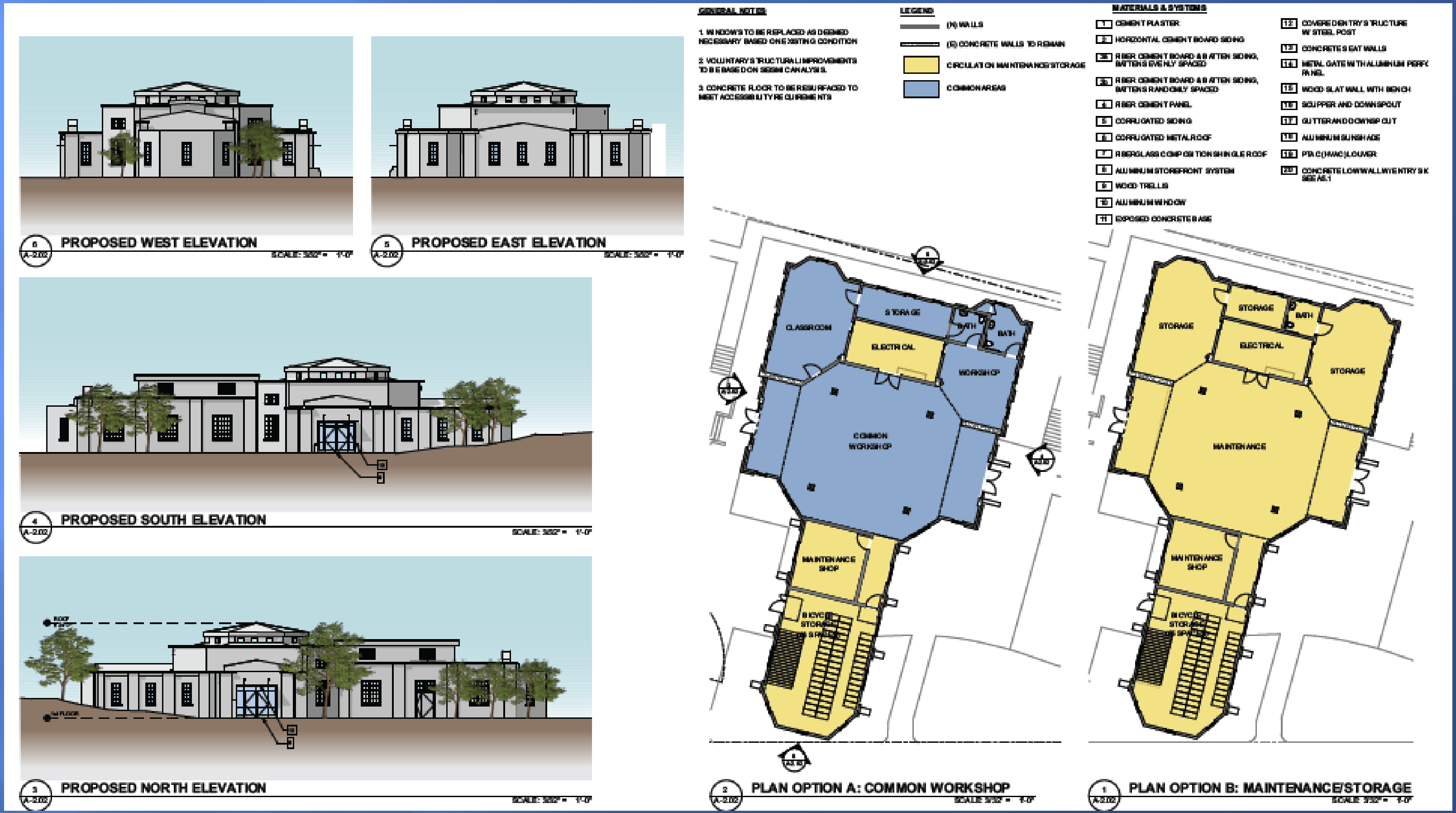
Tree Removal Plan

TOWN OF COLMA



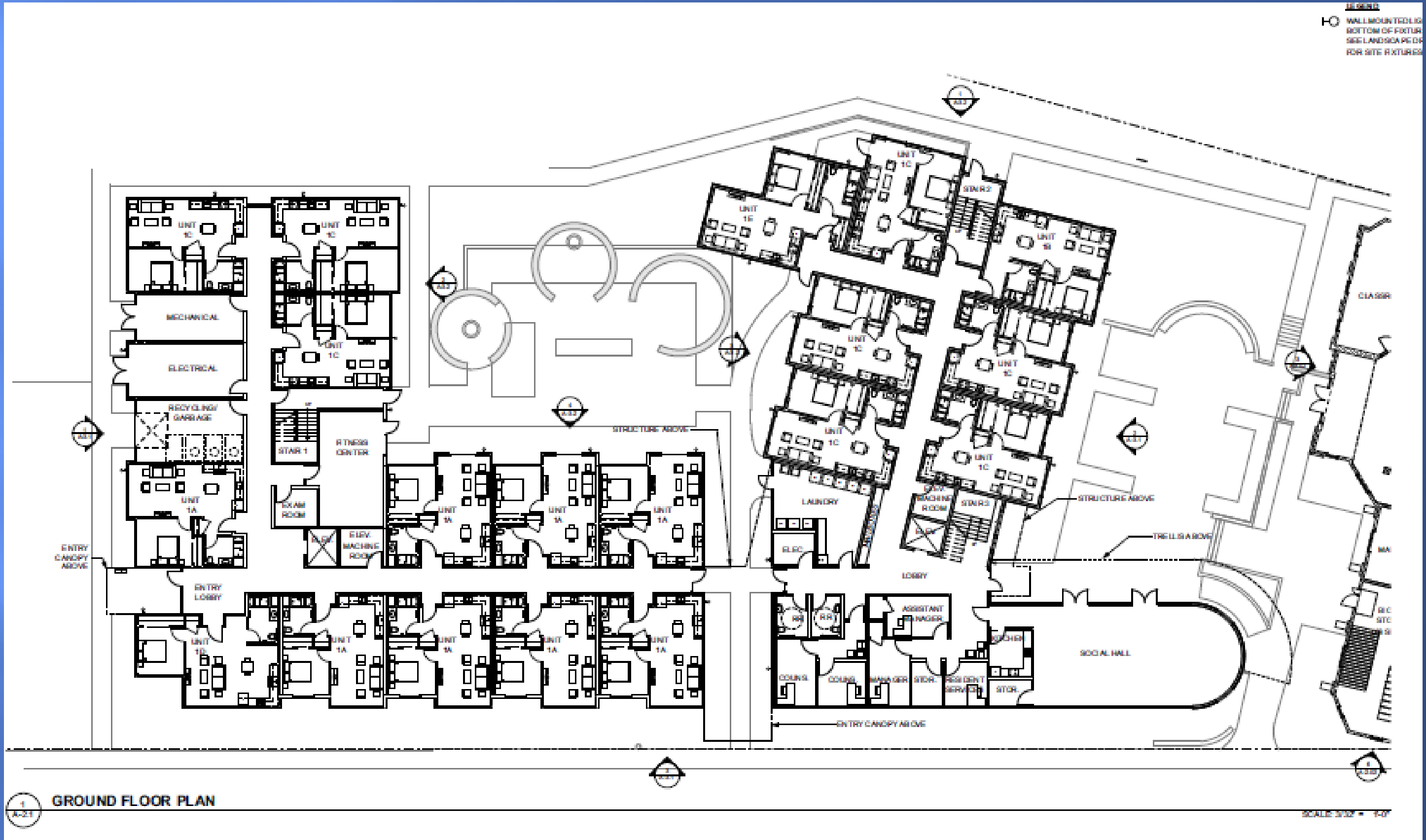
Proposed Site Plan

Town of Colma



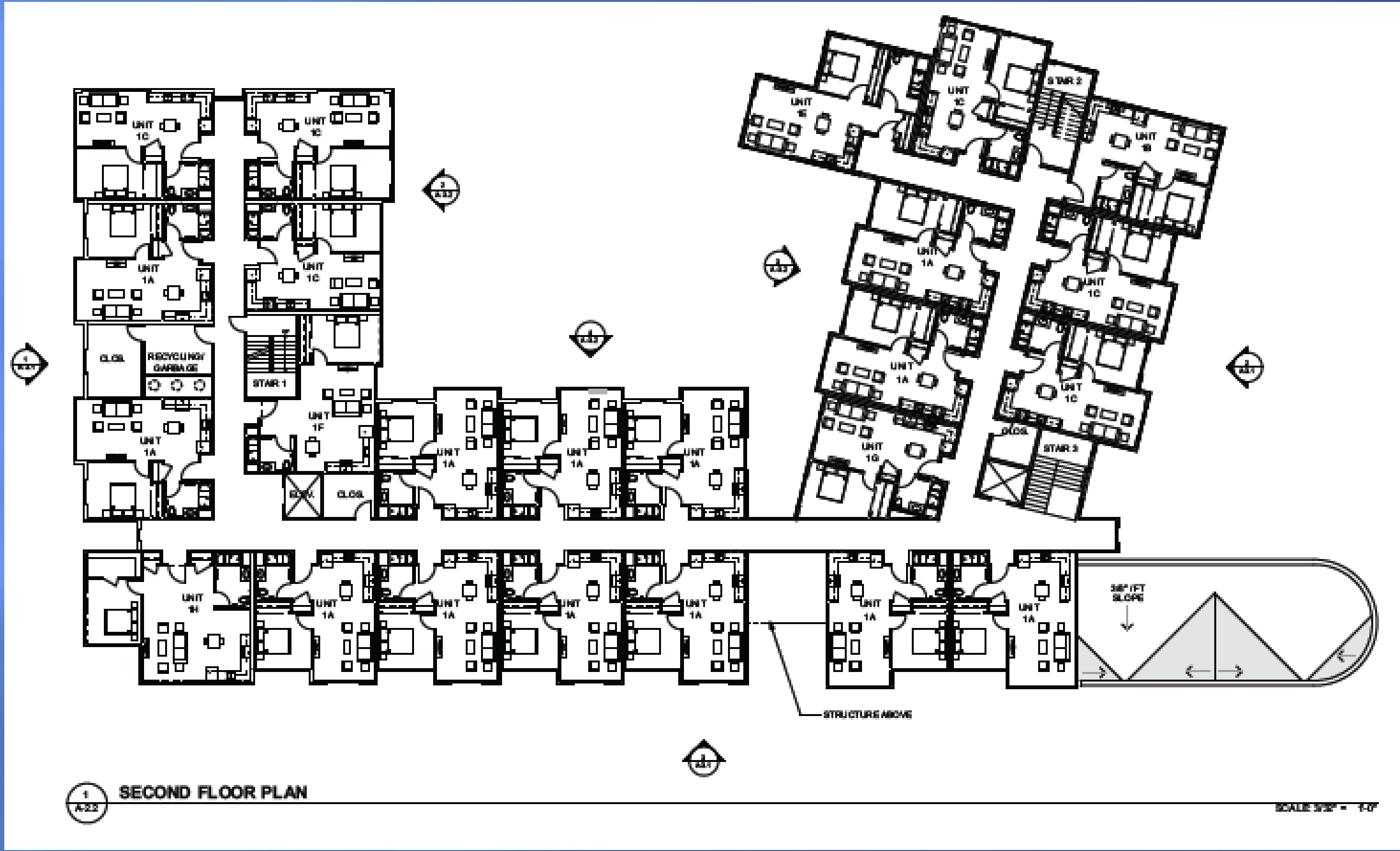
Existing Pump Building

TOWN OF COLMA



First Floor Plan – 19 Units

TOWN OF COLMA



Second Floor Plan – 24 Units

TOWN OF COLMA

Third Floor Plan – 23 units

TOWN OF COLMA

Proposed Building Elevations

Proposed Building Elevations

TOWN OF COLMA

VIEW NORTH ON MISSION ROAD

Artistic Rendering

TOWN OF COLMA

1
A-0.1
VIEW SOUTH ON MISSION ROAD

Artistic Rendering

TOWN OF COLMA

CEQA Process

The California Environmental Quality Act (CEQA) Requires the Town to carry out an environmental review process for the proposed project. The purpose of CEQA is to:

- Inform Public about Potential Significant Environmental Effects
- Identify how impacts can be avoided or reduced
- Prevent significant avoidable impacts to the environment through project changes, alternatives or mitigation measures.

CEQA Process

- Town has determined an EIR is required
- An EIR is a document that:
  - Is used by government agency
  - Analyzes the project
  - Determines project impacts
  - Identifies project alternatives
  - Discloses ways to reduce environmental impacts

CEQA Process

The EIR process will involve:

- Notice of Preparation (30 day period, scoping)
- Publish Draft EIR/EA (45 Day comment period)
- Present Draft EIR/EA to City Council

CEQA Process

The EIR process will involve:

- Respond to Comments on Draft EIR/EA (Final EIR)
- Certify EIR
- Take Action on Project
- File Notice of Determination at County Clerk's Office

EIR Contents

The EIR will Include the following topics:

- Aesthetics
- Hazards/Hazardous Materials
- Traffic, Transit, Parking, Pedestrian Activity
- Cultural Resources (Historic Resources)
- Geology and Soils
- Hydrology and Water Quality
- Land Use and Planning

EIR Contents

The EIR will Include the following topics:

- Biological Resources
- Noise
- Air Quality
- Population and Housing
- Public Services
- Utilities and Service Systems
- Mandatory Findings of Significance

EIR Contents

The EIR will also Include:

- A reasonable range of alternatives, based on analysis and scoping outcome
- A no project alternative
- Cumulative Impacts (two or more individual effects when considered together may be considerable)
- Potential permits the project will require

Scoping Comments

Three ways to comment during the comment period:

- Provide oral or written comments this evening
- Mail comments to the Town, Attn: Michael Laughlin (1190 El Camino Real)
- Email comments to the Town titled “Veteran’s Village”: Michael.laughlin@colma.ca.gov

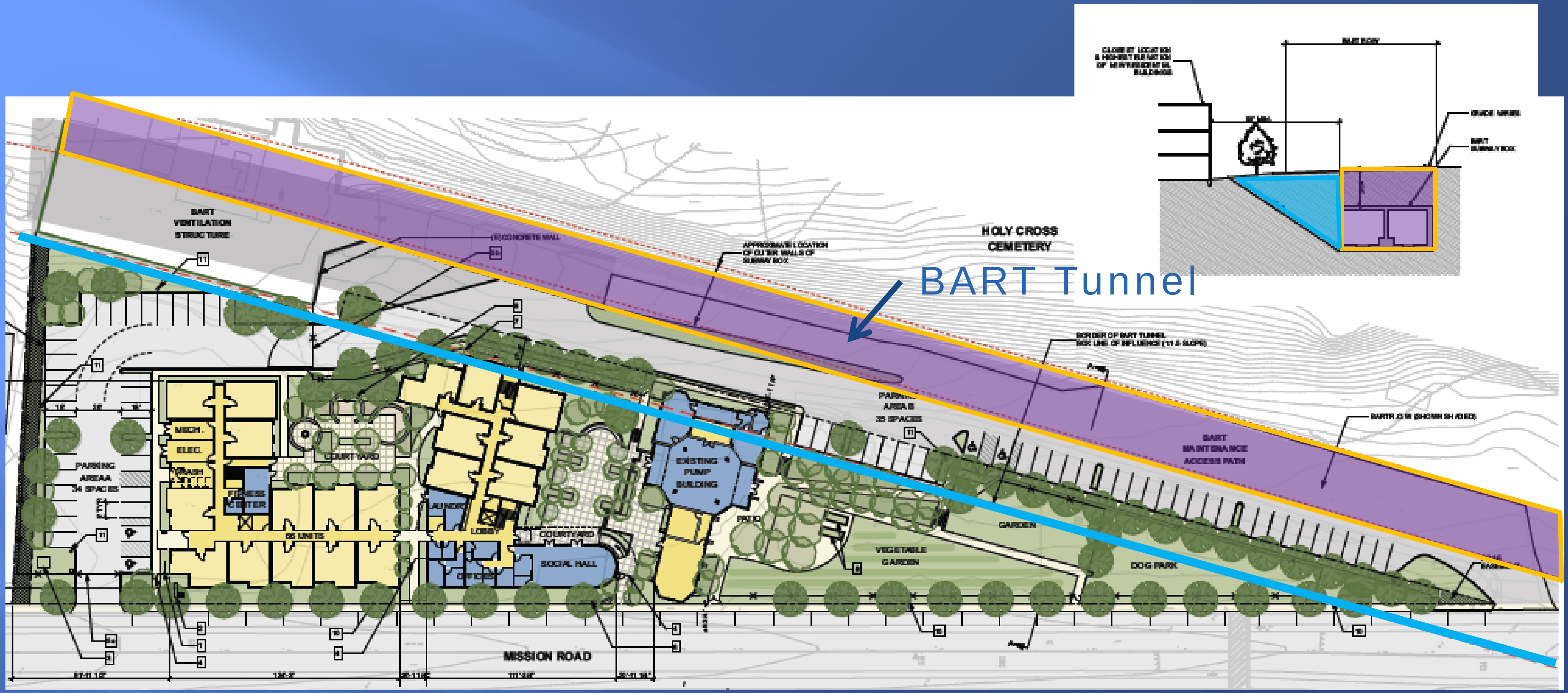
Scoping Comments

Please limit comments to the scope and content of the EIR. For example:

- The EIR should consider construction impacts…
- The EIR should consider traffic impacts….

Additional Information

- The NOP and Plans are posted on the Town's Website (colma.ca.gov) under the Planning Department tab (current projects)
- The draft EIR/EA will also be posted on the Town's website during its 45 day comment period
- Thank you for participating!



Proposed Site Plan

TOWN OF COLMA

DEPARTMENT OF TRANSPORTATION
DISTRICT 4
P.O. BOX 23660, MS-10D
OAKLAND, CA 94623-0660
PHONE (510) 286-5528
FAX (510) 286-5559
TTY 711
http://www.dot.ca.gov/dist4/

Serious Drought.
Help save water!

March 30, 2016

SM082301
SM-82-22.4

Mr. Michael Laughlin
Planning Division
Town of Colma
1190 El Camino Real
Colma, CA 94014

RECEIVED
APR 01 2016
Town of Colma
Planning Dept

Dear Mr. Laughlin:

Veteran's Village 66 Unit Affordable Housing Project - Plans

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the project referenced above. The mission of Caltrans is to provide a safe, sustainable, integrated, and efficient transportation system to enhance California's economy and livability. We seek to reduce statewide Vehicle Miles Travelled (VMT) and increase non-auto modes of active transportation by 2020 through tripling bicycle, and doubling both pedestrian and transit. These targets support the Metropolitan Transportation Commission's Sustainable Communities Strategy, which promotes the increase of non-auto mode shares by ten percentage points and a decrease in automobile VMT per capita by ten percent. We encourage coordination with local jurisdictions and project proponents on all development projects that utilize the multi-modal transportation network.

Project Understanding

The project proposes to construct a 66-unit affordable housing community for veterans on a 2.23 acre parcel located between Cypress Lawn and Holy Cross cemeteries along Mission Road. The project will consist of a new two/three story residential building, courtyards, gardens, and 69 parking spaces divided between two parking lots. The existing historic pump house will be preserved and will house workshop and bicycle storage space. The project is located approximately 1.2 miles from the BART station and in 0.16 miles accesses State Route (SR) 82 in the Town of Colma (Town).

Lead Agency, and Mitigation Responsibility

As the lead agency, the Town is responsible for all project mitigation, including any needed improvements to State highways. The project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures. This information should also be presented in the Mitigation Monitoring Reporting Plan of the environmental document. We recommend the completion of all roadway improvements prior to the issuance of a Certificate of Occupancy.

Early Scoping and the Traffic Impact Study
We endeavor to collaborate with local agencies to avoid, eliminate, or reduce to insignificant levels potential adverse impacts to the State highway system from local development projects. Based on the project location, Caltrans anticipates potential adverse impacts to SR 82 if and when an intensification of traffic-generating development occurs. A Traffic Impact Study (TIS) or a lesser level of analysis may be required to assess the impact of this particular project on the adjacent road network, with specific attention to SR 82. We recommend using the Caltrans *Guide for the Preparation of Traffic Impact Studies* (TIS Guide) for determining which scenarios and methodologies to use in the analysis. The TIS Guide is available at the following website: http://www.dot.ca.gov/hq/tpp/offices/ocp/igr_ceqa_files/tisguide.pdf.

If the proposed project will not generate the amount of trips needed to meet Caltrans' trip generation thresholds, an explanation of how this conclusion was reached must be provided.

We encourage the Town to send the TIS scope of work to Caltrans for review prior to the completion of the study. We feel early coordination through the sharing of information and providing comments makes for a better end result for all parties concerned.

Vehicle Trip Reduction
Caltrans encourages local communities to locate any needed housing, jobs and neighborhood services near major mass transit centers, with connecting streets configured to facilitate walking and biking, as a means of promoting mass transit use and reducing regional VMT and traffic impacts on the State highways.

We also encourage you to develop Travel Demand Management (TDM) policies to encourage usage of nearby public transit lines and reduce vehicle trips on the State Highway System. These policies could include lower parking ratios, car-sharing programs, bicycle parking, and providing transit passes to residents, among others. For information about parking ratios, see the Metropolitan Transportation Commission (MTC) report *Reforming Parking Policies to Support Smart Growth* or visit the MTC parking webpage: http://www.mtc.ca.gov/planning/smart_growth/parking/.

In addition, secondary impacts on pedestrians and bicyclists resulting from any traffic impact mitigation measures should be analyzed. The analysis should describe any pedestrian and bicycle mitigation measures and safety countermeasures that would in turn be needed as a means of maintaining and improving access to transit facilities and reducing vehicle trips and traffic impacts on state highways.

Please feel free to call or email Sandra Finegan at (510) 622-1644 or sandra.finegan@dot.ca.gov with any questions regarding this letter.

Sincerely,

Pat C

PATRICIA MAURICE
District Branch Chief
Local Development – Intergovernmental Review

APPENDIX B

CEQA INITIAL STUDY CHECKLIST

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Environmental Checklist and Responses

1. **Project Title:** Mercy Housing Veterans Village Project
2. **Lead Agency Name and Address:** Town of Colma
Planning Department
1190 El Camino Real
Colma, CA 94014
3. **Contact Person and Phone Number:** Michael Laughlin, City Planner
(650) 757-8888
4. **Project Location:** 1670-1692 Mission Road
Colma, CA 94014
5. **Assessor's Parcel No.:** 011-370-220
6. **Project Sponsor's Name and Address:** Mercy Housing
Michael Kaplan
1360 Mission Street, #300
San Francisco, CA 94103
7. **General Plan Designation:** Commercial
8. **Zoning:** Commercial
9. **Description of the Project:** The project consists of a Planned Development Rezoning and Planned Development Use Permit to allow the construction and development of a 66-unit affordable housing development on an approximately 2.23 acre sized property.
10. **Surrounding Land Uses and Setting:** The project site is located in the Town of Colma and surrounded by cemetery and other commercial uses.
11. **Other Public Agencies Whose Approval is Required:** BART Use and Access Agreement, State Historic Preservation Officer (SHPO)

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

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

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

EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4. "Negative Declaration: Less Than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in 5. below, may be cross-referenced).
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration (Section 15063(c)(3)(D)). In this case, a brief discussion should identify the following:
    a. Earlier Analysis Used. Identify and state where they are available for review.
    b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c. Mitigation Measures. For effects that are "Less Than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources. A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

1.1 AESTHETICS

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
a) Have a significant 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 the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of significant light or glare that would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

1.1.1 Environmental Setting

The site is located at 1670-1692 Mission Road in Colma, California and covers an area of approximately 2.3 acres. The project site currently contains vacant land, two unpaved areas used for automobile parking by nearby auto repair shops, five historic structures associated with the Holy Cross Cemetery pump station (no longer in use), and unmanaged vegetated areas and numerous trees.

The project is located within an area of the Town that contains a mix of land uses including cemetery, industrial (auto repair) and residential uses. A maintenance road to a BART ventilation shaft bounds the project site on the east, travels behind the project site and terminates at the BART ventilation shaft. In general, the project parcel is surrounded to the north and east by the Holy Cross and Cypress Lawn cemeteries and BART uses, and to the west and south by auto repair and commercial uses.

The northwestern portion of the site is comprised of an unpaved area used by Image Auto Body for storage of vehicles. The southern portion of the site is comprised on an unpaved area used by Royal Auto Body for storage of vehicles. An historic concrete building is located southeast of the parking lot and is used for storage by a local florist. An unused concrete water storage tank and pump, also a historic structure, are located southeast of the concrete building.

A concrete building known as the Holy Cross Cemetery pump house, currently occupied by Baca’s Racing Engines & Machine Shop, is located near the center of the site. An additional concrete building located northwest of the machine shop is used for storage of various parts and supplies related to the machine shop. An electrical transformer on a concrete pad is located to the west of the machine shop. The area southeast of the machine shop is used for vehicle and equipment storage for an auto repair shop located across Mission Road to the southwest.

The southeastern portion of the site is a vacant area vegetated with annual grasses and forbs.

A number of trees (approximately 46 over 12” in diameter) primarily consisting of cypress, eucalyptus and cedar trees are concentrated on the property frontage along Mission Road around the site perimeter and scattered throughout the middle of the site.

1.1.2 Regulatory Setting

Colma General Plan

Cities and counties in the state of California must adopt General Plans which regulate physical development. The Land Use and Open Space and Conservation Elements of the Colma General Plan include the following aesthetics policies relevant to the proposed project:

Land Use Element

Policy 5.02.311: In any proposed development the Town shall balance and use judgment in reviewing the visual effects and the potential impacts of the proposed development, facilitating the tranquil atmosphere required for the Town's memorial parks.

Policy 5.02.312: The Town should take action to improve civic beauty including tree planting, road median landscaping, and enforcement of conditions related to private development projects.

Policy 5.02.317: No new metal clad buildings should be permitted in the Town of Colma, other than agriculturally-related.

Policy 5.02.318: The Town should condition the approval of permits for all site building improvement projects where such projects involve the public street frontage to require the installation of street trees along the public street frontage of the affected property. Spacing of the trees should be in accordance with an adopted tree planting plan, or if no plan exists, trees should be installed at a minimum spacing of one tree each 25 feet parallel to the public roadway. Exceptions should be made if this approach would clash with an established landscape scheme of merit.

Policy 5.02.324: It is intended that new buildings in design review districts should be reviewed to ensure that exterior building design, materials and colors are appropriate for the setting where the new buildings are located.

Policy 5.02.361: The Town should require all new construction projects to place power, telephone and cable TV lines underground. Utility boxes and transformers should also be undergrounded if possible. If there is no reasonable alternative than above ground placement, then these facilities should be screened by fencing and/or landscaping.

Circulation Element

Policy 5.03.732: Street trees should be planted along Colma's street system. Trees should be selected from a plant list approved by the City Council in order to create a unifying theme. Street trees should be planted as a requirement of private development, where such developments involve the public street frontage.

Policy 5.03.732: A utility undergrounding/street beautification program should be carried out for Mission Road in conjunction with the provision of additional off-street parking to improve visual appearance and traffic safety.

Policy 5.03.733: Overhead transmission lines should be placed underground in order to improve the visual quality of all roadways.

Open Space and Conservation Element

Policy 5.04.361: The Town should maintain a visual and physical distinction from its surrounding cities.

Policy 5.04.362: A Spanish-Mediterranean architectural theme should be utilized for new buildings and major remodeling projects unless an established architectural theme of merit exists.

Policy 5.04.364: The Town should promote the image of Colma as a flower town by encouraging the continuation of flower growing in agricultural areas, by requiring the use of flowering trees, shrubs and ground cover in project landscaping and by installing seasonal flowers in publicly-owned properties.

Colma Municipal Code Section 5.03.300

Section 5.03.300 Restrictions and Procedures Applicable to the “DR” Design Review Zone of Subchapter 5.03 Zoning of the Colma Municipal Code contains guidelines for building design, materials and architectural style and landscaping to ensure compatibility with surrounding buildings and land uses and the Town’s visual character. The project site is on Mission Road, which is within the Design Review Zone. Projects within the Design Review Zone require City Council approval of project design whenever the project also requires approval of a Use Permit, Subdivision Map, Planned Unit Development, or other action by the City Council, as the proposed project does.

Note that Subchapter 5.06, Tree Cutting and Removal, which requires replacement of removed trees with a diameter at breast height (dbh) of 12 inches or greater, is described in Section 1.4 Biological Resources.

1.1.3 Discussion

Would the proposed project:

a) **Have a significant adverse effect on a scenic vista?**

No Impact. CEQA does not establish the definition of a scenic vista. Communities can define and identify scenic vistas in a general plan or afford protection to scenic vistas through other land use planning documents. The Town of Colma General Plan does not discuss or identify any officially designated scenic vistas within the Town and none were noted during the site visit.

For the purposes of this EIR, a scenic vista is defined as a highly valued landscape that the general public can view from specific vantage points. There are no officially designated scenic vistas which include the project site. The Town of Colma considers vistas from within the various cemeteries as scenic views. Because of the site’s location in relation to actively used areas of the adjacent cemeteries and its location at the bottom of a short, steep hillside on a segment of Mission Road that contains commercial uses, the site is not part of a scenic view from within a cemetery.

Therefore, the proposed project would not have an adverse effect on a scenic vista. This issue will not be discussed further in the EIR.

b) **Significantly damage or destroy scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?**

No Impact. The project site is not within the viewshed of a state scenic highway or a locally designated scenic route. The closest state scenic highway to the project site is State Route 280, located approximately one mile west of the site and the project site is not visible from the highway. The closest designated scenic route in Colma’s General Plan is El Camino Real, located approximately 270 feet west of the site at its closest point. The project site is not visible from El Camino Real. Therefore, the proposed project would not damage scenic resources within a state scenic highway or a locally designated scenic route. This issue will not be discussed further in the EIR.

c) **Substantially degrade the existing visual character or quality of the site and its surroundings?**

Less Than Significant Impact. The proposed project would change the existing visual character of the site from primarily vegetated with low-intensity commercial uses to a new housing development with a large residential structure, a community center, courtyards, parking lots, a dog park and landscaped areas. The proposed project would include the demolition of all the existing structures except for the historic pump house and the removal of all trees and other vegetation from the site and result in the construction of a two- to three-story residential building, which would be 36 feet 4 inches tall at the roof ridge line. The materials and color palette of the new building would include a variety of exterior materials and muted colors to respond to both the historic pump building and the light industrial context of Mission Road (see discussion in Project Description).

The historic Holy Cross Cemetery pump house would be rehabilitated as part of the project and would be used as a community space for the residents of Veterans Village. Rows of new trees would be planted along each of the site's three sides; these will include street tree species along the east and west sides and evergreen species along the north boundary and around the northeast corner, as a way to buffer views to and from the adjacent Cypress Lawn cemetery and BART ventilation structure. Although the project would require the removal of approximately 46 existing trees, the landscape plan would result in the planting of more than 90 new trees and would provide garden and landscaped areas throughout the site to offset the developed portions of the site.

The proposed project would conform to all applicable Town of Colma General Plan policies presented above, regarding building materials, landscaping and undergrounding of utilities. In addition, the proposed project will be subject to design review by the City Council to ensure compatibility with the historic pump house on the site as well as surrounding land uses, such as the historic Holy Cross cemetery. The project has undergone preliminary review to determine conformance with the design review district requirements and it has been found to be in compliance with all relevant design guidelines. For these reasons the project would not substantially degrade the visual character or quality of the site or its surroundings. This issue will not be discussed further in the EIR.

d) Create a new source of significant light or glare that would adversely affect day or nighttime views in the area?

Less Than Significant Impact. The proposed project would include the installation of a number of exterior lights including pole lights, wall-mounted lights and outdoor outlets which would create a new source of night lighting or glare in the project area. The proposed new lights would be designed and installed according to the Town's requirements for control of nighttime light and glare.

The project site is not near any residential properties or other sensitive receptors that could be adversely impacted by new exterior lighting. Land uses adjacent to the site include a maintenance yard on the northwest, a driveway and BART easement on the northeast, Mission Road on the southwest, and Holy Cross Cemetery on the southeast. In addition, the project site is in an urban area that already has street lights and other exterior building lights. Therefore, the proposed exterior lighting is not expected to adversely affect day or nighttime views of the area. This issue will not be discussed further in the EIR.

Sources:

California Department of Transportation. 2016. California Scenic Highway Mapping System, San Mateo County. Available at: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm, accessed April 11, 2016.

Town of Colma, 2000. General Plan. Available at: http://www.colma.ca.gov/index.php/codes/general-plan, accessed April 11, 2016.

Town of Colma, 2009. Colma Municipal Code Subchapter 5.03: Zoning. Available at: http://www.colma.ca.gov/index.php/municipal-code-124, accessed April 11, 2016.

1.2 AGRICULTURAL AND FOREST RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
*Would the project**:				
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 forestland to non-forest use?	☐	☐	☐	☒
*In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.				

1.2.1 Environmental Setting

The project site is located in the Town of Colma in a commercial land use and zoned property.

1.2.2 Discussion

Would the proposed project:

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. The project property is located in a commercially zoned property in the Town of Colma. The property contains no farmland resources and is identified as Urban and Built-up Land on the California Important Farmland map for San Mateo County (California Department of Conservation 2014). The project would not convert farmland to non-agricultural use.

b) Conflict with existing zoning for agricultural use or a Williamson Act contract?

No Impact. The project property is zoned for commercial use (C) and is developed with two vehicle storage uses and an auto repair facility. The project site is not subject to and would not conflict with agricultural zoning, open space easement, or Williamson Act contract

c) Conflict with existing zoning for, or cause rezoning of, forestland (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

No Impact. The project property is zoned for commercial use (C) and is developed with a vehicle storage and an auto repair facility. The project site does not contain timberland resources. The property is not subject to and would not conflict with forestland or timberland zoning.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. The project property is zoned for commercial use (C) and is developed with two vehicle storage uses and an auto repair facility. The project site does not contain forest land resources and therefore would not convert 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 forestland to non-forest use?

No Impact. The project site is commercially developed and does not contain farmland or forestland and would not result in conversion of these resources to non-agricultural or non-forest use.

Sources:

Town of Colma. July 2009. *Colma Zoning.* Site updated 2014. Accessed May 30, 2016. <http://www.colma.ca.gov/index.php/codes/municipal-code/9-zoning-maps-1/571-colma-zoning-1/file>

California Department of Conservation. 2014. *San Mateo County Important Farmland 2014*. Division of Land Resource Protection, Farmland Mapping and Monitoring Program. Accessed May 30, 2016. <ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2014/smt14.pdf>

1.3 AIR QUALITY

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c) 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations as defined by BAAQMD?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

1.3.1 Environmental Setting

Air quality is a function of pollutant emissions and topographic and meteorological influences. The physical features and atmospheric conditions of a landscape interact to affect the movement and dispersion of pollutants and determine its air quality. The US EPA and CARB are the federal and state agencies charged with maintaining air quality in the nation and state, respectively. The US EPA delegates much of its authority over air quality to CARB. CARB has geographically divided the state into 15 air basins for the purposes of managing air quality on a regional basis. An air basin is a CARB-designated management unit with similar meteorological and geographic conditions. There are 15 air basins in the state. The proposed residential building is located in the Town of Colma, in San Mateo County, within the San Francisco Bay Area Air Basin (SFBAAB). The SFBAAB covers all of Alameda, Contra Costa, Marin Napa, Santa Clara, San Mateo, and San Francisco counties, and portions of Solano and Sonoma counties. The Town of Colma is located in the central portion of the SFBAAB, within the San Francisco Peninsula.

The U.S. EPA has established National Ambient Air Quality Standards (NAAQS) for six common air pollutants: ozone (O_3), particulate matter (PM), which consists of “inhalable coarse” PM (particles between 2.5 and 10 microns in diameter, or PM_{10}) and “fine” PM (particles 2.5 microns in diameter and smaller, or $PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. The U.S. EPA refers to these six common pollutants as “criteria” pollutants because the agency regulates the pollutants on the basis of human health and/or environmentally-based criteria.

CARB has established California Ambient Air Quality Standards (CAAQS) for the six common air pollutants regulated by the federal Clean Air Act (the CAAQS are more stringent than the NAAQS), plus the following pollutants: hydrogen sulfide (H_2S), sulfates (SO_X), vinyl chloride, and visibility reducing particles.

A description of the potential common air pollutants that may be associated with existing sources of emissions within the vicinity of the proposed residential project, as well as the construction and operation of the facility itself, is provided below. Air pollutants not commonly associated with new building construction and operation, or with existing sources of emissions in the vicinity of the project, such as lead and visibility reducing particles, are not described below.

- **Ground-level Ozone**, or smog, is not emitted directly into the atmosphere. It is created from chemical reactions between oxides of nitrogen (NO_X) and volatile organic compounds (VOCs), also called reactive organic gases (ROG), in the presence of sunlight (U.S.EPA 2014a). Thus, ozone formation is typically highest on hot sunny days in urban areas with NO_X and ROG pollution. Ozone irritates the nose, throat, and air pathways and can cause or aggravate shortness of breath, coughing, asthma attacks, and lung diseases such as emphysema and bronchitis.
- **Particulate Matter**, also known as particle pollution, is a mixture of extremely small particles and liquid droplets made up of a variety of components such as organic chemicals, metals, and soil and dust particles (U.S. EPA 2013, 2014b).
  - PM_{10}, also known as inhalable coarse, respirable, or suspended PM10, consists of particles less than or equal to 10 micrometers in diameter (approximately 1/7th the thickness of a human hair). These particles can be inhaled deep into the lungs and possibly enter the blood stream, causing health effects that include, but are not limited to, increased respiratory symptoms (e.g., irritation, coughing), decreased lung capacity, aggravated asthma, irregular heartbeats, heart attacks, and premature death in people with heart or lung disease.
  - $PM_{2.5}$, also known as fine PM, consists of particles less than or equal to 2.5 micrometers in diameter (approximately 1/30th the thickness of a human hair). These particles pose an increased risk because they can penetrate the deepest parts of the lung, leading to and exacerbating cardiopulmonary health effects.
- **Carbon Monoxide** is an odorless, colorless gas that is formed by the incomplete combustion of fuels. Motor vehicles are the single largest source of carbon monoxide in the Bay Area. At high concentrations, CO reduces the oxygen-carrying capacity of the blood and can aggravate cardiovascular disease and cause headaches, dizziness, unconsciousness, and even death.
- **Nitrogen Dioxide (NO_2)** is a by-product of combustion. NO_2 is not directly emitted, but is formed through a reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as NO_X and are major contributors to ozone formation. NO_2 also contributes to the formation of particulate matter. NO_2 can cause breathing difficulties at high concentrations.
- **Sulfur Dioxide (SO_2)** is one of a group of highly reactive gases known as oxides of sulfur (SO_X). Fossil fuel combustion in power plants and industrial facilities are the largest emitters of SO_2. Short-term effects of SO_2 exposure can include adverse respiratory effects such as asthma symptoms. SO_2 and other SO_X can react to form PM (U.S. EPA 2015).

In addition to criteria air pollutants, the U.S. EPA and CARB have classified certain pollutants as hazardous air pollutants (HAPs) or toxic air contaminants (TACs), respectively. These pollutants can cause severe health effects at very low concentrations, and many are suspected or confirmed carcinogens. The U.S. EPA has identified 187 HAPs, including such substances as benzene and formaldehyde; CARB also considers particulate emissions from diesel-fueled engines (diesel PM) to be a TAC.

- **Diesel PM.** The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Many of the toxic compounds adhere to the particles, and because diesel particles are very small (less than 2.5 microns in diameter), they penetrate deeply into the lungs. The CARB has identified diesel PM as a human carcinogen. Mobile sources, including trucks, buses, automobiles, trains, ships and farm equipment, are the largest source of diesel emissions in the Bay Area.

Certain common air pollutants, such as ozone precursors, SO_2, and particulate matter, are emitted by a large number of sources and have effects on a regional basis (i.e., through the SFBAAB); other pollutants, such as HAPs, TACS, and fugitive dust, are generally not as prevalent and/or emitted by fewer and more specific sources. As such, these pollutants have much greater effects on local air quality conditions.

Topography and Meteorology

The topography and meteorology of the SFBAAB are characterized by the coast mountain ranges and the seasonal migration of the Pacific high-pressure cell. Regionally, basin airflow is affected by the coast mountain ranges, which create complex terrains consisting of mountains, valleys, and bays. The Golden Gate to the west and the Carquinez Strait to the east are gaps in the mountain ranges that allow air to flow into and out of the SFBAAB. In the summer, winds from the northwest are channeled through the Golden Gate and other narrow openings, resulting in localized areas of high wind speeds. Air flowing from the coast inland is called the sea breeze and begins developing in the late morning or early afternoon; air flowing from the inland regions back to the coast, or drainage, occurs at night.

Basin climate is influenced by the Pacific high-pressure cell, a semi-permanent area of high pressure located over the Pacific Ocean. In the summer, the cell is centered over the northeastern Pacific Ocean, pushing storms to the north and resulting in generally stable conditions within the Bay Area. In the winter the cell weakens and migrates south, bringing cooler temperatures and stormy conditions. Wintertime inversions are weaker and more localized and are the result of rapid heat radiation from the earth’s surface.

The SFBAAB is most susceptible to high levels of air pollution during the summer when cool marine air flowing through the Golden Gate can become trapped under a layer of warmer air (known as an inversion) and prevented from escaping the valleys and bays created by the Coast Ranges.

The Town of Colma’s climate is dominated by the Pacific Ocean 98% of the time. Dominant westerly winds prevail throughout the summer with frequent fog. Winter months are usually very wet and cold. Ninety percent of the rain occurs between the months of November and April (Town of Colma, 2000).

The average rainfall varies between 20-25 inches per year. Temperatures range from lows in the 30’s (degrees Fahrenheit) to highs approaching the 80’s. Colma has a micro-climate of its own: it is lower in elevation from surrounding urban areas, is influenced by Colma Creek drainage, and is in the shadow of San Bruno Mountain (Town of Colma, 2000).

Regional Air Quality Conditions and Attainment Status

The federal and state governments have established emissions standards and limits for certain air pollutants which may reasonably be anticipated to endanger public health or welfare. These standards typically take one of two forms: standards or requirements that are applicable to specific types of facilities or equipment (e.g., petroleum refining, metal smelting), or concentration-based standards that are applicable to overall ambient air quality. Air quality conditions are best described and understood in the context of these standards; areas that meet, or attain, concentration-based ambient air quality standards are considered to have levels of pollutants in the ambient air that, based on the latest scientific knowledge, do not endanger public health or welfare.

The US EPA, CARB, and regional air agencies such as the BAAQMD assess the air quality of an area by measuring and monitoring the amount of pollutants in the ambient air and comparing pollutant levels against NAAQS and CAAQS. Based on these comparisons, regions are classified into one of the following categories:

- **Attainment.** A region is “in attainment” if monitoring shows ambient concentrations of a specific pollutant are less than or equal to NAAQS or CAAQS. In addition, an area that has been re-designated from nonattainment to attainment is classified as a "maintenance area" for 10 years to ensure that the air quality improvements are sustained.

- **Nonattainment.** If the NAAQS or CAAQS are exceeded for a pollutant, the region is designated as nonattainment for that pollutant. It is important to note that some NAAQS and CAAQS require multiple exceedances of the standard in order for a region to be classified as nonattainment. Federal and state laws require nonattainment areas to develop strategies, plans, and control measures to reduce pollutant concentrations to levels that meet, or attain, standards
- **Unclassified.** An area is unclassified if the ambient air monitoring data are incomplete and do not support a designation of attainment or nonattainment.

Table 1.3-1 lists the NAAQS and CAAQS for common air pollutants and summarizes the SFBAAB attainment status.

Table 1.3-1 Ambient Air Quality Standards and SFBAAB Attainment Status

Pollutant	Averaging Time	California AAQS (A)		National AAQS (B)	
		Standard (C)	Attainment Status (D)	Standard (C)	Attainment Status (D)
Ozone	1-Hour	180 µg/m³	**N**	--	**--**
	8-Hour	137 µg/m³	**N**	137 µg/m³	**N**
PM10	24-Hour	50 µg/m³	**N**	150 µg/m³	U
	Annual Average	20 µg/m³	**N**	--	--
PM2.5	24-Hour	--	--	35 µg/m³	**N (E)**
	Annual Average	12 µg/m³	**N**	12 µg/m³	U/A
Carbon Monoxide	1-Hour	23,000 µg/m³	A	40,000 µg/m³	A
	8-Hour	10,000 µg/m³	A	10,000 µg/m³	A
Nitrogen Dioxide	1-Hour	339 µg/m³	A	188 µg/m³	U
	Annual Average	57 µg/m³	--	100 µg/m³	A
Sulfur Dioxide	1-Hour	655 µg/m³	A	196 µg/m³	A
	24-Hour	105 µg/m³	A	365 µg/m³	A
	Annual Average	--	--	80 µg/m³	A
Sulfates	24-Hour	25 µg/m³	A	--	--
Hydrogen Sulfide	1-Hour	42 µg/m³	U	--	--
Vinyl Chloride	24-Hour	26 µg/m³	--	--	--

Source: BAAQMD 2016, modified by MIG.

Table Notes:

(A) Table does not list CAAQS for lead and visibility reducing particles. California standards for ozone, carbon monoxide, sulfur dioxide (1 and 24-hour), nitrogen dioxide, suspended PM10 and PM2.5 are values that are not to be exceeded. The standards for sulfates, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded.

(B) Standards shown are the primary NAAQS designed to protect public health.

(C) All standards shown in terms of micrograms per cubic meter (µg/m³) for comparison purposes.

(D) A= Attainment, N= Nonattainment, U=Unclassifiable.

(E) In January 2013, the U.S. EPA issued a final rule to determine the Bay Area attains the 24-hour PM2.5 NAAQS; however, the region will continue to be designated as “non-attainment” for the national 24-hour PM2.5 NAAQS until the BAAQMD submits a re-designation request and a maintenance plan to EPA for EPA review and approval.

Existing Emissions

Existing sources of air emissions can influence the air quality in the vicinity of the project. Understanding the nature of existing emission sources is important for characterizing current conditions. The Bay Area Air Quality Management District (BAAQMD), the agency responsible for maintaining air quality and regulating emissions of criteria and toxic air pollutants, permits emissions from stationary sources through a Permit to Operate, with each facility identified by a unique plant number.

<u>Existing Stationary Sources</u>

Existing stationary sources of emissions near the proposed project were identified using BAAQMD's Stationary Source Screening Analysis Tool (BAAQMD 2012). There are four stationary sources located within 1,000 feet of the proposed project site, including two cemeteries and two auto body shops. Cypress Lawn Cemetery Association (BAAQMD Plant No. 2932) is the largest stationary emissions source located at 1370 El Camino Real, approximately 825 feet northwest of the proposed project area. Other sources within 1,000 feet of the proposed project site include Royal Auto Body Shop (BAAQMD Plant No. 7817) located at 1681 Old Mission Road (approximately 60 feet west of the site), Image Auto Body Shop (BAAQMD Plant No. 11016) located at 1687 Mission Road (approximately 60 feet west of the site), and Cypress Lawn Memorial Park (BAAQMD Plant No. G9040) at 1370 El Camino Real (approximately 750 feet northwest of the site)[1.] The carcinogenic and non-carcinogenic health risks and hazards posed by these existing sources of emissions are presented in Table 1.3.5.

<u>Existing Mobile Sources</u>

Existing mobile sources of emissions near the proposed project were identified using BAAQMD's Highway Screening Analysis tool (BAAQMD 2015) and annual average daily traffic volume counts from Caltrans (Caltrans 2014). State Route 82, or El Camino Real, was the one high volume roadway, which is defined as having annual average daily traffic volume exceeding 10,000 vehicles per day, identified within 1,000 feet of the proposed project site. State Route 82 runs northwest to southeast through the Town of Colma, joining with Mission Road north of the proposed project site. The closest point between the proposed project site and State Route 82 is approximately 290 feet, near where Mission Road and State Route 82 join at the northern end of the proposed project site. There is a BART ventilation structure to the northeast of the property boundary. BART runs on electricity and does not produce emissions from the ventilation structure (BART 1995).

Sensitive Receptors

A sensitive receptor is generally defined as a location where human populations, especially children, seniors, and sick persons, are found where there is reasonable expectation of continuous human exposure to air pollutants. These typically include residences, hospitals and schools. The closest sensitive receptors are four residences behind the Malloy's Tavern across Mission Road approximately 100 feet west of the site, Treasure Island RV Park approximately 230 feet south of the proposed project site, and the Winston Manor single-family residential neighborhood approximately 500 feet west and southwest of the site. Additionally, the implementation of the 66-unit residential facility will introduce new sensitive receptors at this site. There are no schools, daycares, senior living facilities, or hospitals near the proposed project site.

1.3.2 Regulatory Setting

Federal, state, and local governments control air quality through the implementation of laws, ordinances, regulations, and standards.

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1 BAAQMD lists zero emissions for Plant No. 7817 and Plant No. 11016. As such, they will not be further quantified in Table 1.3-5.

Federal Clean Air Act

The Federal Clean Air Act (CAA), passed in 1970, and last amended in 1990, is the comprehensive federal law that regulars air emissions from stationary and mobile sources. The CAA forms the basis for the national air pollution control effort. Key components of the CAA include: national ambient air quality standards (NAAQS) for major air pollutants, hazardous air pollutants standards, state attainment plans, motor vehicle emission standards, stationary source emissions standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions.

California Clean Air Act

In addition to being subject to federal requirements, air quality in California is also governed by more stringent regulations under the California Clean Air Act. In California, both the federal and state Clean Air acts are administered by CARB. It sets all air quality standards including emission standards for vehicles, fuels, and consumer goods as well as monitors air quality and sets control measures for toxic air contaminants. CARB oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional level.

In-Use Off-Road Diesel Vehicle Regulation

On July 26, 2007, CARB adopted a regulation to reduce DPM and NO_x emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. Such vehicles are used in construction, mining, and industrial operations. This regulation applies to all self-propelled off-road diesel vehicles over 25 horsepower (hp) used in California and most two-engine vehicles (except on-road two-engine sweepers), which are subject to the *Regulation for In-Use Off-Road Diesel Fueled Fleets (Off-Road regulation).* Additionally, vehicles that are rented or leased (rental or leased fleets) are included in this regulation. The Off-Road regulation:

- Imposes limits on idling, requires a written idling policy, and requires a disclosure when selling vehicles;
- Requires all vehicles to be reported to CARB (using the Diesel Off-Road Online Report System DOORs) and labeled;
- Restricts the adding of older vehicles into fleets; and,
- Requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies, VDECS (i.e., exhaust retrofits).

Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD or the District) is responsible for maintaining air quality and regulating emissions of criteria and toxic air pollutants within the SFBAAB. The BAAQMD carries out this responsibility by preparing, adopting, and implementing plans, regulations, and rules that are designed to achieve attainment of state and national air quality standards. The BAAQMD currently has 12 regulations containing more than 100 rules that control and limit emissions from sources of air pollutants.

On September 15, 2010 the BAAQMD adopted the *Bay Area 2010 Clean Air Plan (CAP)*. This plan updates the District's *2005 Ozone Strategy* and addresses PM, TAC, and GHG emissions in a single, integrated document containing 55 control strategies that describe specific measures and actions that the District and its partners will implement to improve air quality, protect public health, and protect our climate. These measures focus on stationary and area sources, mobile sources, transportation control measures, land use, and energy and climate measures (BAAQMD 2011). On February 28, 2014 BAAQMD met to discuss an update to the *CAP* and initiate the development of a Climate Protection Strategy for the Bay Area establishing 2050 GHG Reduction Goals and The updated *CAP* would also include progress reports on current control measures, methods to further reduce ozone precursors, particulate matter, TACs and GHGs, and innovative strategies to track progress in reducing GHGs (BAAQMD 2014a, BAAQMD 2014b).

Town of Colma General Plan Policies

Section 5.04.213 of the Town's General Plan discusses Air Quality stating the major sources of air pollution in Colma are vehicular traffic and natural gas and fuel oil combustion for space, water heating and cooking. Section 5.04.300 sets forth Open Space and Conservation Policies protecting air resources including:

- **Policy 5.04.315** – The Town should support the use of public/mass transit by encouraging pedestrian-friendly street design and mixed-use development near transit hubs.

1.3.3 BAAQMD CEQA Thresholds of Significance

In May 2011, the BAAQMD published new *CEQA Air Quality Guidelines* that contain the BAAQMD's recommendations to Lead Agencies for evaluating and assessing the significance of a project's potential air quality impacts[2] (BAAQMD 2011). The BAAQMD's recommended construction- and operational-related thresholds of significance for criteria pollutants and toxic air contaminants are summarized in Table1.3-2 below.

Table 1.3-2 BAAQMD CEQA Thresholds of Significance

Pollutant	**BAAQMD Project-Level Threshold of Significance (A)**		
	Construction Emissions	**Operational Emissions**	
	Daily Emissions (lb/day)	**Daily Emissions (lb/day)**	**Annual Emissions (tons per year)**
ROG	54	54	10
NO_X	54	54	10
Exhaust PM_{10}	82	82	15
Exhaust $PM_{2.5}$	54	54	10
Fugitive Dust $PM_{10}/PM_{2.5}$	Best Management Practices	*None*	

2 The BAAQMD Board of Director's adopted new CEQA guidelines in June 2010, delaying implementation of some of the new significance thresholds until 2011. In March 2012, the Alameda County Superior Court ruled the BAAQMD had failed to comply with CEQA when it adopted its new thresholds of significance and ordered the Air District to set aside the thresholds and cease dissemination of them until the Air District had complied with CEQA. Thus, the BAAQMD is no longer recommending that the thresholds adopted in 2010 be used as a generally applicable measure of a project's significant air quality impacts. The case was appealed and was under limited review by the California Supreme Court. The Alameda County Superior Court did not address the merits of the thresholds themselves, which are supported by substantial evidence contained in the BAAQMD's Proposed Thresholds of Significance Report. After pending for more than two years, the California Supreme Court ruled in *California Building Industry Association (CBIA) v. Bay Area Air Quality Management District (BAAQMD)* (Case No. S213478) on December 17, 2015. The unanimous ruling focused on a project's impact on the environment, not the environment's impact on the project. The decision held that CEQA does not generally require an analysis of the impacts of existing environmental condition on a project's future resident and/or receptors. The Court determined that an analysis of the impacts of the environment should be required when a statue provides an express legislative directive to consider such impacts, and/or when a proposed project risks exacerbating environmental hazards of conditions that already exist.

Table 1.3-2 BAAQMD CEQA Thresholds of Significance

Pollutant	BAAQMD Project-Level Threshold of Significance [(A)]		
	Construction Emissions	Operational Emissions	
	Daily Emissions (lb/day)	Daily Emissions (lb/day)	Annual Emissions (tons per year)
Local CO	*None*	9.0 ppm (8-hr. avg.), 20.0 ppm (1-hr. avg.)	
Risks and Hazards – New Source/Receptor (Individual)	Compliance with Qualified Community Risk Reduction Plan; or Increased cancer risk of >10.0 in a million; and Increased non-cancer risk of >1.0 Hazard Index (chronic or acute); and Ambient PM2.5 increase: >0.3µg/m^3 annual average		
Risks and Hazards – New Source/Receptor (Cumulative)	Compliance with Qualified Community Risk Reduction Plan; or Increased cancer risk of >100 in a million (from all local sources); and Increased non-cancer risk of >10.0 Hazard Index (from all local sources) (chronic); and Ambient PM2.5 increase: >0.8µg/m^3 annual average (from all local sources)		
Accidental Release of Acutely Hazardous Pollutants	*None*	Storage or use of acutely hazardous materials locating near receptors or receptors locating near stored or used acutely hazardous materials considered significant	
Odors	*None*	Complaint History – 5 confirmed complaints per year averaged over three years	
Source: BAAQMD 2011			

The BAAQMD's CEQA Guidelines also include screening criteria designed to provide lead agencies with a conservation indication of whether a project could result in potentially significant air quality impacts. If a project meets all of the screening criteria, then it would not result in a potentially significant air quality impact and a detailed air quality assessment is not required for the project. The BAAQMD's construction and operations screening criteria for an "apartment, low-rise" or "condo/townhouse, general" land use, as identified in Table 3.1 of the BAAQMD's 2011 CEQA Guidelines, is 240 dwelling units and 451 dwelling units, respectively. Additionally, project construction must meet seven other criteria related to demolition, site preparation, and other construction activities (BAAQMD 2011).

If a project does not meet the screening criteria, the lead agency should proceed with a more detailed evaluation of the project's potential air quality impacts using the Air District's recommended thresholds of significance. Projects that exceed the Air District's recommended CEQA thresholds are considered to have a potentially significant air quality effect requiring project changes or mitigation measures to reduce these effects to less than significant.

Would the proposed project:

a) Conflict with or obstruct implementation of the applicable air quality plan?

No Impact. The 2010 Clean Air Plan contains 55 control strategies that describe specific measures and actions that the Air District and its partners will implement to improve air quality, protect public health, and protect our climate. These measures focus on stationary and area sources, mobile sources, transportation control measures, land use, and energy and climate measures. The 2010 Clean Air Plan anticipates increases in emissions from stationary and mobile sources of emissions, including construction equipment, associated with growth and development in the Bay Area. The Clean Air Plan's control strategies are intended to reduce emissions in the SFBAAB over time such that attainment of air quality standards would be achieved. The 55 control strategies described in the CAP are grouped into five categories: Stationary Source Measures, Transportation Control Measures, Mobile Source Measures, Land Use and Local Impact Measures, and Energy and Climate Measures. Most of these control strategies either do not directly apply to the project or are implemented at the local and regional level by municipal government and the BAAQMD; however, some are relevant to the proposed project. Table 1.3-3 lists the Clean Air Plan strategies that the Applicant has incorporated into the project.

Table 1.3-3 Project Consistency with BAAQMD 2010 Clean Air Plan

2010 Clean Air Plan Control Strategy	Project Consistency
Stationary Source Measures	
11 – Residential Fan Type Furnace 12 – Large Residential and Commercial Space Heating	As feasible, the Applicant will install central furnaces and water heaters equipped with low NOx burners capable of meeting a 14 nanogram/joule NOx emission standard.
Transportation Control Measures	
C-1: Voluntary Employer-Based Trip Reduction C-3: Ridesharing Services and Incentives C-5: Smart Driving D-1: Bicycle Access and Facilities Improvements	The Applicant will provide information to tenants on programs available to help reduce single occupancy vehicle trips (e.g. 511 Rideshare) and promote use of alternative modes of transportation (e.g., bicycle, carpool, transit). The Applicant will also install bicycle racks or other designated bicycle storage areas into the project design.
Energy and Climate Measures	
1 – Energy Efficiency 4 – Shade Tree Planting	The project is consistent with the Town of Colma Climate Action Plan (see Chapter 3), which includes energy efficiency measures. The Applicant's landscaping plan includes trees, which will help offset urban heat island effects.

As shown in Table 1.3-3, the proposed project would be consistent with the applicable control strategies listed in the Clean Air Plan and would not conflict with or obstruct implementation of the BAAQMD's 2010 Clean Air Plan.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Less Than Significant Impact. The proposed project would generate short-term construction and long-term operational emissions from resident vehicles; however, as described below, project construction and operation would be consistent with all BAAQMD CEQA Guidelines screening criteria and would therefore not violate air quality standards, contribute to an air quality violation, or result in a significant air quality impact from project construction and operation emissions.

<u>Short-Term Construction Emissions</u>

Project construction would generate short-term emissions from construction activities, which would disturb approximately 2.2 acres. As described in Section 2.4 (Project Description), construction activities would include site preparation, construction of new apartment complex, rehabilitation of the historic main pump house building, circulation and parking, and utility connections.

Table 1.3-4 compares the proposed project against the BAAQMD's construction screening criteria for the minimum general residential land use criteria. As discussed in more detail in Section 1.3., the BAAQMD CEQA Air Quality Guidelines state that projects that are below construction screening criteria and implement BMPs for fugitive dust control would result in a less than significant air quality impact and do not require a construction air quality assessment.

Table 1.3-4. Project Consistency with BAAQMD Screening Criteria[(A)]

Criterion	Requirement	Project Consistency
1) Land Use Type and Size	Project is below the construction screening size thresholds of 240 dwelling units (du).[(B)]	The proposed project will have 66 dwelling units (du), which is less than the construction criteria pollutant screening size (240 du) for this land use type and size (apartment, low-rise / condo/townhouse, general).
2) Basic Construction Measures	Project design and implementation includes all BAAQMD *Basic Construction Mitigation Measures*	The applicant will include all BAAQMD *Basic Construction Mitigation Measures* and three BAAQMD *Additional Construction Mitigation Measures* into all project-related bid, contract, engineering, and site plan documents (e.g., construction drawings).
3) Demolition	Demolition activities are consistent with BAAQMD Regulation 11, Rule 2: Asbestos Demolition, Renovation, and Manufacturing	The applicant is required to comply with this regulation. The applicant will include compliance with this regulation in all project-related bid, contract, engineering, and site plan documents (e.g., construction drawings).
4) Construction Phases	Construction does not include simultaneous occurrence of more than two construction phases (e.g., grading, paving, and building construction would occur simultaneously)	The project does not include simultaneous occurrence of more than two construction phases. The applicant will include this restriction on all project-related bid, contract, engineering, and site plan documents (e.g., construction drawings).

Table 1.3-4. Project Consistency with BAAQMD Screening Criteria(A)		
Criterion	**Requirement**	**Project Consistency**
5) Multiple Land Uses	Construction does not include simultaneous construction of more than one land use type	The project pertains to only one type of land use.
6) Site Preparation	Construction does not require extensive site preparation	Maximum daily grading would not exceed 0.6 acres.(C)
7) Material Transport	Construction does not require extensive material transport and considerable haul truck activity (greater than 10,000 cubic yards).	The project would result in less than 10,000 cubic yards of material transport (approximately 2,500 cubic yards of net cut is proposed).

Source: BAAQMD 2011, URBEMIS2007 Version 9.2.4; modified by MIG|TRA 2016

(A) BAAQMD Screening Criteria from Table 3-1 of BAAQMD CEQA Guidelines (BAAQMD 2011)

(B) Operational and construction screening level size from Table 3-1 of BAAQMD CEQA Guidelines (BAAQMD 2011)

(C) Default and maximum site preparation estimate for 2.23 acres of residential apartment, low-rise land use derived using UBERMIS2007 Version 9.2.4

The BAAQMD CEQA Guidelines recommend a series of “basic" and “additional” measures to manage short-term construction emissions. For all projects, the BAAQMD recommends implementation of eight Basic Construction Mitigation Measures (BAAQMD 2011) to reduce construction emissions; these basic measures are also used to meet the BAAQMD’s best management practices (BMPs) threshold of significance for construction fugitive dust emissions (i.e., the implementation of all basic construction measures renders fugitive dust impacts a less than significant impact) (BAAQMD 2011). BAAQMD Basic Control Measures would be incorporated to further reduce the less than significant construction-related air quality impacts. These measures are identified in Project Description, Section 2.6.

As shown in Table 1.3-4, the proposed project is below the BAAQMD’s construction screening size for residential land use types, is consistent with all other BAAQMD screening criteria, and includes all eight, BAAQMD-recommended Basic Construction Control Measures to further reduce the project’s potential construction emissions. The proposed project, therefore, would result in a less than significant air quality impact from construction emissions.

Long-Term Operational Emissions

The proposed project consists of a 66-unit residential building, including a fitness center and laundry facilities totaling approximately 56,000 square feet. The operational criteria pollutant screening size for this land use type (apartment, low-rise or condo/townhouse, general) is 451 dwelling units (BAAQMD 2011). The proposed project would be below BAAQMD operational screening size criteria and would therefore result in less than significant operational emissions.

c) 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Less Than Significant Impact. As discussed in a) and b) above, the proposed project would not result in construction or operational emissions that exceed BAAQMD thresholds of significance. In developing its CEQA significance thresholds, the BAAQMD considered the emission levels at which a project’s individual emissions would be cumulatively considerable. The BAAQMD considers projects that result in emissions that exceed its CEQA significance thresholds to result in individual impacts that are cumulatively considerable and significant. Since the proposed project would not individually exceed any BAAQMD CEQA significance thresholds the proposed project would result in less than significant cumulative air quality impacts.

d) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. The proposed project would result in 66 new residential units in Colma. The project has the potential to result in community risks and hazards both as a source and receptor of TACs, however, these risks and hazards would be less than significant as described below.

Source Risks and Hazards

Project-related construction activities would emit PM2.5 from equipment exhaust. Nearly all the project's PM2.5 emissions from equipment exhaust would be diesel particulate matter (diesel PM), a TAC. Site grading, building construction, trenching, and paving would occur intermittently during the daytime weekday period for approximately 14 to 16 months. Although project construction would emit criteria and hazardous air pollutants, these emissions would be well below the BAAQMD's construction thresholds of significance, as shown in Table 1.3-2. The construction best management practices, described in Section 2.6.2 (Project Description), would further reduce construction-related pollutant concentrations by limiting construction activities, requiring equipment to be inspected, tuned, and maintained during construction, and restricting idling to no more than five minutes. In addition, the short construction period for the project and the distance between the construction site and existing sensitive residential receptors would render pollutant concentrations at sensitive receptor locations to less than significant levels.

As described in Chapter 5 of the EIR (Traffic and Circulation), the proposed project would result in a net increase of approximately 227 total vehicle trips. These trip generation rates would not increase traffic volumes on local roadways above BAAQMD carbon monoxide screening levels of 44,000 vehicles per hour or 24,000 vehicles per hour where features such as tunnels, garages, underpasses, canyons, and below grade roadways restrict air flow and mixing. The project, therefore, would not result in substantial CO concentrations from vehicle trips or idling.

Receptor Risks and Hazards

As described in Section 1.1, existing sources of emissions near the project site include stationary sources and vehicle traffic on El Camino Real. The risks and hazards associated with these existing emissions sources are shown in Table 1.3-5.

Table 1.3-5 Existing Stationary / Mobile Source Health Risks and Hazards

Stationary / Mobile Source	Cancer Risk (per million)	Chronic Hazard Index	PM2.5 ($\mu g/m^3$)
Cypress Lawn Cemetery Association[(A)]	5.98	0.32	< 0.00
Cypress Lawn Memorial Park[(A)]	0.09	< 0.00	< 0.00
State Route 82[(B,C)]	3.66	n/a	0.08
BAAQMD Individual Source Threshold[(D)]	**10**	**1.0**	**0.3**
Potential Significant Impact?	**No**	**No**	**No**
Total Combined Source Risks	9.73	0.32	0.09
BAAQMD Cumulative Source Threshold[(D)]	**100**	**10**	**0.8**
Potential Significant Impact?	**No**	**No**	**No**

Source: BAAQMD, 2011; BAAQMD, 2012; BAAQMD, 2015b; Caltrans, 2014; MIG|TRA, 2016

(A) BAAQMD Tools and Methodologies: Stationary Source Screening Analysis Tool, 2012.
(B) BAAQMD Tools and Methodologies: Risks & Hazards: Roadway Screening Analysis Calculator, 2015. Based on distance of 290 feet at closest location between proposed project site and State Route 82
(C) Caltrans GIS Data: Traffic Volumes (AADT), 2014. Based on AADT of 15,400 vehicles.
(D) BAAQMD 2011

As shown in Table 1.3-5, BAAQMD screening data indicates that existing stationary and mobile sources of emissions do not have the potential to result in a cancer risk level, chronic hazard index value, or annual average PM2.5 concentrations that exceed BAAQMD significance thresholds at the individual source or combined, cumulative level. Therefore, the impact is considered less than significant.

e) Create objectionable odors affecting a substantial number of people?

Less Than Significant Impact. The proposed project construction activities could generate typical construction odors (fuels, solvents, etc.), such odors would quickly dissipate and would not affect a substantial number of people. BART maintenance, which involves the regular cleaning and upkeep of rail lines, may generate solvent and other odors from the existing ventilation shaft, but this maintenance would be intermittent and any odors would quickly dissipate. Therefore, the proposed project would not create objectionable odors affecting a substantial number of people.

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1.4 BIOLOGICAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
a) Have a significant adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a significant adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a significant 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 significantly 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?	☐	☐	☐	☒

1.4.1 Environmental Setting

The site is irregularly shaped and consists of vacant land, two unpaved parking areas, a concrete water storage tank and pump, and three one-story concrete buildings. The site is bounded by a maintenance yard on the northwest, a driveway and BART easement on the northeast, Mission Road on the southwest, and Holy Cross Cemetery on the southeast. The site is in an urban area surrounded by roads, cemeteries and industrial, commercial and residential development. The closest open spaces to the site are San Bruno Mountain, located approximately 0.6 mile east of the site, and the San Mateo County coastline, located approximately 2.5 miles to the west.

Vegetation

According to a Tree Inventory prepared for the project (Bartlet Tree Experts, 2016), there are forty-five trees over 12 inches in diameter at breast height on the project site. These include seventeen Monterey cypress (*Hesperocyparis macrocarpa*), twelve eucalyptus (*Eucalyptus* sp.), ten deodor cedar (*Cedrus deodara*), two acacia (*Acacia* sp.), one incense cedar (*Calocedrus decurrens*), one sycamore (*Platanus* sp.), one Monterey pine (*Pinus radiata*), and one New

Zealand Christmas tree (*Metrosideros excelsa*). There are also a number of smaller diameter trees on the site, many of the same species listed above.

The understory is dominated by non-native shrubs, vines and herbs including Himalayan blackberry (*Rubus discolor*), English ivy (*Hedera helix*), cotoneaster (*Cotoneaster* sp.), fennel (*Foeniculum vulgare*), wild radish (*Raphanus sativus*), pampas grass (*Cortaderia* sp.), ripgut brome (*Bromus diandrus*), wild oats (*Avena* sp.), veldt grass (*Ehrharta erecta*), cutleaf geranium (*Geranium dissectum*), sourgrass (*Oxalis pes-caprae*), black nightshade (*Solanum nigrum*) and mallow (*Malva* sp.), among others. There were a few native plants at the site, such as miner's lettuce (*Claytonia parviflora*) and wild cucumber (*Marah fabaceus*).

Wildlife

Wildlife in the project area consist of species adapted to urban areas.

Birds observed on the site included an unidentified gull species (*Larus* sp.), American crow (*Corvus brachyrhynchos*), Stellar's jay (*Cyanocitta stelleri*), Anna's hummingbird (*Calypte anna*), California towhee (*Pipilo crissalis*), American robin (*Turdus migratorius*), house finch (*Carpodacus mexicanus*). Birds of prey that likely occur in the area include sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*Accipiter cooperii*), red-shouldered hawk (*Buteo lineatus*) and red-tailed hawk (*Buteo jamaicensis*).

Mammal species in the project area may include the non-native eastern fox squirrel (*Sciurus niger*), non-native mice and rats, raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*) and striped skunk (*Mephitis mephitis*). Bat species that may occur in the area include little brown myotis (*Myotis lucifugus*), California myotis (*Myotis californicus*), Yuma myotis (*Myotis yumensis*) and other species that are common in the region.

Reptiles and amphibians that could occur include Pacific chorus frog (*Pseudacris regilla*), California slender salamander (*Batrachoseps attenuates*), western fence lizard (*Sceloporus occidentalis*) and northern alligator lizard (*Elgaria coerulea*).

Special-Status Species

Special-status species are those plants and animals that are legally protected or otherwise recognized as vulnerable to habitat loss or population decline by federal, state, or local resource conservation agencies and organizations. In this analysis, special-status species include:

- Species that are federally and/or state listed or proposed for listing as threatened or endangered;
- Species considered as candidates for federal or state listing as threatened or endangered;
- California Department of Fish and Wildlife (CDFW) Species of Special Concern;
- Fully protected species per California Fish and Game Code; and
- Plants considered by the California Native Plant Society (CNPS) and the CDFW to be rare, threatened, or endangered [California rare plant ranks (CRPR) 1 or 2].

The potential for special-status species to occur within the project area was analyzed by conducting a query of the California Natural Diversity Database (CNDDB) and the California Native Plant Society Rare Plant Inventory to see which species occur within the South San Francisco USGS topographical quadrangle and six surrounding quadrangles (Point Bonita, San Francisco North, Hunters Point, Oakland West, San Mateo and Montara Mountain quads). A table of those special-status plant and wildlife species that occur in the project region, along with their protection status, geographic distribution, habitat and potential to occur on the project site, is included in Appendix C of the EIR. There are no extant CNDDB records of any special-status species occurring on or adjacent to the project site and there is no federally designated critical habitat on or adjacent to the project site. Due to the urban, developed nature of the project site and surrounding area, no special-status species are expected to occur on the project site.

1.4.2 Regulatory Setting

Federal, state and local laws and regulations governing biological resources are discussed below. Violation of these laws and regulations would constitute a significant biological impact. Biological resources in the project area are protected under federal, state and local laws and policies. The laws and policies that pertain to the biological resources potentially present on the project site or affected by the project are discussed below.

Federal Endangered Species Act (FESA)

FESA establishes a broad public and federal interest in identifying, protecting, and providing for the recovery of threatened or endangered species. The Secretary of the Interior and the Secretary of Commerce are designated in the FESA as responsible for identifying endangered and threatened species and their critical habitat, carrying out programs for the conservation of these species, and rendering opinions regarding the impact of proposed federal actions on listed species. The United States (U.S.) Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) are charged with implementing and enforcing the FESA. The USFWS has authority over terrestrial and continental aquatic species, and NMFS has authority over species that spend all or part of their life cycle at sea, such as salmonids.

Section 9 of FESA prohibits the unlawful "take" of any listed fish or wildlife species. Take, as defined by FESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such action." The USFWS's regulations define harm to mean "an act which actually kills or injures wildlife." Such an act "may include "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering" (50 CFR § 17.3). Take can be permitted under FESA pursuant to sections 7 and 10. Section 7 provides a process for take permits for federal projects or projects subject to a federal permit, and Section 10 provides a process for incidental take permits for projects without a federal nexus. FESA does not extend the take prohibition to federally listed plants on private land, other than prohibiting the removal, damage, or destruction of such species in violation of state law.

The Migratory Bird Treaty Act of 1918 (MBTA)

Under the MBTA, it is unlawful to "pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not." In short, under the MBTA it is illegal to disturb a nest that is in active use, since this could result in killing a bird or destroying an egg. The USFWS oversees implementation of the MBTA.

California Endangered Species Act (CESA)

Provisions of CESA protect state-listed threatened and endangered species. The CDFW is charged with establishing a list of endangered and threatened species. CDFW regulates activities that may result in "take" of individuals (i.e., "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill"). Habitat degradation or modification is not expressly included in the definition of "take" under the California Fish and Game Code, but CDFW has interpreted "take" to include the killing of a member of a species which is the proximate result of habitat modification.

Fish and Game Code Section 3503

Pursuant to Fish and Game Code section 3503, it is unlawful to "take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto." Section 3503.5 provides similar protection specifically to raptors and their nests. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "taking" by CDFW.

Fish and Game Code Section 4150

Pursuant to Fish and Game Code section 4150, "[a]ll mammals occurring naturally in California which are not game mammals, fully protected mammals, or fur-bearing mammals, are nongame mammals. Nongame mammals or parts thereof may not be taken or possessed except as provided in this code or in accordance with regulations adopted by the commission."

California Fully Protected Species and Species of Special Concern

The classification of "fully protected" was the CDFW's initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibians and reptiles, birds, and mammals. Most of the species on these lists have subsequently been listed under CESA and/or FESA. The Fish and Game Code sections (fish at §5515, amphibians and reptiles at §5050, birds at §3503 and §3511, and mammals at §4150 and §4700) dealing with "fully protected" species state that these species "…may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected species," although take may be authorized for necessary scientific research. This language makes the "fully protected" designation the strongest and most restrictive regarding the "take" of these species. In 2003, the code sections dealing with "fully protected" species were amended to allow the CDFW to authorize take resulting from recovery activities for state-listed species.

California Species of Special Concern are broadly defined as animals not listed under the FESA or CESA, but which are nonetheless of concern to the CDFW because they are declining at a rate that could result in listing or because they historically occurred in low numbers and known threats to their persistence currently exist. This designation is intended to result in special consideration for these animals by the CDFW, land managers, consulting biologist, and others, and is intended to focus attention on the species to help avert the need for costly listing under FESA and CESA and cumbersome recovery efforts that might ultimately be required. This designation also is intended to stimulate collection of additional information on the biology, distribution, and status of poorly known at-risk species, and focus research and management attention on them. Although these species generally have no special legal status, they are given special consideration under the CEQA during project review.

Town of Colma General Plan

Cities and counties in the state of California must adopt General Plans which regulate physical development. The Open Space and Conservation Element of the Colma General Plan includes the following biological resources protection policies relevant to the proposed project:

Policy 5.04.331: Significant tree masses and other vegetative cover, as indicated on the Open Space Map (Exhibit OS-1), should be recognized as natural resources to be managed and preserved. Tree removal, if necessary, should follow the guidelines of the Tree Ordinance. Any vegetation removed as part of a development process should be subject to a landscaping replacement. As a general rule, a one-for-one replacement should be required.

Policy 5.04.332: The Town should encourage use of the representative plant list and landscape criteria set forth in Tables OS-2 and OS-3.

Policy 5.04.333: Street trees should be planted along Colma's street system. Trees should be selected from a plant list approved by the City Council in order to create a unifying theme. Trees should be planted as a requirement of private development, with spacing 20-30 feet apart.

Policy 5.04.334: The Town should encourage property owners to eliminate invasive plants wherever they occur.

Policy 5.04.382: Tree removal requests should be subject to an investigation of the presence of active raptor nests.

Town of Colma Tree Cutting and Removal Ordinance

Subchapter 5.06: Tree Cutting and Removal of the Town of Colma Municipal Code prohibits any person from removing or altering[3] any tree[4] on private property in the Town without a permit. A tree removal application is required to remove or alter such trees, and permit approval may include conditions such as protection of retained trees during construction and tree replacement.

1.4.3 Discussion

Would the proposed project:

a) **Have a significant 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?**

Less than Significant with Mitigation. No special-status species have the potential to occur within or in the vicinity of the project site (see Section 1.4.1 Existing Setting); therefore, no impacts to special-status species would occur.

However, nesting birds protected under the MBTA and California Fish and Game Code are potentially present in the trees and shrubs on or near the project site. The proposed project would require removal of trees and other vegetation which could result in the removal of active bird nests and the permanent loss of nesting habitat. In addition, noise and construction activity could temporarily disturb nesting or foraging activities, potentially resulting in the abandonment of nest sites. This impact can be avoided if construction activities are planned for the non-nesting season (September 1 to January 31). Mitigation Measure BIO-1 would prevent construction-related impacts to nesting birds. The proposed project includes the planting of over 90 trees as part of the landscaping plan, which would prevent the permanent loss of nesting habitat for most species of birds. With implementation of Mitigation Measure BIO-1a and BIO-1b and the proposed tree planting, project-related impacts to nesting birds would be less than significant.

Tree cavities, leaves of large trees, tree bark and/or any unoccupied structures near the project site could provide nursery and nocturnal roosting habitat for bat species. The proposed project would include the removal of trees and structures that could be occupied by roosting bats. Roosting bats are protected by California Fish and Game Code Section 4150. With the implementation of Mitigation Measure BIO-2, project-related impacts to roosting bats would be less than significant.

Impact BIO-1: If construction occurs during the bird nesting season (February 1 to August 31), removal of trees or other vegetation or construction in close proximity to such vegetation could impact nesting birds. This impact can be avoided if construction activities are planned for the non-nesting season (September 1 to January 31).

Mitigation Measure BIO-1a: To avoid impacts to nesting birds and violation of state and federal laws pertaining to birds, all construction-related activities (including but not limited to mobilization and staging, clearing, grubbing, vegetation removal, fence installation, demolition, and grading) should occur outside the avian nesting season (that is, prior to February 1 or after August 31). If construction and construction noise occurs within the avian nesting season (from February 1 to August 31), all suitable habitats located within the project's area of disturbance

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3 "Alteration" means any action which would significantly damage a tree, whether (1) by cutting of its trunk or branches, or (2) by filling or surfacing or changing the drainage of the soil around the tree, or (3) by other damaging acts; this definition excludes routine pruning and shaping, removal of dead wood, or other maintenance of a tree to improve its health, facilitate its growth, or maintain its configuration to protect an existing view (Section 5.06.020).

4 "Tree" is defined as any live woody plant having a single perennial stem of 12 inches or more in diameter or multi-stemmed perennial plant having an aggregate diameter of 40 inches or more measured 4 feet above the natural grade; or any woody plant that has been placed by the City, or required by permit of the City, that has not yet obtained the stated size (Section 5.06.020).

including staging and storage areas plus a 250-foot (passerines) and 1,000-foot (raptor nests) buffer around these areas shall be thoroughly surveyed, as feasible, for the presence of active nests by a qualified biologist no more than five days before commencement of any site disturbance activities and equipment mobilization. If project activities are delayed by more than five days, an additional nesting bird survey shall be performed. Active nesting is present if a bird is sitting in a nest, a nest has eggs or chicks in it, or adults are observed carrying food to the nest. The results of the surveys shall be documented and submitted to the Town Planning/Building Department prior to its issuance of building/grading permits.

If it is determined that birds are actively nesting within the survey area, Mitigation Measure BIO-1b shall apply. Conversely, if the survey area is found to be absent of nesting birds, Mitigation Measure BIO-1b shall not be required.

Mitigation Measure BIO-1b: If pre-construction nesting bird surveys result in the location of active nests, no site disturbance and mobilization of heavy equipment (including but not limited to equipment staging, fence installation, clearing, grubbing, vegetation removal, fence installation, demolition, and grading), shall take place within 250 feet of non-raptor nests and 1,000 feet of raptor nests, or as determined by a qualified biologist in consultation with the California Department of Fish and Wildlife, until the chicks have fledged. Monitoring shall be required to insure compliance with the MBTA and relevant California Fish and Game Code requirements. Monitoring dates and findings shall be documented and provided to the Planning/Building Department.

Effectiveness: These measures would minimize impacts on nesting bird species.

Implementation: By the Town or its Contractor.

Timing: February 1 through August 31, no more than 5 days in advance of the start of project construction.

Monitoring: The biologist shall prepare a written record of survey results and implementation of any avoidance and minimization measures. The biologist shall monitor any active nests to determine when young have matured sufficiently to have fledged. Copies of all documentation shall be kept on file at Town Hall.

Impact BIO-2: Tree removal and/or demolition of the existing buildings could result in the removal or disturbance of bat roost habitat and may result in significant impacts to bat populations if an occupied or perennial (but unoccupied) maternity or colony roost is disturbed or removed.

Mitigation Measure BIO-2: A preconstruction survey for maternity (March 1 to August 1) or colony bat roosts (year-round) shall be conducted by a qualified biologist within 7 days prior to activities that remove vegetation or structures. If an occupied maternity or colony roost is detected, CDFW shall be contacted about how to proceed. Typically, a buffer exclusion zone would be established around each occupied roost until bat activities have ceased. The size of the buffer would take into account:

- Proximity and noise level of project activities;
- Distance and amount of vegetation or screening between the roost and construction activities;
- Species-specific needs, if known, such as sensitivity to disturbance.

Due to restrictions of the California Health Department, direct contact by workers with any bat is not allowed. The qualified bat biologist shall be contacted immediately if a bat roost is discovered during project construction.

Effectiveness: These measures would minimize impacts on bat species.

Implementation: By the Town or its Contractor.

Timing: Year-round, no more than 7 days in advance of the start of project construction.

Monitoring: The biologist shall prepare a written record of survey results and implementation of any avoidance and minimization measures. Copies of all documentation shall be kept on file at Town Hall.

b) Have a significant 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?

No Impact. Sensitive vegetation communities include riparian habitat or other sensitive natural communities identified in local or regional plans, policies, or regulations, or designated by the USFWS and CDFW. There are no sensitive habitats identified on the project site in the Town of Colma General Plan or by the USFWS or CDFW, or identified during the field survey. Field survey of the site confirmed there are no sensitive vegetation communities on or adjacent to the project site. There is a small patch of willow riparian habitat adjacent to the duck pond approximately 90 feet to the north of the site at the Cypress Lawn Cemetery. There is also riparian habitat approximately 200 feet to the west of the site behind the commercial and industrial buildings on the opposite side of Mission Road from the site. The proposed project would not impact these nearby riparian habitat areas, or any other sensitive natural community. This issue will not be discussed further in the EIR.

c) Have a significant 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?

Less than Significant Impact. There are no wetlands located on or adjacent to the project site. The National Wetlands Inventory shows a freshwater pond approximately 90 feet to the north of the site which is shown as a duck pond in the Town of Colma General Plan Exhibit OS-1. An open section of Colma Creek shown as “riverine” in the National Wetlands Inventory is located approximately 200 feet to the west of the project site (across Mission Road and behind some commercial buildings). The proposed project would include preparation and implementation of a stormwater pollution prevention plan (SWPPP) containing best management practices to protect water quality during construction, and on-site stormwater retention and treatment to protect water quality during project operation. Therefore, the proposed project would not impact any nearby federally protected wetlands or other waters of the United States. This issue will not be discussed further in the EIR.

d) Interfere significantly 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?

No Impact. No known major migration corridors or native wildlife nursery sites are within or adjacent to the project site. Roads and buildings in the project area pose movement barriers for some wildlife species (e.g., amphibians and mammals). The proposed project would convert a site occupied by historic structures, vehicles and ruderal vegetation to an affordable housing development. The project would not create any new barriers to wildlife movement beyond existing barriers. Therefore, the project would not interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory corridors, or impeded the use of wildlife nursery sites. This issue will not be considered further in the EIR.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (including the County Heritage and Significant Tree Ordinances)?

Less than Significant Impact. The proposed project includes the removal of forty-six trees protected by the Town’s Tree Cutting and Removal Ordinance (Municipal Code Section 5.06).

The project applicant would obtain a tree removal permit from the Town as required by the Ordinance, and would adhere to any permit conditions required by the Town. In addition, the project includes the planting of over 90 trees as part of the landscaping plan which would serve as tree replacement for the protected trees. In addition, the project would be consistent with the Town's General Plan policies protecting biological resources with implementation of Mitigation Measures BIO-1 and BIO-2. This issue will not be considered further in the EIR.

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

No Impact. The project site and its vicinity are not located within an area covered by a HCP, NCCP, or other approved conservation plan. Therefore, no impact would occur. This issue will not be considered further in the EIR.

Sources:

California Native Plant Society (CNPS), 2016. Electronic Inventory of Rare and Endangered Vascular Plants of California. Sacramento, California. http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi, (accessed March 15, 2016).

California Natural Diversity Database (CNDDB), 2016. California Department of Fish and Wildlife, Biogeographic Data Branch, RareFind 5. Accessed March 16, 2016.

Town of Colma, 2000. General Plan Conservation and Open Space Element. Available at: http://www.colma.ca.gov/index.php/codes/general-plan, accessed March 22, 2016.

Town of Colma, 2009. Colma Municipal Code Subchapter 5.06: Tree Cutting and Removal. Available at: http://www.colma.ca.gov/index.php/municipal-code-124, accessed March 22, 2016.

United States Fish and Wildlife Service (USFWS), 2016. National Wetlands Inventory: Wetlands Mapper. Available online at: http://www.fws.gov/wetlands/Data/Mapper.html, accessed April 25th, 2016.

1.5 CULTURAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
a) Cause a significant adverse change in the significance of a historical resource as defined in §15064.5?	☒	☐	☐	☐
b) Cause a significant adverse change in the significance of an archaeological resource pursuant to §15064.5?	☒	☐	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☒	☐	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☒	☐	☐	☐

The project site contains five structures which date back to the early days of the Holy Cross Cemetery and which have been found to have historical significance. Project plans include the removal of four of the five structures; the main Holy Cross Cemetery pump house building would be protected, rehabilitated and incorporated into the project. A historic architecture evaluation of the existing structures on the site concluded that they are eligible for both the National and California Registers of Historic Resources, as such, their removal or alteration are considered significant impacts under CEQA and NEPA. In addition to the requirements of CEQA, the project is also required to comply with Section 106 of the National Historic Preservation Act because the project is applying for HUD funding. Section 106 of the National Historic Preservation Act requires consultation with the State Historic Preservation Officer which will be completed before the project can be approved by the Town and the San Mateo County Housing Authority.

Because of removal of the structures is considered a potentially significant impact under CEQA this impact analysis will be addressed in the EIR. The EIR/EA will discuss the project's potentially significant impacts relating to the Holy Cross Historic District and the historical value of the structures that will be removed or impacted by the project. The EIR/EA will describe proposed mitigation measures to minimize the project's impacts.

1.5.1 Environmental Setting

An archaeological reconnaissance report was prepared by Holman & Associates (December 2015) which investigates the project's potential project impacts to archaeological resources. The report notes no known archaeological resources at the site but recommends a Standard Mitigation Measure in the event that unrecorded buried historical resources are uncovered during construction. A full summary of the archaeological reconnaissance report and discussion of project impacts and mitigation measures is contained in the EIR.

A Finding of Effect Report (Hill 2016) was also prepared to analyze the potential adverse effects to built historical features at the site. It is determined that the project could result in potentially significant impacts to cultural resources. The report recommends three mitigation measures (salvage/relocation, photo documentation and interpretive exhibit) to reduce the project's impacts. Even with the implementation of the mitigation measures, the impact would remain significant. A full summary of the Finding of Effect report and discussion of project impacts and mitigation measures is contained in the EIR.

The potential for unique geologic and paleontological features and human remains will also be discussed in the EIR.

1.5.2 Discussion

Would the proposed project:

a) Cause a significant adverse change in the significance of a historical resource as defined in CEQA Section 15064.5?

Potentially Significant Impact. Project impacts to historical resources will be analyzed in the EIR.

b) Cause a significant adverse change in the significance of an archaeological resource pursuant to CEQA Section15064.5?

Potentially Significant Impact. Project impacts to archaeological resources will be analyzed in the EIR.

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Potentially Significant Impact. Project impacts to unique paleontological resource or site or unique geologic feature will be analyzed in the EIR.

d) Disturb any human remains, including those interred outside of formal cemeteries?

Potentially Significant Impact. Project impacts to human remains will be analyzed in the EIR.

Sources:

Hill and Bradley. 2016. Finding of Effect. Colma Veterans Village – 1690 Mission Road, Colma, California. February.

Holman and Associates Archaeological Consultants. 2015. Archaeological Reconnaissance of a Proposed Mercy Housing Project at 1670-1692 Mission Road, Town of Colma, San Mateo County, California and Finding of no Historic Properties Affected. San Francisco. December.

1.6 GEOLOGY AND SOILS

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
a) Expose people or structures to 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? *Note: Refer to Division of Mines and Geology Special Publication 42 and the County Geotechnical Hazards Synthesis Map.*	[ ]	[ ]	[ ]	[X]
ii) Strong seismic ground shaking?	[ ]	[ ]	[X]	[ ]
iii) Seismic-related ground failure, including liquefaction?	[ ]	[ ]	[X]	[ ]
iv) Landslides?	[ ]	[ ]	[ ]	[X]
b) Result in significant soil erosion or the loss of topsoil?	[ ]	[ ]	[X]	[ ]
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?	[ ]	[ ]	[X]	[ ]
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	[ ]	[ ]	[X]	[ ]
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?	[ ]	[ ]	[ ]	[X]

1.6.1 Environmental Setting:

The information in this section is derived from the Geotechnical Investigation performed for the proposed project by Rockridge Geotechnical in March, 2015.

Regional Geology and Seismicity

The site is located in the Coast Ranges geomorphic province of California that is characterized by northwest-trending valleys and ridges. These topographic features are controlled by folds and faults that resulted from the collision of the Farallon plate and North American plate and subsequent strike-slip faulting along the San Andreas Fault system. The San Andreas Fault is more than 600 miles long from Point Arena in the north to the Gulf of California in the south. The Coast Ranges province is bounded on the east by the Great Valley and on the west by the Pacific Ocean.

The major active faults in the area are the San Andreas, San Gregorio and Hayward faults. For these and other active faults within a 50-kilometer radius of the site, the distance from the site and estimated mean characteristic Moment magnitude[5] [2007 Working Group on California Earthquake Probabilities (WGCEP) and Cao et al. (2003) are summarized in Table 1.6-1.

Table 1.6-1 Regional Faults and Seismicity

Fault Segment	Approximate Distance from Site (km)	Direction from Site	Mean Characteristic Moment Magnitude
N. San Andreas - Peninsula	2	West	7.23
N. San Andreas (1906 event)	2	West	8.05
San Gregorio Connected	10	West	7.50
N. San Andreas – North Coast	17	Northwest	7.51
Total Hayward	27	Northeast	7.00
Total Hayward – Rodgers Creek	27	Northeast	7.33
Monte Vista - Shannon	32	Southeast	6.50
Total Calaveras	42	East	7.03
Mount Diablo Thrust	43	East	6.70
Point Reyes	45	Northwest	6.90
Rodgers Creek	46	North	7.07
Green Valley Connected	48	East	6.80

Since 1800, four major earthquakes have been recorded on the San Andreas Fault. In 1836, an earthquake with an estimated maximum intensity of VII on the Modified Mercalli (MM) scale occurred east of Monterey Bay on the San Andreas Fault. The estimated Moment magnitude, Mw, for this earthquake is about 6.25. In 1838, an earthquake occurred with an estimated intensity of about VIII-IX (MM), corresponding to an Mw of about 7.5. The San Francisco Earthquake of 1906 caused the most significant damage in the history of the Bay Area in terms of loss of lives and property damage. This earthquake created a surface rupture along the San Andreas Fault from Shelter Cove to San Juan Bautista approximately 470 kilometers in length. It had a maximum intensity of XI (MM), an Mw of about 7.9, and was felt 560 kilometers away in Oregon, Nevada, and Los Angeles. The most recent earthquake to affect the Bay Area was the Loma Prieta Earthquake of 17 October 1989 with an Mw of 6.9. This earthquake occurred in the Santa Cruz Mountains about 87 kilometers south of the site.

In 1868, an earthquake with an estimated maximum intensity of X on the MM scale occurred on the southern segment (between San Leandro and Fremont) of the Hayward Fault. The estimated Mw for the earthquake is 7.0. In 1861, an earthquake of unknown magnitude (probably an Mw of about 6.5) was reported on the Calaveras Fault. The most recent significant earthquake on this fault was the 1984 Morgan Hill earthquake (Mw = 6.2).

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5 Moment magnitude is an energy-based scale and provides a physically meaningful measure of the size of a faulting event. Moment magnitude is directly related to average slip and fault rupture area.

The U.S. Geological Survey's (USGS) 2007 WGCEP has compiled the earthquake fault research for the San Francisco Bay area in order to estimate the probability of fault segment rupture. They have determined that the overall probability of moment magnitude 6.7 or greater earthquake occurring in the San Francisco Bay Region during the next thirty years is 63 percent. The highest probabilities are assigned to the Hayward/Rodgers Creek Fault and the northern segment of the San Andreas Fault. These probabilities are 31 and 21 percent, respectively.

Site Geology and Soils

The Regional Geologic Map prepared by Graymer et al. (1998) indicates the site is underlain by alluvial fan and fluvial deposits (Qhaf). The geotechnical borings and cone penetration tests (CPTs) indicate the site is blanketed by 20 to 34 feet of sand, clayey sand, and silty sand interbedded with some thin zones of sandy clay and silt. The granular soil is primarily medium dense, although there are zones of both loose and dense sandy soil throughout the soil profile. The sandy clay and silt are primarily stiff with some thin zones of both medium stiff and very stiff material. Below a depth of 20 to 34 feet below ground surface (bgs), the soil consists of dense to very dense clayey and silty sand interbedded with thin layers of very stiff to hard sandy clay that extends to the maximum depth explored of 45 feet bgs.

1.6.2 Regulatory Setting:

Alquist-Priolo Earthquake Fault Zoning Act

In response to the 1971 San Fernando earthquake, which damaged numerous homes, commercial buildings, and other structures, California passed the Alquist-Priolo Earthquake Fault Zoning Act. The Alquist-Priolo Earthquake Fault Zoning Act regulates construction and development of buildings in California intended for human occupancy near known active faults due to hazards associated with surface fault ruptures.

The Alquist-Priolo Earthquake Fault Zoning Act requires that a state geologist establish regulatory zones called Earthquake Fault Zones (previously Special Studies Zones) around the surface traces of active faults and issue corresponding maps for the affected areas. Local agencies are required to regulate most development projects within the Earthquake Fault Zones. Before a project can be permitted, cities and counties require a geologic investigation to demonstrate that the proposed buildings will not be constructed across active faults. An evaluation and written report for a specific site must be prepared by a licensed geologist. If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back at least 50 feet from the fault.

California Seismic Hazard Mapping Act

The Seismic Hazard Mapping Act (Public Resources Code Section 2690-2699.6) was passed in 1990 following the Loma Prieta earthquake to reduce threats to public health and safety and to minimize property damage caused by earthquakes. The Seismic Hazard Mapping Act directs the Department of Conservation, California Geological Survey to identify and map areas prone to the earthquake hazards including liquefaction, earthquake-induced landslides, and amplified ground shaking. These data are evaluated regionally to evaluate the severity of the seismic hazards and designate Zones of Required Investigation (i.e., areas prone to liquefaction and earthquake-induced landslides). The Seismic Hazard Mapping Act requires site-specific geotechnical investigations be conducted to identify potential seismic hazards and formulate mitigation measures prior to permitting most developments designed for human occupancy within the Zones of Required Investigation.

California Building Code

The California Building Code (CBC) is codified in the California Code of Regulations (CCR) as Title 24, Part 2 and became effective January 1, 2014. The CBC is administered by the California Building Standards Commission, but enforced by California cities and counties. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety, and general welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures and certain equipment within its jurisdiction.

The CBC contains necessary California amendments, which are based on the American Society of Civil Engineers (ASCE) Minimum Design Standards 7-10. ASCE 7-10 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads for inclusion into building codes. The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients, which are used to determine a seismic design category (SDC) for a project. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site; SDC values range from A (very small seismic vulnerability) to E/F (very high seismic vulnerability and near a major fault). Once a project is categorized according to SDC, design specifications can be determined. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure, or any appurtenances connected or attached to such buildings or structures, throughout California.

Colma General Plan

Cities and counties in the state of California must adopt General Plans which regulate physical development. The Safety Element (1999) of Colma General Plan includes the following seismic and geologic policies relevant to the proposed project:

Policy 5.07.411: The Town should continue to investigate the potential for seismic and geologic hazards as part of the development review process and maintain this information for the public record.

Policy 5.07.412: The Town should require geotechnical, soils and foundation reports for proposed projects which warrant them according to the Safety Element and its geologic and Hazards Maps, the County's Seismic and Safety Element; and the Town's Building Official and Building Codes.

Policy 5.07.413: Colma should prohibit development in geologically hazardous zones, including any land alteration, grading for roads and structural development.

Policy 5.07.452: Colma should continue to analyze significant seismic, geologic and community wide hazards as part of the environmental review process, and require that mitigation measures be made conditions of project approval.

Colma Grading and Erosion and Sediment Control Ordinance

Subchapter 5.07: Grading and Erosion and Sediment Control of the Colma Municipal Code prohibits grading, fill, excavation, clearing and grubbing without first obtaining a permit (Section 5.07.070). According to Section 5.07.100, the permit application requires a site map and grading plan, Erosion and Sediment Control Plan, work schedule and drainage calculations and stormwater detention calculations, among other requirements, and sometimes requires a Soils Engineering Report and/or a Geology Engineering Report (when required by the City Engineer). The Erosion and Sediment Control Plan must be consistent with the Guidelines set forth in the California Regional Water Quality Control Board (CRWQCB) Field Manual, with specific attention to both off-site and on-site impacts.

1.6.3 Discussion:

Under the recently-decided California Building Industry Association v. Bay Area Air Quality Management District case (CBIA v. BAAQMD 2015), the California Supreme Court held that

"CEQA does not require an agency to consider the impact of existing conditions on future project users," except in specific circumstances unrelated to this geological conditions analysis. (CBIA v. BAAQMD, pg. 2) The Court also noted, however, that CEQA does not "prohibit an agency from considering— as part of an environmental review for a project it proposes to undertake— how existing conditions might impact a project's future users or residents." (CBIA v. BAAQMD, fn. 12) Therefore, the current CEQA review practice of determining whether the potential effects of existing geological conditions on project components is a potentially significant impact is no longer a valid CEQA impact assessment.

Consistent with this court ruling and CEQA case law, the impact discussion presented below focuses on the project's effect on geology and soils rather than the effect of geologic hazards and site conditions upon the proposed project infrastructure. The project is evaluated to determine whether it would create or exacerbate soil or geologic conditions identified in each of the above significance threshold criteria.

Would the proposed project:

a) Expose people or structures to 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 significant evidence of a known fault?

No Impact. The site is not within an Earthquake Fault Zone, as defined by the Alquist-Priolo Earthquake Fault Zoning Act, and no known active or potentially active faults exist on the site. Therefore, the risk of fault offset at the site from a known active fault is very low. The project would not create potential for fault rupture or exacerbate fault rupture conditions on the project site. The project has no impact related to fault rupture. This issue will not be considered further in the EIR.

ii. Strong seismic ground shaking?

Less than Significant Impact. The ground shaking intensity felt at the project site will depend on: (1) the size of the earthquake (magnitude), (2) the distance from the site to the fault source, (3) the directivity (focusing of earthquake energy along the fault in the direction of the rupture), and (4) subsurface conditions. The site is about two kilometers (1.2 miles) from the San Andreas Fault. Therefore, the potential exists for a large earthquake to induce strong to very strong ground shaking at the site during the life of the project. However, the project would be designed and constructed in accordance with the recommendations in the geotechnical report and the seismic design provisions in the current California Building Code. The project would not exacerbate seismic ground shaking conditions on the project site or increase the risk of loss, injury, or death from seismic event. This issue will not be considered further in the EIR.

iii. Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. Liquefaction is a phenomenon in which saturated soil temporarily loses strength from the buildup of excess pore water pressure, especially during earthquake-induced cyclic loading. Soil susceptible to liquefaction includes loose to medium dense sand and gravel, low-plasticity silt, and some low-plasticity clay deposits. Flow failure, lateral spreading, differential settlement, loss of bearing strength, ground fissures and sand boils are evidence of excess pore pressure generation and liquefaction.

The site is located within a zone of high liquefaction susceptibility as shown on the map titled *State of California, Maps of Quaternary Deposits and Liquefaction Susceptibility in the Central San Francisco Bay Region*, prepared by the U.S Geological Survey (USGS), dated 2006. CGS has provided recommendations for procedures and report content for site investigations performed within seismic hazard zones in Special Publication 117 (SP-117), titled *Guidelines for Evaluating and Mitigating Seismic Hazard Zones in California*, dated September 11, 2008. SP-117 recommends subsurface investigations in mapped liquefaction hazard zones be performed using rotary-wash borings and/or CPTs.

Rockridge Geotechnical evaluated the liquefaction potential of soil encountered at the site using data collected from soil borings and CPTs. The liquefaction analyses indicate there are thin layers of potentially liquefiable soil between depths of 16 and 34 feet below ground surface. The potentially liquefiable layers are less than two feet thick. The estimated liquefaction-induced total and differential settlement (referred to as post-liquefaction reconsolidation) after a major event on a nearby fault is up to one inch and 1/2 inch across a horizontal distance of 30 feet, respectively. The analysis indicated the non-liquefiable soil overlying the potentially liquefiable soil layers is sufficiently thick and the potentially liquefiable layers are sufficiently thin such that the potential for surface manifestations from liquefaction, such as sand boils, and loss of bearing capacity for shallow foundations are low.

The project would be designed and constructed in accordance with the recommendations in the geotechnical report and the seismic design provisions in the current California Building Code to ensure liquefaction does not adversely impact project features. Project construction would not create or exacerbate liquefaction conditions. The project impact related to seismic ground failure is less than significant. This issue will not be considered further in the EIR.

iv. Landslides?

No Impact. The project area is relatively level and is not near hills or slopes that could be subject to landslides. According the Town of Colma General Plan Hazards Map (1999), the project site is an area with very low landslide susceptibility. Project construction would not create or exacerbate landslide conditions, on or off the project site. This issue will not be considered further in the EIR.

b) Result in significant soil erosion or the loss of topsoil?

Less than Significant. Erosion is a natural process by which wind and water move across soils and break down existing features and structures. Human alteration of the natural environment can accelerate the pace of erosion, and/or create unnatural patterns of erosion. Accelerated erosion can cause instability in geologic structures, and water quality concerns in receiving waters. Erosion can be created through point sources, such as utility and industrial discharge points and mining and agricultural operations, or through non-point sources, such as impervious surfaces (paving and developed land uses), unpaved roads, and unsound grading or construction practices.

Grading, excavation and site preparation activities during project construction could result in soil erosion or the loss of topsoil. However, the proposed project requires a grading permit, which requires an Erosion and Sediment Control Plan consistent with the Guidelines set forth in the CRWQCB Field Manual, with specific attention to both off-site and on-site impacts. In addition, a Stormwater Pollution Prevention Plan (SWPPP) is required for the project (see Hydrology Section) which would include best management practices to prevent erosion and protect water quality. With preparation and implementation of the Erosion and Sediment Control Plan and BMPs in the SWPPP, the proposed project would not result in significant soil erosion or loss of topsoil. This issue will not be considered further in the EIR.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Less Than Significant Impact. As described in response to question a.iv above, the project site is relatively flat and the project would not result in on- or off-site landslides.

Lateral spreading occurs when a continuous layer of soil liquefies at depth and the soil layers above move toward an unsupported face, such as a shoreline slope, or in the direction of a regional slope or gradient. Based on the lack of controlling boundary conditions, the potential for lateral spreading to occur at the project site is very low (Rockridge Geotechnical, 2015).

As described in response to question a.iii above, the project site is located in a zone of high liquefaction susceptibility, but implementation of the recommendations in the geotechnical report and seismic design measures in the current California Building Code would ensure the project is built to withstand any anticipated liquefaction.

Subsidence occurs where water, gas, or other material is removed from intergranular spaces, resulting in compaction of soils. In extreme circumstances, this phenomenon can cause severe lowering of the soil surface, damaging overlying structures and causing risks to life. Subsidence is most common in areas underlain by loose, compressible clay rich soils, where water or oil is withdrawn in excessive amounts. According to the Safety Element of the 1999 Town of Colma General Plan, widespread ground subsidence due to groundwater or petroleum withdrawal is not a significant potential hazard in Colma.

Project construction would not create or exacerbate geologic instability, on or off the project site. This issue will not be considered further in the EIR.

d) Be located on expansive soil, as noted in the 2010 California Building Code, creating substantial risks to life or property?

Less than Significant. Expansive soils contain shrink-swell clays that are capable of absorbing water. As these clays absorb water, they increase in volume, and these changes in volume are capable of exerting enough force on buildings and other structures to damage foundations and basement walls. Damage from expansive soils also occurs when the soils dry out and contract, causing subsidence and earth fissuring.

According to the subsurface investigation performed by Rockridge Geotechnical, the project site does contain some clay soils which could be expansive. However, the project would be designed and constructed in accordance with the recommendations in the geotechnical report and the seismic design provisions in the current California Building Code. Project construction would not create or exacerbate expansive soil conditions, on or off the project site. This issue will not be considered further in the EIR.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. The project site is served by the Colma municipal sewer system and the proposed project does not include the use of septic tanks or alternative wastewater disposal systems. Therefore, no impacts will occur. This issue will not be considered further in the EIR.

Sources:

Rockridge Geotechnical, 2015. Geotechnical Investigation, Proposed Residential Development, 1670-1692 Mission Road, Colma, California. Prepared for Mercy Housing. March 24. Project No. 15-846.

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Town of Colma, 2009. Colma Municipal Code Chapter 5 Subchapter 07- Grading and Erosion and Sediment Control. Available at: http://www.colma.ca.gov/index.php/municipal-code-124/5-planning-zoning-use-development-of-land-1, accessed March 17, 2016.

1.7 GREENHOUSE GAS EMISSIONS

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

1.7.1 Environmental Setting

Gases that trap heat in the atmosphere and affect regulation of the Earth's temperature are known as greenhouse gases (GHGs). GHGs that contribute to climate regulation are a different type of pollutant than criteria or hazardous air pollutants because climate regulation is global in scale, both in terms of causes and effects. Some GHGs are emitted to the atmosphere naturally by biological and geological processes, such as evaporation (water vapor), aerobic respiration (carbon dioxide), and off-gassing from low oxygen environments including swamps or exposed permafrost (methane); however, GHG emissions from human activities, such as fuel combustion (carbon dioxide) and refrigerants (hydrofluorocarbons), are primarily responsible for the significant contribution to overall GHG concentrations in the atmosphere, climate regulation, and global climate change.

Human production of GHGs has increased steadily since pre-industrial times (approximately pre-1880) and atmospheric carbon dioxide concentrations in the atmospheric carbon dioxide concentrations have increased from a pre-industrial value of 280 ppm in the early 1800's to 407 ppm in March 2016 (NOAA 2016). The effects of increased GHG concentrations in the atmosphere include climate change (increasing temperature and shifts in precipitation patterns and amounts), reduced ice and snow cover, sea level rise, and acidification of oceans. These effects in turn will impact food and water supplies, infrastructure, ecosystems, and overall public health and welfare.

The 1997 United Nations' Kyoto Protocol international treaty set targets for reductions in emissions of four specific GHGs – carbon dioxide, methane, nitrous oxide, and sulfur hexafluoride – and two groups of gases – hydrofluorocarbons and perfluorocarbons. These GHG are the primary GHG emitted into the atmosphere by human activities. The six common GHG's are described below.

<u>Carbon Dioxide (CO_2)</u>. CO_2 is released to the atmosphere when fossil fuels (oil, gasoline, diesel, natural gas, and coal), solid waste, and wood or wood products are burned.

<u>Methane (CH_4)</u>. CH_4 is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from the decomposition of organic waste in municipal solid waste landfills and the raising of livestock.

<u>Nitrous oxide (N_2O)</u>. N_2O is emitted during agricultural and industrial activities, as well as during combustion of solid waste and fossil fuels.

<u>Sulfur hexafluoride (SF_6)</u>. SF_6 is commonly used as an electrical insulator in high voltage electrical transmission and distribution equipment such as circuit breakers, substations, and transmission switchgear. Releases of SF6 occur during maintenance and servicing as well as from leaks of electrical equipment.

<u>Hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs)</u>. HFCs and PFCs are generated in a variety of industrial processes. Although the amount of these gases emitted into the atmosphere

is small in terms of their absolute mass, they are potent agents of climate change due to their high global warming potential.

GHG emissions from human activities contribute to overall GHG concentrations in the atmosphere and the corresponding effects of global climate change (e.g., rising temperatures, increased severe weather events such as drought and flooding). GHGs can remain in the atmosphere long after they are emitted. The potential for a GHG to absorb and trap heat in the atmosphere is considered its global warming potential (GWP). The reference gas for measuring GWP is CO_2, which has a GWP of one. By comparison, CH_4 has a GWP of 21, which means that one molecule of CH_4 has 21 times the effect on global warming as one molecule of CO_2. Multiplying the estimated emissions for non-CO_2 GHGs by their GWP determines their carbon dioxide equivalent (CO_2e), which enables a project's combined global warming potential to be expressed in terms of mass CO_2 emissions.

Existing GHG Emission Sources at the Project Site

Existing stationary emissions include the electricity from Baca's Machine Shop currently operating on the proposed project site. Mobile source emissions include Baca's employees and other vehicles, such as customers, associated with the machine shop.

1.7.2 Regulatory Setting

California Global Warming Solutions Act (AB32)

The California Global Warming Solutions Act of 2006 (AB32) requires the California Air Resources Board (ARB) to reduce GHG emissions to 1990 levels by 2020. ARB identified 427 million metric tons of carbon dioxide equivalent (MTCO2e) as the total statewide GHG 1990 emissions level and adopted this level as the 2020 GHG emissions limit (ARB 2007). ARB estimates 2020 GHG emission levels will reach approximately 600 million MTCO2e if no actions are taken under a "business-as-usual" scenario.

To achieve the necessary GHG reductions, ARB approved the *Climate Change Scoping Plan* on December 11, 2008, which identifies the measures (i.e., mandatory rules and regulations and voluntary measures) that will achieve at least 174 $MMTCO_2e$ of reductions and reduce statewide GHG emissions to 1990 levels by 2020 (ARB 2009). In 2011, ARB released a supplement to the *2008 Scoping Plan Functional Equivalent Document* (FED) that included an updated 2020 BAU statewide GHG emissions level projection of 507 MMTCO2e (ARB 2011).

ARB recently released its first update to the Scoping Plan (ARB 2014). ARB has also adopted several rules designed to reduce vehicular GHG emissions, including the Pavley Regulations (AB1493), which will reduce GHG emissions from passenger vehicles between 22 and 30 percent, and the Low Carbon Fuel Standard, which requires a ten percent reduction in the carbon intensity of transportation fuels by 2020.

Executive Order B-30-15, or the 2030 Carbon Target and Adaptation, issued by Governor Brown in April 2015, sets a target of reducing GHG emissions by 40 percent below 1990 levels in 2030. By directing state agencies to take measures consistent with their existing authority to reduce GHG emissions, this order establishes coherence between the 2020 and 2050 GHG reduction goals set by AB 32 and seeks to align California with the scientifically established GHG emissions levels needed to limit global warming below two degrees Celsius. In addition, the order requires CARB to work closely with other state agencies and the public to update the State's climate change Scoping Plan, scheduled for completion and adoption in 2016.

California Building Standards Code

The California Building Standards Code (Title 24 of the California Code of Regulations) was enacted in 1978 to ensure that all new construction meets a minimum level of energy efficiency standards. California's Building Energy Efficiency Standards are updated on an approximate three-year cycle. The current 2013 Standards went into effect July 1, 2014. Subchapters 7 and 8 of Title 24, Part 6 contain mandatory standards for new low rise residential buildings related to insulation, heating and cooling, lighting, shading and roofing.

Town of Colma Climate Action Plan

In 2013, The Town of Colma implemented a Climate Action Plan (CAP) geared toward meeting the Town's goal of reducing GHG emissions by 15% below its 2006 emissions levels by 2020. The CAP includes many measures and programs to accomplish the goal. The following policies are relevant:

- **Develop and implement a Green Building Ordinance**. Develop ordinance to meet Leadership in Energy and Environmental Design (LEED) Silver equivalent requirements for new commercial construction, major additions, renovations and tenant improvements. Include energy efficiency requirements that exceed building code for residential projects. Develop ordinances to be consistent with green building ordinances in neighboring 40 jurisdictions. Monitor program and projects covered by ordinance.
- **Increase recycling and waste diversion to meet recycling diversion rate of 80%.** Evaluate new cost-effective opportunities to expand commercial and residential recycling programs under the new Request for Proposal for Recycling and Solid Waste Collection Services. Require all businesses to recycle (exceeding AB 341 requirements) and ensure compliance of commercial recycling requirements. Increase recycling by adding new program for food waste/organics to commercial and residential collection. Consider banning yard waste, cardboard and other materials in landfills.

Promote solar / renewable energy installations for commercial and residential. Streamline Town permit process requirements for solar energy installations. Consider reducing current solar permit fee structure. Promote use of PACE funding for solar and consider providing additional financial incentives.

Colma Municipal Code

Section 5.04.120 of the Colma Municipal Code adopts the 2013 Edition of the California Energy Code contained in Part 6 of Title 24 of the California Code of Regulations by reference as the Colma Energy Conservation Code.

Colma General Plan

The following goal, policy and programs from the Colma General Plan Housing Element (Town of Colma, 2015) relate to energy efficiency in the design and construction of new housing.

- Goal G: Encourage sustainable residential development that is energy efficient and consistent with existing and future Town values and policies related to reducing greenhouse gas emissions.

  Policy 6: Recommended and promote energy conservation in existing and new housing.

    Program 6.1 Green Building Regulations for Residential Uses: Colma Planning Department will study the appropriateness and effectiveness of adopting green building and green landscaping ordinances, as part of a Town effort to address global climate change and energy conservation. The study will include consideration of energy efficient design, use of renewable resources in building and interior design materials, and the incorporation of solar and wind energy infrastructure.

    Program 6.2 Encourage use of cool roofing systems and other energy conservation measures to reduce a building's energy usage: The Town will provide information to the public on programs to assist in the provision of energy efficiency measures during new construction or as a residential retrofit.

San Mateo County Energy Efficiency Climate Action Plan

The San Mateo County *Energy Efficiency Climate Action Plan* (EECAP) (2013) outlines GHG reduction strategies to achieve the County's reduction target of 17% below 2005 emissions levels by 2020. The EECAP exceeds the State-recommended 15% reduction target and is intended to satisfy the requirements of the BAAQMD for a Qualified GHG Reduction Strategy. The following policies are relevant:

- **Measure 3.1: Green Building Ordinance.** Strengthen the energy efficiency requirement of the existing Green Building Ordinance, which was initially adopted in 2008, with appropriate outreach to stakeholders.
- **Measure 3.3: Urban Heat Island.** Require tree planting, shading design, solar orientation, and "cool" hardscapes.
- **Measure 3.4: Expedited Permitting**. Expedite the review, permitting, and inspection process for projects targeting higher levels of energy reduction than mandated target goals or incorporating renewable energy systems.
- **Measure 4.2: Solar Water Heater Incentives.** Provide incentives for solar water heaters and reduce/remove permit fees for solar hot water energy installations.
- **Measure 4.3: Pre-Wired Solar Homes.** Require all new roofs to be-wired for solar PV and new buildings to be plumbed for solar water heaters.
- **Measure 4.9: Emissions Offset Programs.** Allow new development projects to participate in CO_2 offset programs, such as to purchase electricity generated from renewable sources off-site.
- **Measure 13.1: Use of Recycled Materials.** Require new development to incorporate a minimum of 15% of recycled materials into construction to encourage the market for recycled goods.
- **Measure 13.2: Zero Waste.** Work toward zero waste through comprehensive recycling and composting programs, in addition to aggressive outreach efforts.
- **Measure 15.1: Construction Idling**. Adopt ordinances and policies that aim to reduce emissions from heavy-duty construction equipment by limited idling and utilizing cleaner fuels, equipment, and vehicles to exceed the BAAQMD requirements.

Bay Area Air Quality Management District

Regionally, the BAAQMD has adopted regulations and guidelines to track and reduce GHG emissions from industrial, stationary GHG emission sources. In 2005, the BAAQMD established is Climate Protection Program to reduce pollutants that contribute to global climate change. In 2008, the BAAQMD adopted a GHG fee of 4.4 cents per metric ton of GHG emissions that applies to permitted industrial facilities and businesses. In 2010, the BAAQMD adopted updated CEQA Air Quality Guidelines that establish screening criteria and significance thresholds for GHG emissions from land use and stationary source projects.

As described in Section 2.3, Air Quality, the BAAQMD's 2010 Clean Air Plan is a multi-pollutant plan that includes specific measures and actions that the BAAQMD and its partners will implement to improve air quality, protect public health, and protect our climate. The 2010 Clean Air Plan includes a focus on managing Bay Area emissions of the six Kyoto GHG (carbon dioxide, methane, nitrous oxide, hydroflourocarbons, perflourocarbons sulfur hexafluoride). (BAAQMD 2010b).

Discussion:

Would the proposed project:

a) Generate greenhouse gas (GHG) emissions, either directly or indirectly, that may have a significant impact on the environment?

Global climate change is the result of GHG emissions worldwide; individual projects do not generate enough GHG emissions to influence global climate change. Thus, the analysis of GHG emissions is by nature a cumulative analysis focused on whether an individual project's contribution to global climate change is cumulatively considerable.

Less Than Significant Impact. The proposed project would produce GHG emissions from construction- and vehicle trip-related fuel combustion, as well as utility use and consumption (e.g., electricity use, natural gas consumption). The BAAQMD does not maintain GHG thresholds of significance for construction activities; however, as described in Section 1.3, Air Quality, the proposed project is substantially below the BAAQMD's "apartment, low-rise" and "condo/townhouse" criteria air pollutant construction screening level size of 240 dwelling units, and is therefore presumed to have a less than significant construction GHG emissions impact.

Project construction and operation would be subject to CALGreen standards that require implementation of best management practices during siting, design, and construction of non-residential developments that would further reduce the magnitude of potential construction and operational GHG emissions from the project.

Similarly, the proposed project (66 dwelling units) is below the BAAQMD's "apartment, low-rise" and "condo/townhouse" GHG operational screening level size of 78 dwelling units. Consistent with the BAAQMD's *CEQA Air Quality Guidelines*, projects that are below this screening criteria threshold would not result in emissions that exceed BAAQMD significance thresholds. The project, therefore, would not result in a significant impact to air quality from long-term operational GHG emissions.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less Than Significant Impact. The proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. GHG emissions from construction equipment, residential fuel usage, electricity generation, and transportation are identified and planned for in the BAAQMD's 2010 Clean Air Plan (BAAQMD 2010). A primary objective of the 2010 Clean Air Plan is to reduce greenhouse gas emissions to 1990 levels by 2020 and 40% below 1990 levels by 2035. The 2010 Clean Air Plan considers an increase in construction equipment, residential fuel, electricity, and transportation GHG emissions and identifies control measures designed to achieve regional GHG reduction goals.

The project would comply with 2013 Edition of the California Energy Code adopted by the Colma Municipal Code (Section 5.04.120) as the Colma Energy Conservation Code (contained in Part 6 of Title 24 of the California Code of Regulations). In addition the project includes the following green building features:

- Solar thermal system on the roof
- Sunshades at select units based on orientation
- High efficiency HVAC system
- Energy efficient lighting including LED fixtures
- Energy Star appliances
- Energy efficient building envelope
- Water conserving plumbing fixtures

The proposed project would also be constructed in conformance with CALGreen, and meeting policy measures outlined in the Town of Colma Climate Action Plan, as well as the San Mateo Energy Efficiency Climate Action Plan.

To achieve the sustainable vision for the region, Plan Bay Area 2040, put forth by the Metropolitan Transportation Committee (MTC) and Association of Bay Area Governments (ABAG), the Plan Bay Area land use concept plan for the region concentrates the majority of new population and employment growth in the region in Priority Development Areas (PDAs). PDAs are transit-oriented, infill development opportunity areas within existing communities, and over two-thirds of all regional growth by 2040 is allocated within PDAs. PDAs are expected to accommodate 80 percent (or over 525,570 units) of new housing and 66 percent (or 744,230) of new jobs (MTC/ABAG 2013, Placeworks 2016). The proposed project is within the El Camino Real Corridor PDA (ABAG 2015) and consistent with overall goals of the Town of Colma Climate Action Plan to reduce GHG emission reductions. Therefore, the project does not conflict with the AB 32 Climate Change Scoping Plan or other applicable plans, policies, and regulations adopted for the purpose of reducing GHG emissions.

Sources:

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1.8 HAZARDS AND HAZARDOUS MATERIALS

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
f) For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

1.8.1 Environmental Setting

Langan Treadwell Rollo prepared a Phase I Environmental Site Assessment (ESA) in general conformance with the scope and limitations of American Society for Testing and Materials (ASTM) Practice E 1527-13 and the U.S. Environmental Protection Agency's Rule for 40 CFR 312 for the property located at 1670-1692 Mission Road in Colma, California.

The purpose of the Phase I ESA was to evaluate the possible presence of recognized environmental conditions at the site. A recognized environmental condition is the presence or likely presence of hazardous substances or petroleum products in, on, or at a property: (1) due to a release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of future release to the environment (ASTM, 2013).

Based on a review of regulatory files, the site history, and site reconnaissance summarized below, the Phase I ESA revealed no evidence of a recognized adverse environmental condition in connection with the project site.

Regulatory Files Review

A review of environmental regulatory agency lists and records was performed for the site and vicinity to identify potential sources of or activities involving hazardous substances or petroleum products that might affect the soil and groundwater quality at the site. The lists identify properties where underground storage tank (UST) leaks, chemical spills, or contamination of soil and/or groundwater have been reported and confirmed. The regulatory lists also include properties where above-ground or underground storage tanks are present, hazardous materials are generated and/or stored, and whether or not there has been an unauthorized release.

A search of environmental regulatory agency databases for the site and vicinity was prepared by Environmental Data Resources Inc. (EDR). Where appropriate, additional information was obtained from telephone interviews, online databases, or file reviews at the respective regulatory agencies. A summary of the findings is discussed below.

<u>Site – 1670-1692 Mission Road</u>

Of the addresses searched by EDR for the 1670-1692 Mission Road property, 1690 Mission Road was the only address listed in the EDR database. Online databases operated by the California Department of Toxic Substances Control (DTSC) and California Regional Water Quality Control Board (RWQCB) were researched for the site. In addition, inquiries were made in regard to files held at the San Mateo County Environmental Health (SMCEH) and the Colma Fire Protection District (CFPD). Files related to hazardous materials for 1690 Mission Road were available at the SMCEH and reviewed for the report.

1690 Mission Road was listed on the EDR US Historic Auto Station database and identified as Baca's Racing Engines & Machine Shop for the years 2007, 2008, and 2011. Files reviewed at the SMCEH indicate that the hazardous materials have been stored at the Site: Cutting oil, iron shavings, cleaning solvent, honing oil, waste oil, degreaser, alkaline cleaner, and metal sludge. No records of a release of hazardous materials at 1690 Mission Road were found during the agency file reviews.

<u>Off-Site Database Listings</u>

The Phase I ESA focused on off-site facilities with known contamination in soil and groundwater that were most likely to represent potential environmental concerns at the Site. These areas include nearby properties or locations that were in the near vicinity and/or hydraulically up gradient of the Site. The estimated direction of groundwater flow is to the south within the immediate site vicinity. Based the off-site database, all of the nearby listings had no violations, were closed by the regulatory agency, were hydrologically cross gradient or down gradient, or were determined to be a significant distance (greater than a 1/4 mile) from the site.

Site History

The summary of land-use history of the site was developed by searching Sanborn Fire Insurance Maps, historical topographic maps, aerial photographs, Town Directories, regulatory records, and conducting personal interviews.

Historical topographic maps were reviewed for the years 1899, 1915, 1947, 1950, 1956, 1968, 1973, 1980, 1993, and 1995. Historical aerial photographs of the Site were reviewed for the years 1943, 1946, 1956, 1968, 1974, 1982, 1993, 1998, 2005, 2006, 2009, 2010, and 2012. Town Directories were reviewed for the years 1970 to 2013. Sanborn maps for the Site and vicinity were not available for review. Based on the available sources, the following chronology of the site was developed.

In the 1943, 1946, and 1956 aerial photographs, at least five structures are visible at the site. The remainder of the site appears to be vacant and comprised of vegetation. The property to the northeast appears to be used for agricultural purposes, with a cemetery beyond. A cemetery is located to the north and northwest of the site. Residential properties and farmland are observed to the southwest.

In the 1968 aerial photographs, the majority of the site appears vacant, with the exception of three structures located near the center of the property. Residential and commercial properties comprise the land to the southwest of the site.

In the 1974, 1982, 1993, and 1998 aerial photographs, the site appears relatively unchanged from previous documentation. The surrounding properties to the southwest of the site have been developed with more residential, commercial, and light industrial properties.

In the 2005, 2006, 2009, 2010, and 2012 aerial photographs, the southeastern portion of the site appears to have been graded and cleared. The northwestern portion of the site is used as a parking lot. The remainder of the site and the surrounding properties appear relatively unchanged from previous documentation.

Site and Nearby Area Reconnaissance

The site reconnaissance performed for the Phase I ESA revealed no visual evidence of the following features: ponds; stressed vegetation or stained soil; or mining, oil, and gas exploration, production, or distribution. At the time of the inspection, the site showed no evidence of any significant staining, spillage, and/or ponded liquids or uncontained solids. A reconnaissance of adjacent properties also revealed no apparent signs of chemical releases or leaks.

Hazardous Materials Investigation

SCA Environmental, Inc. performed a hazardous materials investigation in May of 2016 for the five historic structures on the site which included:

- An inspection and survey of the five structures.
- Non-destructive sampling and testing for lead-containing coatings, polychlorinated biphenyls (PCBs) in building materials, asbestos-containing materials (ACMs), and asbestos-containing construction materials (ACCMs).
- Visual quantification of potential PCB-containing lighting ballasts and mercury-containing fluorescent lighting fixtures.

The black roofing mastic on the metal roofing panels on Pump Building roof was found to be positive for asbestos. In addition, the pump building, two sheds and water tank were assumed to contain asbestos in the water pipe insulation or gaskets, waterproofing membrane below the concrete pad, base rock, window putty, roofing material and/or electrical wiring. These materials are required to be tested prior to demolition of the buildings to determine proper handling and disposal methods.

Lead was detected in the building paints at concentrations from 23 milligrams per kilogram (mg/kg) to 74,000 mg/kg, and in ceramic floor tile at 14 mg/kg. As lead was identified in some paints and a detailed inventory of paints was not performed for the project for the purpose of complying with the Cal/OSHA lead in construction regulation (8 CCR 1532.1), all coated surfaces were considered to contain some lead and require demolition dust control procedures for compliance with Cal/OSHA's Construction Lead Standard under 8 CCR 1532.1. The aforementioned regulation contains requirements for lead air monitoring, work practices, respiratory protection, etc., that are triggered by the presence of even very low levels of lead.

The investigation also identified lighting ballasts which may contain PCBs, window putty in the Pump Building which contains PCBs, window putty in one of the sheds which was assumed to contain PCBs, and Mercury-containing fluorescent tubes in the Pump Building.

1.8.2 Regulatory Setting

Hazardous Waste Regulations

The U.S. Environmental Protection Agency (US EPA) regulates the disposal of hazardous wastes under the federal Resource Conservation and Recovery Act (RCRA). A hazardous waste site is defined as a site that contains or formerly contained, and has residual of one or more hazardous materials. Hazardous waste is defined as “a waste with a chemical composition or other properties that make it capable of causing illness, death, or some other harm to humans and other life forms when mismanaged or released into the environment” (DTSC 2015a). Hazardous materials may include, but are not limited to oils, pesticides, poisons, gasoline, acids, cleaning materials, and medical waste products. The U.S. EPA maintains lists of federally regulated hazardous wastes which are generally characterized as ignitable, corrosive liquid, reactive, and toxic.

The Department of Toxic Substance Control (DTSC) regulates the disposal of non-RCRA hazardous wastes in California (22 CCR §66261 et. al). California has adopted hazardous waste listings similar to the RCRA hazardous waste lists.

Waste classified as hazardous is managed for safe and protective handling for storage, transportation, treatment, and disposal.

ACM Regulations

The BAAQMD and the Cal/EPA provide local enforcement of these regulations. Friable asbestos containing material (ACM) with greater than 1% asbestos must be abated prior to demolition or renovation, and is required to be disposed of as asbestos waste. Prior to renovation or demolition, the BAAQMD requires abatement of friable ACM, as well as non-friable ACM that may become friable during renovation (practically, this means all non-friable ACM). Federal Occupational Safety and Health Administrations (OSHA) regulations, locally enforced by CAL/OSHA, define ACM as substances that contain greater than 1% asbestos.

LBP Regulations

Lead exposures in the workplace are regulated by Cal/OSHA, which has certain regulatory requirements for identifying and controlling potential lead exposures. Currently applicable regulations for the construction industry have been adopted by Cal/OSHA (8 CCR 1532.1) from the Federal OSHA regulations. The current OSHA 8- hour Permissible Exposure Level (PEL) for lead is 50 µg/m. The California Department of Public Health (CDPH) requires the use of Certified Lead Workers and Supervisors for lead abatement projects at public buildings with a greater than 20 years expected life or whenever work is completed specifically to abate Lead-Based paints as defined by HUD. The CDPH certification requirements do not apply to industrial sites; however, dust controls and personnel protection are still required under 17 CCR Section 35001 through 36100.

Current EPA and Cal/EPA regulations do not require Lead-Based Paint (LBP) to be removed prior to demolition, unless loose and peeling. Provided that the paints are securely adhered to the substrates (i.e., non-flaking or non-peeling), disposal of intact demolition debris can generally be handled in California as non-hazardous and non-RCRA waste. In California, loose and peeling LBP or other wastes require characterization and testing for leachability to determine if the materials would be classified as a RCRA or California hazardous waste.

Town of Colma General Plan

The following hazards and hazardous materials policies from the Town’s General Plan Safety Element (1999) are relevant to the proposed project:

Policy 5.07.441: Colma should support County efforts to locate, regulate and maintain information regarding hazardous materials located or transported within the Town.

Policy 5.07.451: The Town should maintain the Colma Emergency Management Plan and continue to participate with the San Mateo County’s Mutual Aid Programs and Operational Area Emergency Services Organization as a basis for community emergency preparedness.

Policy 5.07.453: Emergency evacuation routes should be determined by the Police Chief and City Engineer. Evacuation routes should follow the major roadways as set forth in the Circulation Element.

1.8.3 Discussion

Would the proposed project:

a) **Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

Less than Significant Impact. The proposed project is a low income housing project. The housing project would not include the routine transport, use or disposal of hazardous materials. Hazardous materials used on the site would be limited to fuels and fluids in resident's vehicles and small quantities of cleaning or gardening supplies commonly associated with residential use. Therefore, the proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. This issue will not be discussed further in the EIR.

b) **Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?**

Less than Significant Impact. The hazardous material investigation conducted for the project site (SCA Environmental, Inc., 2016) identified, measured and assumed ACMs, LBP and PCBs. A number federal and state regulations apply to such materials (see Section 1.8.2 Regulatory Setting). The proposed project would comply with all applicable regulations regarding testing, abatement, worker protection and disposal of such materials.

The use of heavy construction equipment has the potential to result in leaks of fuels, oils, and lubricants that could contaminate soil or storm water. Standard hazardous materials BMPs for the safe use, handling, storage of materials, spill prevention and response would be implemented during project construction which would include measures such as daily inspections of equipment for leaks and the on-site maintenance of adequate quantities of absorbent materials to clean up the largest foreseeable leak and contingencies in the event unknown hazardous materials are encountered during construction.

With compliance with applicable regulations and implementation of the standard construction hazardous materials BMPs, the proposed project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving hazardous materials. This issue will not be considered further in the EIR.

c) **Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or hazardous waste within one-quarter mile of an existing or proposed school?**

No Impact. The proposed project would not handle hazardous or acutely hazardous materials, substances or hazardous waste within one-quarter mile of an existing or proposed school. The closest schools to the site are El Camino High School and Sunshine Gardens Elementary School, approximately 0.5 mile and 0.8 mile to the south of the site, respectively. In addition, the proposed project is a low income housing project which would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or hazardous waste. This issue will not be discussed further in the EIR.

d) **Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?**

Less than Significant Impact. The Phase I ESA prepared for the project included a search of environmental regulatory agency databases. 1690 Mission Road was listed on the US Historic Auto Station database and identified as Baca's Racing Engines & Machine Shop for the years 2007, 2008, and 2011. Files reviewed at the SMCEH indicate that the hazardous materials have been stored at the Site: Cutting oil, iron shavings, cleaning solvent, honing oil, waste oil, degreaser, alkaline cleaner, and metal sludge. No records of a release of hazardous materials at 1690 Mission Road were found during the agency file reviews. This site would not create a significant hazard to the public or the environment, and none of the addresses at the site (1670-1692) were included in any of the databases. Therefore, this will not be discussed further in the EIR.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

Less than Significant Impact. San Francisco International (SFO) is located approximately 5 miles southeast of the project site. The project site is within SFO airport's Airport Influence Area A (all of San Mateo County) and Airport Influence Area B (all of the Town of Colma). The projected 2020 CNEL noise contour map from the Draft Environmental Assessment for the Proposed Runway Safety Area Program shows the project site is within a noise compatible zone. The project site is not located within a safety compatibility zone in the airport land use plan. On July 28th, 2016, the Airport Land Use Commission recommended that the City/County Association of Governments (C/CAG) of San Mateo County Board determine the project is consistent with the SFO ALUCP. Subsequent C/CAG Board approval is expected. The project site will not be affected by airport hazards. This issue will not be discussed further in the EIR.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

No Impact. There are no private airstrips located within the vicinity of the project site. This issue will not be discussed further in the EIR.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Impact. The proposed project would not impair implementation of or physically interfere with the Town of Colma's Standardized Emergency Management System, its Emergency Management Plan or its designated evacuation routes. Adequate emergency access would be maintained on the site during and following construction, and the project would not require road closures or interfere with existing evacuation routes. No impacts to an emergency response or evacuation plan would occur. This issue will not be discussed further in the EIR.

h) Expose people or structures to a significant risk of loss, injury, or death involving wild land fires, including where wild lands are adjacent to urbanized areas or where residences are intermixed with wild lands?

Less than Significant Impact. Wild land fires occur periodically at San Bruno Mountain State Park, most recently an 11-acre fire in May of 2015. The California Department of Forestry has rated San Bruno Mountain State Park and adjacent undeveloped areas of Colma as areas of moderate fire hazard. According to the Association of Bay Area Governments Hazards Maps, the project site is in a Wildland-Urban Interface area but is not within any historic wildfire perimeters from 1950 through 2014 (ABAG, 2016). The project site is approximately 0.6 west of San Bruno Mountain State Park, with the Holy Cross Cemetery located in between. Due to the distance from San Bruno Mountain and the presence of the cemetery in between, the risk of any wildland fire reaching the site is low. Therefore, the project would not expose people or structures to a significant risk of loss, injury or death involving wild land fires. This issue will not be discussed further in the EIR.

Sources:

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SCA Environmental, Inc., 2016. Summary Report of Limited Hazardous Materials Surveys. 1670-1690 Mission Road, Colma, CA. SCA Project No.: F12039. Prepared for Mr. Michael Kaplan, Real Estate Developer.

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1.9 HYDROLOGY AND WATER QUALITY

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
a. Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b. Significantly deplete groundwater supplies or interfere significantly with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c. Significantly alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in significant erosion or siltation on- or off-site?	☐	☐	☒	☐
d. Significantly alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or significantly increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	☐	☐	☒	☐
e. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide significant additional sources of polluted runoff?	☐	☐	☒	☐
f. Otherwise substantially degrade water quality?	☐	☐	☐	☒
g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j. Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

1.9.1 Environmental Setting

The information below on hydrology and water quality conditions at the site and in the project area is derived primarily from the Town of Colma General Plan, technical studies prepared for the project, the Oakland Museum of California Creek and Watershed Maps and the Clean Water Act Section 303(d) List.

Surface Water and Site Drainage

The project site is in the Colma Creek Watershed. Colma Creek extends from San Bruno Mountain to its outlet at the San Francisco Bay just north of the San Francisco Airport and south of Point San Bruno. Colma Creek drains portions of Colma, South San Francisco, San Bruno, and Daly City. The western border of the basin is the San Andreas Fault while the northern edge terminates at the San Bruno Mountain ridge and the south is bounded by Interstate 380.

The total drainage area is approximately 15.8 miles and is mostly developed (Moffat & Nichol and AGS, 2015). Colma Creek is underground within the Town of Colma except at a few locations (Town of Colma, 2000). Above ground portions of the creek can be found west of the project site behind commercial buildings, There is an artificial water body (duck pond) to the north of the site.

Runoff water at the project site percolates into the ground water and/or drains into an underground storm drain which connects to an engineered channel that ultimately discharges into the San Francisco Bay.

Common pollutants in runoff water in urban areas similar to the project area include gasoline, motor oil, heavy metals and trash from parking lots, as well as fertilizers and pesticides from lawns. Colma Creek is included on the State Water Resources Control Board 303(d) list of impaired water bodies for trash, and the lower San Francisco Bay that it drains to is listed for Chlordane, DDT, Deildrin, Dioxin compounds, Furan compounds, invasive species, mercury, PCBs and trash (SWRCB, 2012).

Groundwater

The Colma Creek Watershed is part of the San Mateo Basin, a major groundwater basin. Groundwater is used to irrigate cemeteries in the Town of Colma. The groundwater aquifier that the cemeteries depend on extends through South San Francisco and northern San Bruno. The trough is estimated to be two miles wide by nine miles long, lying between San Bruno Mountain and the Santa Cruz Mountains. Most of the wells tapping the aquifier are 200 to 600 feet deep and produce 100 to 600 gallons per minute. The mineral, chemical and physical constituents found in the groundwater generally fall below the California Domestic Water Quality maximum contaminant levels (Town of Colma, 2000).

The results of the geotechnical investigation performed for the project indicate that the current groundwater table at the site is below a depth of 30 feet below ground surface, but there may perched groundwater as shallow as 16 feet in some areas of the site (Rockridge Geotechnical, 2015). Although the Phase I ESA performed for the project did not include water quality testing, the report concluded that there was no evidence of a recognized adverse environmental condition at the site based on a review of regulatory files, site history and the site reconnaissance (Langan Treadwell Rollo, 2014).

1.9.2 Regulatory Setting

In addition to CEQA, other federal and state laws apply to the hydrology and water quality identified in this report. Each of these laws is identified and discussed below.

Federal Clean Water Act

The Clean Water Act (CWA) is the primary federal legislation governing water quality and forms the basis for several state and local laws throughout the nation. The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Important and applicable sections of the Act are:

- Section 404 authorizes the United States (U.S.) Army Corps of Engineers (USACE) to regulate the discharge of dredged or fill material to waters of the U.S., including wetlands. The USACE issues individual site-specific or general (Nationwide) permits for such discharges.
- Sections 303 and 304 provide for water quality standards, criteria, and guidelines. The State implements Section 303 through the State Water Resources Control Board and RWQCB, as discussed below. Section 304 requires the U.S. EPA to publish water quality criteria that accurately reflects the latest scientific knowledge on the kind of effects and extent of effects that pollutants in water may have on health and welfare. Section 304 also provides guidance to the State in adopting water quality standards.

- Section 401 requires an applicant for any Federal permit that proposes an activity that may result in a discharge to "waters of the U.S." to obtain certification from the State that the discharge will comply with other provisions of the CWA. In California, a Water Quality Certification is provided by the State Water Resources Control Board and/or RWQCB.
- Section 402 establishes the National Pollutant Discharge Elimination System (NPDES), which is a permitting system for the discharge of any pollutant (except for dredge or fill material) into waters of the U.S. In California, this permit program is administered by the RWQCBs, and is discussed in detail below.

National Pollutant Discharge Elimination System

The CWA has nationally regulated the discharge of pollutants to the waters of the U.S. from any point source since 1972. In 1987, amendments to the CWA added section 402(p), which established a framework for regulating nonpoint source storm water discharges under the NPDES. The NPDES General Construction Permit requirements apply to clearing, grading, and disturbances to the ground such as excavation. Construction activities on one or more acres are subject to a series of permitting requirements contained in the NPDES General Construction Permit. This permit requires the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) that includes Best Management Practices (BMPs) to be implemented during project construction. The project sponsor is also required to submit a Notice of Intent (NOI) with the State Water Resources Control Board Division of Water Quality. The NOI includes general information on the types of construction activities that would occur on the site.

Porter-Cologne Water Quality Control Act

The state's Porter-Cologne Water Quality Control Act, as revised in December 2007 (California Water Code Sections 13000-14290), provides for protection of the quality of all waters of the State of California for use and enjoyment by the people of California. It further provides that all activities that may affect the quality of waters of the state shall be regulated to obtain the highest water quality that is reasonable, considering all demands being made and to be made on those waters. The Act also establishes provisions for a statewide program for the control of water quality, recognizing that waters of the state are increasingly influenced by interbasin water development projects and other statewide considerations, and that factors such as precipitation, topography, population, recreation, agriculture, industry, and economic development vary regionally within the State. The statewide program for water quality control is, therefore, administered most effectively on a local level with statewide oversight. Within this framework, the Act authorizes the State Water Resources Control Board and RWQCBs to oversee the coordination and control of water quality within California.

State Water Resources Control Board

Created by the California State Legislature in 1967, the State Water Resources Control Board holds authority over water resources allocation and water quality protection within the State. The five-member State Water Resources Control Board allocates water rights, adjudicates water right disputes, develops statewide water protection plans, establishes water quality standards, and guides the nine RWQCBs. The mission of the State Water Resources Control Board is to, "preserve, enhance, and restore the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations."

San Francisco Bay Regional Water Quality Control Board

If activities, discharges, or proposed activities and discharges from a property could affect California's surface, coastal, or ground waters, in most cases a permit will need to be acquired from the RWQCB. The proposed project is under the jurisdiction of the San Francisco Bay RWQCB. Dischargers whose projects disturb one or more acres of soil (including all construction disturbance) are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit, 99-08-DWQ). Construction activity subject to this permit includes clearing, grading and disturbances to the ground such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a SWPPP. The SWPPP must list BMPs the discharger will use to protect storm water runoff and the placement of those BMPs. Furthermore, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. Section A of the Construction General Permit describes the elements that must be contained in a SWPPP.

San Mateo Countywide Water Pollution Prevention Program

Projects that add and/or replace over 10,000 square feet of impervious surface must comply with San Mateo County's Provision C.3 of the San Mateo Countywide Water Pollution Prevention Program's (SMCWPPP) amended NPDES permit.

The project would be subject to Provision C.3 of the County's NPDES Permit which requires:

- Numeric Sizing Criteria for Pollutant Removal Treatment Systems. The project must include source controls, site design measures, and treatment controls to minimize stormwater pollutant discharges. Pollution treatment controls shall be sized to treat the volume of annual runoff required to achieve 80 percent or more capture of average annual runoff (in the Bay Area this is equivalent to having the capacity to repetitively treat storm events of about 1 inch of precipitation).
- Operation and Maintenance of Treatment Measures. Treatment controls often do not work unless adequately maintained. The permit requires an Operations and Maintenance (O&M) Agreement and a maintenance plan.
- Limitation on Increase of Peak Stormwater Runoff Discharge Rates. Urbanization creates impervious surfaces that reduce the landscape's natural ability to absorb water and release it slowly to creeks. These impervious surfaces increase peak flows in creeks and can cause erosion (referred to as hydromodification). Projects must evaluate the potential for this to occur and provide mitigation as necessary.

Town of Colma General Plan

Cities and counties in the state of California must adopt General Plans which regulate physical development. The Open Space and Conservation Element of the Colma General Plan includes the following water quality and flood hazard policies relevant to the proposed project:

Policy 5.04.316: The Town should minimize the water supply and beneficial use impacts of new development and construction activities the maximum extent possible.

Policy 5.04.341: On-site storm water detention facilities should be constructed for new developments (over ½ acre) which contribute runoff to Colma Creek to store the difference in runoff between the 10-year predevelopment storm (original natural state) and the 100-year post development storm, with storm water released at the 10-year predevelopment rate. Property owners should be required to enter into agreements for maintenance. (same as Policy 5.07.423 of the Safety Element).

Policy 5.07.422: The Town should continue to require the habitable portions of new structures to have a first floor elevation that is elevated to or above the projected 100-year flood surface, and to be adequately protected from flooding, as defined in the Municipal Code (Section 5.05.335).

Town of Colma Municipal Code

The following sections of the Town of Colma Municipal Code related to water quality protection are relevant to the proposed project.

Subchapter 3.10: Town of Colma Stormwater Management and Discharge Control Code

The purpose and intent of Subchapter 3.10 is to ensure the future health, safety, and general welfare of Town citizens by eliminating non-stormwater discharges to the municipal separate storm sewer; controlling the discharge to municipal separate storm sewers from spills, dumping or disposal of materials other than stormwater; and reducing pollutants in stormwater discharges to the maximum extent practicable. The intent of Subchapter 3.10 is also to protect and enhance the water quality of the watercourses, water bodies, and wetlands in a manner pursuant to and consistent with the CWA.

The discharge of non-storm water discharges to the Town of Colma storm sewer system is prohibited (Municipal Code Section 3.10.080), although discharges regulated under an NPDES permit and certain other discharges are exempted from this prohibition. Municipal Code Section 3.10.110 states that "Any person engaged in activities which will or may result in pollutants entering the town storm sewer system shall undertake all practicable measures to reduce such pollutants." Pollution prevention measures include litter prevention, frequent cleaning of parking lots, and best management practices for new developments and redevelopments.

Subchapter 5.07: Grading and Erosion and Sediment Control

Subchapter 5.07: Grading and Erosion and Sediment Control of the Colma Municipal Code prohibits grading, fill, excavation, clearing and grubbing without first obtaining a permit (Section 5.07.070). According to Section 5.07.100, the permit application requires a site map and grading plan, Erosion and Sediment Control Plan, work schedule and drainage calculations and stormwater detention calculations, among other requirements, and sometimes requires a Soils Engineering Report and/or a Geology Engineering Report (when required by the City Engineer). The Erosion and Sediment Control Plan must be consistent with the Guidelines set forth in the State Regional Water Quality Control Board Field Manual, with specific attention to both off-site and on-site impacts.

Subchapter 5.11: Water Efficient Landscape Regulations

Subchapter 5.11: Water Efficient Landscape Regulations of the Colma Municipal Code requires new development proposals to submit a Landscape Documentation Package to the City Engineer for review and approval prior to issuance of any permits. The Landscape Documentation Package must include project information, a Water Efficient Landscape Worksheet, a soil management report, a landscape design plan, an irrigation design plan and a grading design plan. The Subchapter also includes provisions for post installation irrigation and maintenance and a section which prohibits runoff caused by inefficient irrigation from occurring on any parcel within the Town of Colma (Section 5.11.220).

1.9.3 Discussion

Would the proposed project:

a) Violate any water quality standards or waste discharge requirements?

Less than Significant Impact. Potential water quality impacts during project construction and operation, and project compliance with applicable regulations to protect water quality, are discussed below.

Project Construction

Construction of the project would cause disturbances to the ground surface from earthwork, including removal of vegetation and trees, grading and trenching. These activities could potentially increase the amount of sediment runoff from the site that flow into the Town's storm drains. Increased sediment could negatively impact water quality of runoff flowing from the site.

Construction of the project may also include the use of hazardous materials that are potentially harmful to water quality, such as vehicle fuels, fluids, paints, thinners, and other chemicals. Accidents or improper use of these materials could release contaminants to the environment. Additionally, oil and other petroleum products used to maintain and operate construction equipment could be accidentally released.

Construction of the proposed project would disturb more than one acre, and therefore a SWPPP would be required for the project. The SWPPP would include BMPs to prevent erosion and sedimentation and protect water quality during construction. A Grading Permit from the Town of Colma would also be required for the project, which requires an Erosion and Sediment Control Plan consistent with the Guidelines set forth in the SRWQCB. Engineering plans developed for the project by Van Meter Williams Pollack (2016) include a Preliminary Erosion Control Plan that shows storm water inlet protection, the use of fiber rolls, sandbags and earthen berms to prevent runoff water from leaving the site, and hydro-seeding of disturbed areas. With implementation of the BMPs in the SWPPP and the Erosion and Sediment Control Plan required for the Grading Permit, project construction would not violate any water quality standards or waste discharge requirements. This issue will not be discussed further in the EIR.

Project Operation

Project implementation would significantly increase the impervious surface area of the site, which could result in an increase in the amount of polluted storm water runoff from the site entering municipal storm drains. The majority of the project site is currently unpaved and pervious; the only impervious surface area is the portions of the site occupied by the existing concrete building and water storage tanks and pump. After project completion, 67,877 square feet or approximately 1.56 acres will be covered by impervious surfaces (buildings, courtyards, parking lots, roads and pedestrian paths, etc. and includes portion off-site BART property; 7,936 square feet), while 37,331 square feet or approximately 0.86 acre would remain pervious for gardens, the dog park and landscaped areas.

Project operation would also involve the use of household cleaning supplies and landscaping fertilizers or pesticides which could enter runoff water draining from the site. Trash or pet waste are other potential pollutants that could be generated by the project and could enter municipal storm drains, however project plans show the dog park area providing two sets of trash and recycling receptacles at opposite ends of the park.

The proposed project would create more than 10,000 square feet of new impervious surface area and thus would be required to comply with the low impact development (LID) requirements of Provision C.3 of the Municipal Regional Permit, as administered by the SMC SWPPP. Six bio-retention planter areas totaling 2,889 square feet are planned along the south side of the site bordering Mission Road for on-site storm water retention and treatment. These storm water bio-retention areas are sized to meet the requirements of Provision C.3 and San Mateo County storm water treatment design requirements. In addition, covered trash and recycling receptacles would be provided at multiple locations throughout the site. Measures for storm water pollution prevention consistent with Subchapter 3.10 of the Town's Municipal Code would also be followed, including litter prevention, frequent cleaning of parking lots and BMPs for new development. With on-site storm water retention and treatment and compliance with Provision C.3, SMCSWPPP requirements, and Subchapter 3.10 of the Town's Municipal Code, the proposed project would not violate any water quality standards or waste discharge requirements during project operation. This issue will not be discussed further in the EIR.

b) Significantly deplete groundwater supplies or interfere significantly with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

Less than Significant Impact. Potable water is supplied to the Town of Colma, including the project site, from surface water sources, primarily the Hetch Hetchy Reservoir. Water will be supplied to the project by California Water Service Company. The proposed project would result in a small increase in landscaped area requiring irrigation water relative to the large cemeteries that are the primary source of demand for irrigation water in the Town. In addition, the proposed project would include water efficient landscaping consistent with Subchapter 5.11 of the Town's Municipal Code.

The proposed project would increase amount the impervious surface area on the site which could interfere with groundwater recharge in these impervious areas. However, 37,331 square feet or approximately 0.86 acre of the site would remain pervious and the project would also include six bio-retention areas totaling 2,889 square feet. This exceeds the minimum treatment area required by the SMC SWPPP by 174 square feet. Runoff water from the impervious portions of the site would drain into the pervious portions of the site and the bio-retention areas and allowed to percolate into the ground.

Therefore, the proposed project would not significantly deplete groundwater supplies or interfere significantly with groundwater recharge. This will not be discussed further in the EIR.

c) Significantly alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

Less than Significant Impact. There are no streams or other water features in the project vicinity that would be altered by the project. The proposed project would increase the amount of impervious surface area on the site which could slightly alter the drainage pattern of the site. Soil erosion or siltation could result from excavation and grading activities during construction. However, the proposed project would include preparation and implementation of a SWPPP and an Erosion and Sediment Control Plan which would include BMPs to prevent erosion and siltation during construction. In addition, the project would include six bio-retention planter areas totaling 2,889 square feet for on-site storm water retention and treatment and the project would comply with the low impact development requirements of Provision C.3 of the Municipal Regional Permit, SMCSWPPPP requirements, and Subchapter 3.10 of the Town's Municipal Code. Therefore, the proposed project would not result in substantial erosion or siltation on- of off-site. This will not be discussed further in the EIR.

d) Significantly alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Less than Significant Impact. There are no streams or other water features in the project vicinity that would be altered by the project. The proposed project would increase the amount of impervious surface area on the site which could slightly alter the drainage pattern of the site or increase the rate or amount of surface runoff from the site. However, the project would include six bio-retention planter areas totaling 2,889 square feet for on-site storm water retention and treatment. These storm water bio-retention areas are sized to meet the requirements of Provision C.3 of the Municipal Regional Permit and San Mateo County storm water treatment design requirements. Therefore, the proposed project would not result in flooding on- of off-site. This will not be discussed further in the EIR.

e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?

Less than Significant Impact. The proposed project would increase amount the impervious surface area on the site which could interfere with groundwater recharge in these impervious areas. However, 37,331 square feet or approximately 0.86 acre of the site would remain pervious and the project would also include six bio-retention areas totaling 2,889 square feet. This exceeds the minimum treatment area required by the SMC SWPPP by 174 square feet. These storm water bio-retention areas are sized to meet the requirements of Provision C.3 of the Municipal Regional Permit and San Mateo County storm water treatment design requirements. Measures for storm water pollution prevention consistent with Subchapter 3.10 of the Town's Municipal Code would also be followed, including litter prevention, frequent cleaning of parking lots and BMPs for new development. With on-site storm water retention and treatment and compliance with Provision C.3, SMCSWPPP requirements, and Subchapter 3.10 of the Town's Municipal Code, the proposed project would not create or contribute to runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff. This will not be discussed further in the EIR.

f) Otherwise substantially degrade water quality?

No Impact. As described in response to question a, the proposed project would include preparation and implementation of a SWPPP and an Erosion and Sediment Control Plan to prevent potentially significant impacts to water quality during project construction, and bio-retention areas for on-site storm water retention and treatment as well as compliance with Provision C.3, SMCSWPPP requirements, and Subchapter 3.10 of the Town's Municipal Code to prevent potentially significant impacts to water quality during project operation. The project would not otherwise substantially degrade water quality.

g) Place housing within an existing 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

h) Place within an existing 100-year flood hazard area structures that would impede or redirect flood flows?

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

No Impact (g-i). Colma is not part of the Federal Emergency Management Agency (FEMA) flood mapping program. However, a locally devised flood zone along Colma Creek is shown on the Town's Zoning Map. The project site is not within the creek setback zone shown on the Town's Zoning Map (Town of Colma, 2009b) or within an Area Subject to Flooding shown on the General Plan Hazards Map (Town of Colma, 1999). In addition, the project site is not within a dam failure inundation zone according to the Dam Inundation Areas- San Mateo County map (San Mateo County, 2005). Therefore, the proposed project would not place housing or other structures within an existing 100-year flood hazard area or expose people or structures to a significant risk of loss, injury or death involving flooding. These issues will not be discussed further in the EIR.

j) Inundation by seiche, tsunami, or mudflow?

No Impact. The project site is not near any large inland body of water and thus is not at risk of inundation from a seiche. According to the Tsunami Inundation Map for Emergency Planning: San Francisco South Quadrangle (Pacific Coast), the project site is not within a Tsunami Inundation Area (CEMA, CGS and University of Southern California, 2009). The project site and surrounding area are relatively level; therefore, the site is not subject to inundation by mudflow. These issues will not be discussed further in the EIR.

Sources:

California Emergency Management Agency (CEMA), California Geological Society (CGS), and University of Southern California, 2009. Tsunami Inundation Map for Emergency Planning: San Francisco South Quadrangle (Pacific Coast). June 15, 2009. Available at: http://www.conservation.ca.gov/cgs/geologic_hazards/Tsunami/Inundation_Maps/SanMateo/Documents/Tsunami_Inundation_SouthSanFrancisco_PacificCoast_Quad_SanMateo.pdf, accessed March 21, 2016.

Langan Treadwell Rollo, 2014. Phase I Environmental Site Assessment, 1670-1692 Mission Road, Colma, California. Prepared for Mercy Housing California, San Francisco, California. December 3, 2014.

Moffat & Nichol and AGS, 2015 (May). San Bruno Creek / Colma Creek Resiliency Study. Draft Report. Prepared for San Francisco International Airport. Available at: https://green.smcgov.org/sites/green.smcgov.org/files/SanBruno_Colma%20Resiliency%20Draft_Rpt_150511.pdf, accessed March 21, 2016.

Oakland Museum of California, 2007. Creek and Watershed Map of Daly City and Vicinity. Available at: http://explore.museumca.org/creeks/WholeMaps/11_Daly%20City%20Creek%20Map.pdf, accessed March 21, 2016.

Rockridge Geotechnical, 2015. Geotechnical Investigation, Proposed Residential Development, 1670-1692 Mission Road, Colma, California. Prepared for Mercy Housing. March 24. Project No. 15-846.

San Mateo County, 2005. Dam Inundation Areas- San Mateo County. Available at: http://planning.smcgov.org/sites/planning.smcgov.org/files/documents/files/Dam_Failure_Inundation.pdf, accessed March 21, 2016.

State Water Resources Control Board, 2012. Final 2012 California Integrated Report (Clean Water Act Section 303(d) List / 305 (1) Report). Available at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2012.shtml, accessed March 21, 2016.

Town of Colma, 1999 and 2000. General Plan Safety Element and Conservation and Open Space Element. Available at: http://www.colma.ca.gov/index.php/codes/general-plan, accessed March 21, 2016.

Town of Colma, 2009a. Colma Municipal Code Subchapter 3.10: Town of Colma Stormwater Management and Discharge Control Code, Subchapter 5.07: Grading and Erosion and Sediment Control, and Subchapter 5.11: Water Efficient Landscape Regulations. Available at: http://www.colma.ca.gov/index.php/municipal-code-124, accessed March 21, 2016.

Town of Colma, 2009b (July). Town of Colma General Plan: Zoning. Available at: http://www.colma.ca.gov/index.php/codes/municipal-code/9-zoning-maps-1/571-colma-zoning-1/file, accessed March 21, 2016.

1.10 LAND USE AND PLANNING

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

1.10.1 Environmental Setting

The project site is zoned Commercial (C), Design Review (DR) and has a General Plan designation of Commercial Land Use – Mission Road North (Figure 2-2). The Commercial land use and zoning allow for the present uses on site which are vehicle storage and a machine shop (Figure 2-3 and Figure 2-4) but it also allows for residential uses with the approval of a Planned Development Permit and Use Permit.

Land uses surrounding the project are described in Project Description and shown in Figures 2-3, 2-4, and 2-5.

1.10.2 Regulatory Setting

The Town of Colma General Plan – Housing Element

The Town's Housing Element identifies this site as a required residential development site to satisfy the Town's housing production requirements. It allows for multi-family housing units at this location, within the General Plan density allowances. The Housing Element also identifies the Planned Development rezoning process for permitting residential uses at the site. This rezoning process will allow for the most development flexibility in setting standards for height, setbacks, ingress, egress and landscaping due to the unique and physical constraints of the site, and is required for the development of more than 5 residential units.

The site's maximum allowable density is 22 units per acre (which equates to 49 units based on the 2.23 acre site size) and the project proposes 30 units per acre which includes a 35 percent density bonus. Mercy Housing is able to include this density bonus because the development includes all affordable housing units. Consistent with Government Code Section 69515 et seq., as referenced in the Colma Municipal Code, the developer of a proposed housing project of at least five units must provide housing units affordable to income-qualified households to qualify for a density bonus, concessions or other incentives.

The property is not in a Spanish Mediterranean "S" overlay area, therefore the following Housing Element policy would apply to the project:

Policy 5.02.324: It is intended that new buildings in design review districts should be reviewed to ensure that exterior building design, materials and colors are appropriate for the setting where the new buildings are located.

Town of Colma Municipal Code – Zoning Ordinance

The existing Commercial zoning at the site establishes five (5) foot setbacks for the front, side and rear property lines and a height limitation of 40 feet. The project proposes a front setback of more than nine feet, side setback of over 87 feet and rear setback of over 18 feet and therefore meet all the requirements of the commercial zoning district. The floor to area ratio is limited to 1.0 and the project proposes an FAR of 0.64. The maximum lot coverage is 50 percent and the project proposes a lot coverage of 25 percent. The project meets all commercial zoning floor and lot area requirements. The pump house is an existing feature at the site and is not proposed for relocation as part of the project. Therefore, it will remain an existing feature at the site (it should be noted that the pump building does not currently meet the 5 foot front setback requirement, but will become conforming as part of the rezoning process which allows for reduced setbacks).

Chapter 5.03.300 of the Town's Zoning Ordinance describes the restrictions and procedures applicable to the "DR" Design Review Zone. As discussed in Aesthetics, the Town has found that the project's architectural plans meets all applicable technical DR Design review requirements, but that the City Council has ultimate review authority for the project (M. Laughlin, pers. comm. 2016).

In addition, the Zoning Ordinance, Chapter 5.03.345, includes a "no net loss" requirement which requires that designated housing sites, including the proposed project site, be developed for housing, and if not, that housing be developed elsewhere in the Town.

BART

BART property and right-of-way extends the length of the project site's eastern boundary. BART establishes setback requirements for structures at 50-feet at grade; and for ground disturbing activities in areas within 1:1.5 below grade from the BART underground tunnel. The project meets both setback requirements and project plans shall require approval from BART to ensure their standards are met.

1.10.3 Discussion

Would the proposed project:

a) Physically divide an established community?

No Impact. The proposed project is an affordable housing development within an area of the Town that is adjacent to cemetery/open space and commercial uses. BART property separates the site from the cemetery/open space lands to the east and a maintenance access road separates the site from the Cypress Lawn Cemetery to the north. Mission Road is the site's western border. The project does not separate or divide the community such that movement between the site and adjacent parcels is cut off or otherwise restricted.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Less than Significant Impact. Construction of the Project would have a significant environmental impact if it would conflict with established policies in adopted plans, policies, or regulations. The project site is zoned Commercial (C), Design Review (DR) and has a General Plan designation of Commercial Land Use – Mission Road North (Figure 2-2). The Commercial land use and zoning allow for the present uses on site which are vehicle storage and a machine shop but it also allows for residential uses with the approval of a Use Permit. The Town's Housing Element Update identifies this site as a required residential development site to satisfy the Town's housing production requirements. The Housing Element also identifies using the Planned Development rezoning process for permitting residential uses at the site. This rezoning process will allow for the most development flexibility in setting standards for height, setbacks, ingress, egress and landscaping due to the unique and physical constraints of the site. Thus, the project is consistent with the site's General Plan designation and applicable sections of the zoning ordinance.

As discussed in the Aesthetics section, the project is located within the Design Review overlay area and preliminary review by the Town under Design Review standards determined that the project architectural plans demonstrated compliance with all stated standards (M. Laughlin, pers. comm. June 2, 2016). Please see Aesthetics Section for additional discussion of the Town's Design Review requirements.

As stated above in Section 1.4.3 Biological Resources discussion of response e) the project would be consistent with the Town's Tree Cutting and Removal Ordinance (Municipal Code Section 5.06) and the Town's policies protecting biological resources with the implementation of mitigation measures BIO-1 and BIO-2.

The project would also be consistent with Town General Plan and Municipal Code requirements related to geology, hydrology, noise, public services, recreation and utilities and services. Please see the applicable IS chapters for applicable policies.

This Initial Study Environmental Checklist and Responses notes potentially significant impacts associated with Cultural Resources. Relevant policies protecting the Town's Historic Resources are presented in the EIR, Chapter 4.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

No Impact. No habitat conservation plan or natural community conservation plan applies to the project site. Therefore there would be no impact or conflict with a habitat conservation plan or natural community conservation plan.

Sources:

Town of Colma. 2015 Housing Element. Adopted by the City Council on January 14, 2015. Certified by the California Department of Housing and Community Development on January 30, 2015.

Town of Colma. 2016. Municipal Code. Accessed at: http://www.colma.ca.gov/index.php/codes/municipal-code/5-planning-zoning-use-development-of-land-1/337-d-chapter-5-subchapter-03-zoning-1/file. Municipal Code accessed on June 20, 2016.

1.11 MINERAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
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?	☐	☐	☐	☒

1.11.1 Discussion

Would the proposed project:

- **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?**

No Impact (Responses a – b). No locally important mineral resource or locally-important resource recovery sites are designated in the project area by either the Town of Colma General Plan or the San Mateo County General Plan or Zoning Ordinance. The proposed project is an affordable housing project and would not impact mineral resources and potential mineral resource impacts from project implementation are not evaluated further in the EIR.

Sources:

Town of Colma. 1999. *Town of Colma General Plan*. Adopted June 1999. Accessed May 30, 2016. <http://www.colma.ca.gov/index.php/codes/general-plan>

County of San Mateo. 1986. *San Mateo County General Plan*. Approved by Board of Supervisors November 18, 1986. Accessed May 30, 2016. <http://www.co.sanmateo.ca.us/vgn/images/portal/cit_609/10073472gp_polis.pdf>

1.12 NOISE

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

1.12.1 Environmental Setting

This section describes the fundamentals of noise and the existing noise conditions in the project area, summarizes applicable regulations that govern noise, evaluates the noise impacts from the construction and operation of the proposed project features, and identifies mitigation measures to address the impacts found to be potentially significant.

Noise is defined as loud, unpleasant, or unwanted sound. The frequency (pitch), amplitude (intensity or loudness), and duration of noise all contribute to the effect on a listener, or receptor, and whether or not the receptor perceives the noise as objectionable, disturbing, or annoying.

The Decibel Scale (dB)

The decibel scale (dB) is a unit of measurement that indicates the relative amplitude of a sound. Sound levels in dB are calculated on a logarithmic basis. An increase of 10 dB represents a tenfold increase in acoustic energy, while 20 dBs is 100 times more intense, 30 dBs is 1,000 more intense, and so on. In general, there is a relationship between the subjective noisiness, or loudness of a sound, and its amplitude, or intensity, with each 10 dB increase in sound level perceived as approximately a doubling of loudness.

Sound Characterization

There are several methods of characterizing sound. The most common method is the “A-weighted sound level,” or dBA. This scale gives greater weight to the frequencies of sound to which the human ear is typically most sensitive. Thus, most environmental measurements are reported in dBA, meaning decibels on the A-scale.

Human hearing matches the logarithmic A-weighted scale, so that a sound of 60 dBA is perceived as twice as loud as a sound of 50 dBA. In a quiet environment, an increase of 3 dB is usually perceptible, however, in a complex noise environment such as along a busy street, a noise increase of less than 3 dB is usually not perceptible, and an increase of 5 dB is usually perceptible. Normal human speech is in the range from 50 to 65 dBA. Generally, as environmental noise exceeds 50 dBA, it becomes intrusive and above 65 dBA noise becomes excessive. Nighttime activities, including sleep, are more sensitive to noise and are considered affected over a range of 40 to 55 dBA. Table 1.12- lists typical outdoor and indoor noise levels in terms of dBA.

Table 1.12-1. Typical Outdoor and Indoor Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	-110-	Rock Band
Jet flyover at 1,000 feet		
	-100-	
Gas lawn mower at 3 feet		
	-90-	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	-80-	Garbage disposal at 3 feet
Noise urban area, daytime		
Gas lawnmower, 100 feet	-70-	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	-60-	
		Large business office
Quiet urban daytime	-50	Dishwasher next room
Quite urban nighttime	-40-	Theater, large conference room (background)
Quiet suburban nighttime		
	-30-	Library
Quite rural nighttime		Bedroom at night
	-20-	
		Broadcast/recording studio
	-10-	
Lowest threshold of human hearing	-0-	Lowest threshold of human hearing

Source: Caltrans 2009

Sound levels are typically not steady and can vary over a short time period. The equivalent noise level (Leq) is used to represent the average character of the sound over a set period of time. The Leq represents the level of steady noise that would have the same acoustical energy as the sum of the time-varying noise measured over a given time period. Leq is useful for evaluating shorter time periods over the course of a day. The most common Leq averaging period is hourly, but Leq can describe any series of noise events over a given time period.

Variable noise levels are values that are exceeded for a portion of the measured time period. Thus, L01 is the level exceeded one percent of the time and L90 is the level exceeded 90 percent of the time. The L90 value usually corresponds to the background sound level at the measurement location.

Noise exposure over the course of an entire day is described by the day/night average sound level, or Ldn, and the community noise equivalent level, or CNEL. Both descriptors represent the 24-hour noise impact on a community. For Ldn, the 24-hour day is divided into a 15-hour daytime period (7 AM to 10 PM) and a nine-hour nighttime period (10 PM to 7 AM) and a 10 dB “penalty” is added to measure nighttime noise levels when calculating the 24-hour average noise level. For example, a 45 dBA nighttime sound level would contribute as much to the overall day-night average as a 55 dBA daytime sound level. The CNEL descriptor is similar to Ldn, except that it includes an additional 5 dBA penalty beyond the 10 dBA for sound events that occur during the evening time period (7 PM to 10 PM). The artificial penalties imposed during Ldn and CNEL calculations are intended to account for a receptor’s increased sensitivity to sound levels during quieter nighttime periods.

Sound Propagation

The energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out and travels away from the noise generating source. Theoretically, the sound level of a point source attenuates, or decreases, by 6 dB with each doubling of distance from a point source. Sound levels are also affected by certain environmental factors, such as ground cover (asphalt vs. grass or trees), atmospheric absorption, and attenuation by barriers. Outdoor noise is also attenuated by a building’s exterior walls so that sound levels inside a residence are from 10 to 20 dB less than outside, depending mainly on whether windows are open for ventilation or not and the type of building materials used.

When more than one point source contributes to the sound pressure level at a receiver point, the overall sound level is determined by combining the contributions of each source. Decibels, however, are logarithmic units and cannot be directly added or subtracted together. Under the dB scale, a doubling of sound energy corresponds to a 3 dB increase in noise levels. For example, if one noise source produces a sound power level of 70 dB, two of the same sources would not produce 140 dB – rather, they would combine to produce 73 dB.

In typical noisy environments, changes in noise of 1 to 2 dB are generally not perceptible. However, it is widely accepted that people are able to begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness.

Vibration

Vibration is the movement of particles within a medium or object such as the ground or a building. Vibration may be caused by natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or humans (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, groundborne vibrations may be described by amplitude and frequency. Vibration amplitudes are usually expressed in peak particle velocity (PPV) in inches per second (in/sec). PPV represents the maximum instantaneous positive or negative peak of a vibration signal and is most appropriate for evaluating the potential for building damage. As with airborne sound, the groundborne velocity can also be expressed in decibel notation as velocity decibels, or VdB (FTA 2006).

Existing Ambient Noise Levels

The proposed project site is located in the Town of Colma in northern San Mateo County. Colma is characterized by the 17 cemeteries within its approximately two square mile boundary. The Town’s Noise Element identifies the primary sources of noise in Colma as traffic noise from Interstate 280 and arterial roadways in the community, specifically El Camino Real, Serramonte Boulevard, and Junipero Serra Boulevard. The General Plan includes two maps of noise contours for the Town of Colma: measured noise levels from 1998 and projected levels for

2015. The noise contours follow El Camino Real as it shifts away from Mission Road designating a higher noise area on the northern part of the proposed project site. The 1998 noise contour map shows noise levels ranging from 55 dBA to 70 dBA across the proposed project site. The 2015 project noise contour map shows the proposed project site in the same range, between 55 dBA and 70 dBA, but more of the site is in the higher noise range.

To characterize the noise levels that occur in the project area, MIG|TRA conducted 24-hour monitoring at the proposed building site. Sounds levels were measured with two Larson Davis Model 720 Type 2 sound level meters in 10-minute intervals. Monitors were placed in two different locations. Meter 1 (M1) was placed in the northwest section of the project area approximately 40 feet east of Mission Road, and 340 feet east of El Camino Real. Meter 2 (M2) was placed in the northeast section of the project area approximately 20 feet south and 38 feet west of the concrete wall for the BART ventilation structure. Table 1.12-2 summarizes the results of the noise monitoring. Conditions were mostly overcast with light fog in the early morning and breaking cloud cover leading to sunny skies midday. Temperatures ranged from low 50s at night to mid to high 60s during the day.

Table 1.12-2 Existing Ambient Noise Levels[(A)]

Noise Monitoring Location	Ambient Noise Levels (dBA)							
	Ldn	CNEL	L(10)	L(33)	L(50)	L(90)	Lmax	Lmin
M1 – Along Mission Rd near El Camino Real	63.0	63.5	63.1	58.4	55.4	48.8	88.0	37.1
M2 – Near concrete wall for BART ventilation structure	57.9	58.2	56.3	52.3	51.4	49.6	97.6	38.2

Source: MIG|TRA; 2016. See Appendix G of the EIR

(A) Monitoring conducted from 8 AM on 7 June 2016 to 8 AM on 8 June 2016.

During the monitoring, both transportation and non-transportation noise source were observed to contribute to the ambient noise levels at the proposed project site. Transportation noise sources consisted of vehicle traffic on Mission Road, including cars pulling in and out of businesses along Mission Road, and on nearby El Camino Real, as well as overhead aircraft. Non-transportation noise sources included loud conversation and labor sounds from auto shops, including pneumatic tools, along Mission Road. Noise levels were observed from approximately 20 feet south and 38 feet west of the concrete wall for the BART ventilation structure. Noise levels from the BART shaft were not audible above background noise and are not a substantial contributor to ambient noise levels.

Sensitive Receptors

Sensitive receptors are facilities that house or attract people who are especially sensitive to the effects of the noise environment. Hospitals, schools, convalescent facilities, parks, and residential areas are examples of sensitive receptors. The closest sensitive noise receptors are single family homes located west of El Camino Real, approximately 500 feet west of the proposed project site (at their closest point); the Treasure Island RV Park, located approximately 230 feet south of the proposed project site; and four residences behind Malloy’s Tavern across the street, approximately 100 feet west of the project site. In addition, the proposed 66-unit residential apartment complex is considered a noise sensitive land use because it would introduce new sensitive residential receptors to the site. There are no schools, daycares, senior living facilities, or hospitals near the proposed project site.

1.12.2 Regulatory Setting

Caltrans Noise and Vibration Criteria

Caltrans' 2004 Transportation and Construction-Induced Vibration Guidance Manual provides a summary of vibration criteria that have been reported by researchers, organizations, and governmental agencies, including standards from the International Standards Organization and the American Association of State Highway and Transportation Officials, which establish human response (78 VdB/ 0.008 in/sec PPV for daytime residential land uses) and building structural damage criteria (0.1 in/sec PPV). Chapter seven of this manual provides Caltrans guidelines for vibration damage potential and vibration annoyance potential. These guidelines are summarized in Table 1.12-3

Table 1.12-3 Caltrans' Groundborne Vibration Threshold Criteria

Human Response	**Maximum PPV (inches/second)**
Barely Perceptible	0.01
Distinctly Perceptible	0.04
Strongly Perceptible	0.10
Severe	0.4
Vibration Damage Potential Criteria	**Maximum PPV (inches/second)**
Extremely Fragile Historic Buildings	0.08
Fragile Buildings	0.1
Historic and Some Old Buildings	0.25
Older Residential Structures	0.3
New Residential Structures	0.5
Modern Industrial/Commercial Buildings	0.5

Source: Caltrans 2004

Town of Colma General Plan

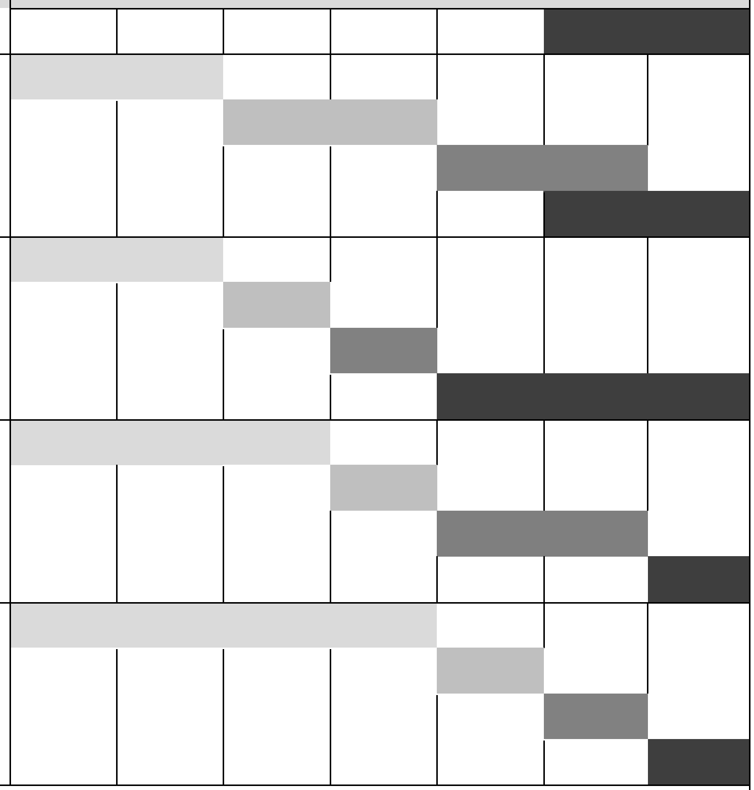
The Town of Colma General Plan provides information and policies related to noise sources, impacts and mitigation measures. The General Plan prescribes noise exposure criteria and standards for new development. The goal of the Noise Element in the General Plan is to protect, maintain, and improve the tranquil environment within the Town. Table 1.12-4 shows the Town land use compatibility standards for 24-hour ambient noise levels (CNEL).

Table 1.12-4. Town of Colma Noise / Land Use Compatibility Standards

Relevant Land Use Category	**Community Noise Exposure Level (CNEL)**					
	55	**60**	**65**	**70**	**75**	**80**
Residential: Low Density Single Family, Duplex and Mobile Homes						
Residential – Multi-Family						

Table 1.12-4. Town of Colma Noise / Land Use Compatibility Standards

Relevant Land Use Category	Community Noise Exposure Level (CNEL)					
	55	60	65	70	75	80
Schools, Libraries, Churches, Hospitals and Nursing Homes						
Playgrounds and Neighborhood Parks						
Golf Course, Riding Stables, Water Recreation, Cemeteries						
Industrial, Manufacturing, Utilities, Agriculture						



Source: Town of Colma General Plan, Table N-3: Land Use Compatibility for Community Noise Environments (modified) (Colma 1999)

Key:

Normally Acceptable – The range of noise levels in this category are compatible with the specified land use type. No special noise insulation is required in buildings of conventional construction.

Conditionally Acceptable – The range of noise levels in this category are higher than those normally acceptable for the specified land use type. A detailed acoustic study should be undertaken to set forth design features that will reduce exterior noise levels and for construction to control the amount of exterior noise reaching interior use spaces.

Normally Unacceptable – New construction or development of the specified land use type should be discouraged. If development is to proceed, a detailed acoustic study must be prepared and needed noise insulation features incorporated into the design.

Unacceptable – New development of the specified land use type should not be undertaken when the site falls within the range of noise levels in this category.

The General Plan includes the following policies and noise reduction strategies applicable to the proposed project:

- **Policy 5.06.311** – The Town should review proposed development with regard to potential noise generation impacts, to ensure that the tranquil atmosphere for the Town's memorial parks is maintained.
- **Policy 5.06.312** – Land use decisions should include consideration of the noise compatibility chart and acoustic reports required for all development in locations where noise levels exceed the "normal acceptable" range for specified land use types. Mitigation measures should be required if recommended in the acoustic report.
- **Policy 5.06.313** – A detailed acoustic report should be required in all cases where hotels, motels, and multiple-family dwellings are proposed in areas exposed to exterior

noise levels of 60 Ldn or greater. Mitigation measures should be required if recommended in the report.

- **Policy 5.06.315** – An ordinance should be adopted limiting days and hours of construction to provide quiet time.

Town of Colma Municipal Code

Chapter 2, Prohibited Activities, Subchapter 05, Noise Limitations, of the Colma Municipal Code limits noise in residential areas to protect and promote public health, safety, and welfare. The Code does not list quantitative noise thresholds for interior or exterior noise standards. Rather, the code focuses on subjective traits for community noise, such as annoyance, disturbance, and offensiveness. In particular, Section 2.05.020 states:

(a) It shall be unlawful for any person to willfully make or continue, or cause to be made or continued, any loud and unnecessary noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area. The standards which may be considered in determining whether a violation of the provisions of this section exists may include, but not be limited to, the following:

(1) The levels of the noise;
(2) Whether the nature of the noise is usual or unusual;
(3) Whether the origin of the noise is natural or unnatural;
(4) The level and intensity of the background noise, if any;
(5) The proximity of the noise to residential sleeping facilities;
(6) The nature and zoning of the area within which the noise emanates;
(7) The time of the day and night the noise occurs;
(8) The duration of the noise; and
(9) Whether the noise is recurrent, intermittent, or constant.

In addition, per Section 5.04.220 of the Town Code, construction activities within a 500-foot radius of any residential unit, including Planned Developments that include residential uses, may only conduct construction or repair work that generates noise in excess of 85 decibels, as measured by the property line, on Monday through Friday between 7 AM and 7 PM, and Saturday, Sundays and Colma-observed holidays between 9 AM and 5 PM. The Building Official may grant an exception for special conditions when requested in writing and approved by the Building Official. The above requirements do not apply to emergency repair work, work for public utility and street repair, street sweeping, garbage collection, and emergency response warning systems (Colma 2015).

1.12.3 Discussion

Would the proposed project:

a) Expose persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant Impact. The proposed residential facility would consist of a combined two- and three-story 66-unit residential building and a one-story building containing offices and a social hall. Outdoor spaces include several courtyards, garden area, and two parking areas. Noise monitoring indicates ambient noise levels at parts of the site are above the “conditionally acceptable” level of 60 CNEL / Ldn for Residential – Multi-Family designated land uses. This ambient noise monitoring level is consistent with the Town’s General Plan, which states that multi-family dwellings within approximately 360 feet of El Camino Real, and which have a direct line of sight to El Camino Real, could be impacted by noise.

As required by state law and the Town’s General Plan, multi-family dwellings proposed in areas exposed to exterior noise levels of 60 Ldn or higher must prepare a detailed acoustic report (General Plan Policy 5.06.313). The report must be prepared by an acoustical engineer holding a degree in engineering, architecture, or physics and set forth measures that would reduce exterior noise levels to 60 Ldn and control the amount of exterior noise reaching interior spaces to 45 Ldn or less. Such features may include site planning and design considerations (e.g., increase distance between noise sources and receptors), architectural treatments and special construction techniques, and shields or barriers that reduce noise. Standard construction techniques provide a minimum of 15-20 dBA reduction from outdoor to indoor noise levels, thus, with such measures, interior noise levels are not likely to exceed 45 Ldn. The applicant's preparation of a detailed acoustical report and the Town's review and approval of the report prior to the issuance of a building permit would ensure the project does not expose persons to noise levels that exceed applicable standards (Standard Project Conditions/BMP). Please refer to discussion c) for the potential impacts from project-generated noise on adjacent land uses.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Less Than Significant Impact. Site construction and development would involve the use of construction equipment such as graders, pavers, and cranes that would expose people and structures to groundborne vibration. Human response to groundborne vibration is subjective and varies from person to person. Caltrans identifies the threshold criteria in Table 1.12-6 for human response to, and potential structural damage from, continuous or frequent intermittent sources of vibration.

Table 1.12-6. Groundborne Vibration Threshold Criteria

Land Use Criteria - Human Response	**Maximum PPV (inches/second)**	**Max Lv (dBV)**
Workshop – Distinctly feelable vibration	--	90
Office – Feelable vibration	--	84
Residential Day – Barely feelable vibration	--	78
Residential Night – Vibration not likely feelable	--	72
Threshold of human perception	--	65
Construction Vibration Damage Criteria	**Maximum PPV (inches/second)**	**Approximate Lv (dBV)**
I. Reinforced concrete steel or timber	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90
Source: FTA 2006; MIG|TRA 2016		

The proposed site property line is located at least 30 feet from any structure and 100 feet from the nearest sensitive residential receptor (the residences behind Malloy's Tavern). Table 1.12-7 lists the estimated vibratory motion and groundborne velocity for this equipment at distances of 30 and 100 feet.

Table 1.12-7. Project Construction Groundborne Vibration Estimates[(A)]

Equipment	**Estimated PPV (inches/second)**		**Estimated dBV**	
	30 Feet	**100 Feet**	**30 Feet**	**100 Feet**
Vibratory roller	0.17	0.046	91.6	65.9

Large bulldozer	0.07	0.019	84.6	68.9
Small bulldozer	0.00	0.001	55.6	39.9
Loaded truck	0.06	0.017	83.6	67.9
Jackhammer	0.03	0.008	76.6	60.9
Source: FTA 2006; MIG|TRA 2016 (A) Estimations based on a reference distance of 25 feet.				

As shown in Table 1.12.7, project construction equipment would not produce excessive groundborne vibration at sensitive residential receptor locations. The maximum dBV, 68.9, and PPV, 0.046 inches / second, at a distance of 100 feet is below Caltrans criteria for "not likely feelable" and structural damage. Construction equipment, particularly vibratory rollers, could be perceptible to workers at adjacent businesses in close proximity to the equipment (within approximately 30 feet); however, this impact would not be excessive and is considered less than significant because it would be infrequent and short in duration (lasting a few hours each day, and only a few days in close proximity to the structure) and would not exceed thresholds for architectural damage for masonry buildings.

Once constructed, new residential receptors at the site could be exposed to vibration from underground BART service that runs near and underneath the proposed project site. BART implemented several mitigation measures outlined in the BART – San Francisco Airport Extension EIR (1995) including floating slab trackbed and resiliently supported ties or soft rail fasteners, to decrease groundborne vibration to less than significant levels; therefore, groundborne vibration effects from the BART line on the new resident population would be less than significant.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Less Than Significant Impact. The proposed project would result in new residential uses that would not contain sources of noise that would cause a substantial permanent increase in noise levels in the project vicinity. The project site is currently zoned as Commercial and existing uses contribute non-transportation noise to ambient conditions, including noise from pneumatic tools, human speech, etc. (see section 1.12.1). These noise sources would cease and be replaced with similar noise sources from the proposed residential land use (e.g., car doors closing, landscaping equipment, human speech). Ambient noise monitoring indicates transportation noise from El Camino Real is the significant contributor to ambient noise levels in the project vicinity. Car doors closing, human speech, and other residential land use noises would be highest during the daytime and would likely not be noticeable or discernible above ambient noise levels. The proposed project would add vehicle trips to the roadway system, but the number of trips added would be well below existing roadway volumes and would not result in substantial transportation noise. Therefore, this impact is less than significant.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Less Than Significant Impact. Site construction and development could temporarily increase noise levels in the project vicinity, including at the northeast section of Winston Manor and the northern area of Treasure Island RV Park (sensitive residential receptor locations). This noise would be produced by equipment such as graders, bulldozers, backhoes, and drill rigs.

Table 1.12-8 lists typical construction equipment, and the noise level it would generate at distances of 30 feet, 100 feet, and 500 feet. The noise levels for most of this equipment at a distance of 30 feet ranges from roughly 80 to 86 dBA. When equipment is used in combination, noise levels would be approximately 3 to 5 dB higher. These noise levels would be intermittent, occurring throughout the day during the construction period. Noise levels are anticipated to be highest during site preparation and grading as well foundation installation. Building construction and finishing activities would require less heavy equipment generating lower overall noise levels.

Table 1.12-8. Typical Construction Equipment Noise Levels

Equipment	Noise Level (Leq)		
	30 feet	100 Feet	500 feet
Backhoe	80	70	56
Bulldozer	85	75	61
Concrete Mixer	77	75	53
Crane	85	71	61
Excavator	81	75	57
Generator	85	73	61
Pneumatic Tools	83	76	59
Scraper	86	75	62
Truck (concrete and supplies delivery)	85	75	61
Vibratory Compactor	85	67	61
Source: Caltrans 2009; FTA 2006; FHWA 2010; modified by MIG|TRA 2016.			

Construction noise is considered a less than significant impact because of the temporary nature of the noise and because the hours of construction are limited. The Town of Colma restricts all site development and building construction exceeding 85 dBA at the property line, that are within a 500-foot radius of residential structures, to the hours of 7 AM to 7 PM, Monday through Friday, and 9 AM to 5 PM on Saturday, Sunday and Colma observed holidays unless the special permission is granted by the Building Official. Short-term construction noise is a less than significant impact.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Less than Significant Impact. San Francisco International (SFO) is located approximately 5 miles southeast of the project site. The project site is within SFO airport's Airport Influence Area A (all of San Mateo County) and Airport Influence Area B (all of the Town of Colma). The projected 2020 CNEL noise contour map from the Draft Environmental Assessment for the Proposed Runway Safety Area Program shows the project site is within a noise compatible zone and would not expose people to excessive noise levels. On July 28th, 2016, the Airport Land Use Commission recommended that the City/County Association of Governments (C/CAG) of San Mateo County Board determine the project is consistent with the SFO ALUCP. Subsequent C/CAG Board approval is expected.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. There are no private airstrips located within the project vicinity.

Sources:

Bay Area Rapid Transit District (BART), U.S. Department of Transportation Federal Transit Administration, San Mateo County Transit District. 1995. *BART – San Francisco Airport Extension. Noise and Vibration. Draft Environmental Impact Report /Technical Appendix.* January 1995.

California Department of Transportation (Caltrans) 2004. *Transportation- and Construction-Induced Vibration Guidance Manual*. Prepared by Jones and Stokes for Caltrans Noise, Vibration, and Hazardous Waste Management Office. Sacramento, CA. June 2004.

______2009. *Technical Noise Supplement*. ICF Jones & Stokes. November 2009.

Town of Colma. 1999. *General Plan. Noise Element.* Adopted June 1999.

______2013. *Municipal Code. Chapter Two: Prohibited Activities.* Published October 30, 2014.

______2015. *Municipal Code. Chapter 6: Building & Construction.* Published June 16, 2009. Updated June 22, 2015.

U.S. Federal Highway Administration (FHWA). 2010. *Construction Noise Handbook, Chapter 9 Construction Equipment Noise Levels and Ranges*. U.S. Department of Transportation FHWA. May 20, 2010.

U.S. Federal Transit Administration (FTA) 2006. *Transit Noise and Vibration Assessment. FTA-VA-90-1003-06.* Washington, DC. May 2006.

1.13 POPULATION AND HOUSING

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

1.13.1 Environmental Setting

The Town of Colma, a small incorporated town in San Mateo County near the northern part of the San Francisco Peninsula, has a population of approximately 1,500 and 430 housing units (Colma 2015). The northeast section of the Winston Manor single-family residential neighborhood is located approximately 500 feet to the west and Treasure Island RV Park is located approximately 230 feet south of the proposed project site.

1.13.2 Regulatory Setting

Town of Colma General Plan

The Town of Colma General Plan includes the following housing policies relevant to the proposed project.

<u>Housing Element</u>

The proposed project would help the Town of Colma meet the following goals and policies from the Housing Element of the Town's General Plan:

Goal A: Identify adequate sites, with appropriate zoning and development standards and services to accommodate Colma's share of the regional housing needs for each income level.

Goal B: Assist in making available adequate housing to meet the needs of extremely low, very low, low and moderate income households.

Goal C: Address, and where possible, remove governmental constraints to the maintenance, improvement and development of housing, including housing for all income levels and housing for persons with disabilities.

Goal F: Promote equal housing opportunities for all persons regardless of race, religion, sex, marital status, ancestry, national origin, color, familial status or disability.

Policy 3: Provide incentives that encourage affordable high-density residential uses near major regional transportation facilities.

Policy 4: Provide Housing accessible to persons with special needs, including seniors, persons with disabilities, and homeless persons.

Policy 5: Assist citizens in locating and retaining affordable housing and promote equal housing opportunity and fair housing.

1.13.3 Discussion

Would the proposed project:

a) **Induce significant population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

Less Than Significant Impact. The proposed project would directly induce population growth by developing a 66-unit residential building consisting of 65 one-bedroom units and a single two-bedroom unit for an on-site manager. The proposed project would provide affordable housing as identified by the Town's Housing Element and would also help to accomplish the need for 250 additional housing units by 2040, as projected by the Association of Bay Area Governments (ABAG) and Metropolitan Transportation Commission (MTC) Plan for Bay Area Projections for Housing, Households and Jobs (ABAG/MTC 2013). The population growth associated with the proposed project would be in compliance with the Town's General Plan; therefore, the impact is less than significant.

No Impact.

b) **Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?**

c) **Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?**

No Impact (Responses b – c). The proposed 66-unit residential building would be located on a site that is already developed with commercial uses. There is no existing housing on the project site and no housing would be displaced by the project; therefore, no replacement housing would be needed elsewhere.

Sources:

Association of Bay Area Governments, Metropolitan Transportation Commission. 2013. *Draft Bay Area Plan: Final Forecase of Jobs, Population and Housing.* Accessed June 8, 2016. <http://planbayarea.org/pdf/final_supplemental_reports/FINAL_PBA_Forecast_of_Jobs_Population_and_Housing.pdf>

Town of Colma. 2015. *General Plan: 2015 Housing Element.* Adopted January 14, 2015. Accessed June 8, 2016. <http://www.colma.ca.gov/index.php/codes/general-plan/5-housing-element-1/1283-2015-housing-element-1/file>

United States Census Bureau. 2010. *FactFinder.* 2010 Census. Accessed June 8, 2016. <http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml?src=bkmk>

1.14 PUBLIC SERVICES

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

1.14.1 Environmental Setting

Fire and Emergency Response Services

Fire protection services for the proposed project site are provided by the Colma Fire Protection District (CFPD). CFPD is the only paid-on-call fire department in the Bay Area, with over 36 firefighters, a command officer staff and a department chief. The CFPD operates Station 85 located at 50 Reiner Street in Colma, which is approximately 1.3 miles northwest of the proposed project site. CFPD operates three fire engines and one ladder truck and is staffed with at least one on-duty paramedic at all hours of the day, every day of the year. In addition, CFPD members may respond to calls from home or their primary jobs as needed. CFPD is able to meet a response time under 6 minutes and 59 seconds for code 3 responses on a consistent basis (ESA 2014).

Police Services

The Colma Police Department (CPD) provides police protection services to the Town of Colma, including the proposed project site. The Colma Police station is located at 1199 El Camino Real, which is approximately a half-mile northwest of the proposed project site. The CPD consists of a staff of 26 officers, which includes a motorcycle officer, a member attached to the Daly City / North San Mateo County SWAT team, a tactical (SWAT) dispatcher and a Community Service Officer (Colma 2014).

Schools

Jefferson Elementary School District and Jefferson Union High School District provide public education for Brisbane, Daly City, Pacifica and the Town of Colma. There are two pre-schools, eleven elementary schools, and three middle schools in the Jefferson Elementary School District for a total enrollment of approximately 7,137 for the 2015-2016 year. The student population is diverse including Latino (34 percent), Filipino (28 percent), Asian (18 percent), and White (11 percent) students. There are five high schools in the Jefferson Union High School District with a total enrollment of approximately 4,926 students for the 2015-2016 school year. District enrollment by major ethnicity groups is approximately Filipino (30 percent), Latino (28 percent), White (15 percent), and Asian (15 percent) (CDE 2016).

Three community colleges make up the San Mateo County College District: Cañada College in Redwood City, College of San Mateo in San Mateo, and Skyline College in San Bruno. Cañada College currently serves approximately 6,300 students. College of San Mateo and Skyline College each serve approximately 10,000 students.

Parks

Town of Colma park facilities are described below under Recreation, Section 1.15.

Other Public Facilities

Library

San Mateo County Library's Brisbane Branch Library, located approximately 2.7 miles east of the project site, serves residents in the Town of Colma. San Mateo County Library's Millbrae Branch Library also serves residents of Colma, located approximately 5.75 miles southeast. The San Mateo County Library offers an array of library services including books, periodicals, newspapers, and information in multiple languages, as well as access to computers and the Internet, online databases, music, videos, business resources, and educational research. The Library also offers programs for children, teens, and adults, and outreach services in settings such as schools, low-income clinics and shelters. Educational programming includes homework help assistance, computer training, and literacy services for children, families and adults.

Colma residents can also use the City of Daly City's Library Westlake Branch which is located approximately 1.15 miles from the proposed project site. It is the second largest of the Daly City libraries, with over 60,000 books, audiobooks, music CDs, videos, DVDs, and magazines. The Westlake Library offers a computer lab with ten computers, a scanner, wireless internet access, a public-use typewriter, and a photocopier.

Community Centers

The Colma Community Center, located at 1520 Hillside Boulevard, is a 5,500 square foot facility that is used to host receptions, parties, reunions and events. The neighboring Colma Historical Park features the Colma Historical Museum, Train Depot, Freight Building and Blacksmith Shop, along with picnic tables and grass area. Sterling Park, located at 427 F Street, is a 1,200 square-foot facility that features a half-court basketball court, bocce ball court, outdoor restrooms, playground, grass area for games and picnic tables with BBQ pit. The Town also has a dog park, known as the Bark Park, located on the west end of D Street.

Medical Facilities

Seton Hall Medical Center, located at 1900 Sullivan Avenue in Daly City, is approximately 1.25 miles from the proposed project site. Kaiser Permanente Daly City has medical offices at 395 Hickey Blvd in Daly City approximately 0.8 mile from the proposed project site.

1.14.2 Regulatory Setting

Town of Colma General Plan

The Town of Colma General Plan Safety Element (1999) includes the following public services policies relevant to the proposed project.

Policy 5.07.433: Colma should assist the Fire Protection District in efforts to continue to maintain an average response time of two to four minutes to all locations in Colma.

Policy 5.07.434: The Town should continue to have the Colma Fire Protection District review development plans for conformity with the Uniform Fire Code and Title 24 of the California Building Code.

1.14.3 Discussion

Would the proposed project:

a) **Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically**

altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

i) Fire protection?

Less Than Significant Impact. The construction of the 66-unit apartment complex would comply with standard fire code requirements administered by the Town of Colma Building Division and specified in the California Building Code and California Fire Code. The proposed project would result in a slight increase of population, as discussed in Section 2.3.10, and would result in an increase in calls for emergency medical services and fire suppression services over existing conditions at the site. However, this increase in emergency service calls would not create a need for new or physically altered facilities to maintain adequate service ratios, response times, or other performance objectives (Balton 2016), therefore, the impact is less than significant.

ii) Police?

Less Than Significant Impact. As discussed in a), the proposed project would result in a slight increase in population and would likely increase the number of calls for service to the site over existing conditions. The potential increase in calls for service is not expected to impact police protection services that would result in the construction of a new police station or the need to hire additional personnel. Additionally, given the close proximity between the proposed project and CPD station, it is unlikely that response times for police protection services would be adversely affected to the point of requiring a new police station. The proposed project would note create a need for new or physically altered facilities to maintain adequate service ratios, response times, or other performance objectives (Stratton 2016), therefore, the impact is less than significant.

iii) Schools?

Less Than Significant Impact. The proposed project is in the Jefferson Elementary School District and Jefferson Union High School District (JUHSD). The project is not expected to generate a measurable number of new school aged children in either school district because the one-bedroom, veteran housing units are most likely to be occupied by single individuals or couples without children. Based on experience with their other veteran housing projects, Mercy Housing does not expect many children to be housed at this project site (Michael Kaplan, personal communication).

The elementary school district does not impose development impacts fees but the proposed residential development will pay school impact fees of $3.48 per square foot the JUHSD.

Because the project is not expected to generate measurable numbers of school aged children, the impacts to schools is considered a less than significant impact.

iv) Parks?

The potential environmental impacts related to parks are addressed in Section 1.15, Recreation.

v) Other public facilities?

Less Than Significant Impact. The proposed project would add 66 to 198 new residents to the area that would likely use nearby public facilities. The Association of Bay Area Governments (ABAG) and Metropolitan Transportation Commission (MTC) have estimated that Colma could accommodate up to 250 new units by 2040 (ABAG/MTC 2013). Based on limited land availability and land committed to cemetery use, the Town anticipates much more limited population growth and the subsequent use of the public facilities in the future. The impact will not result in adverse physical impacts associated with the provision of new or physically altered public facilities or the need for new or physically altered public facilities; therefore, the impact is less than significant.

Sources:

Association of Bay Area Governments, Metropolitan Transportation Commission. 2013. *Draft Bay Area Plan: Final Forecast of Jobs, Population and Housing.* Accessed June 8, 2016. <http://planbayarea.org/pdf/final_supplemental_reports/FINAL_PBA_Forecast_of_Jobs_Population_and_Housing.pdf>

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Environmental Science Associates (ESA). 2014. *Serramonte Ford Expansion IS/MND.* Prepared for the Town of Colma September 2014. Page 69.

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Town of Colma. 2014. Colma Police Department, Department Profile. Accessed June 13, 2016. <http://www.colma.ca.gov/index.php/town-departments/police/police-1>

______2015. *General Plan: 2015 Housing Element.* Adopted January 14, 2015. Accessed June 8, 2016. <http://www.colma.ca.gov/index.php/codes/general-plan/5-housing-element-1/1283-2015-housing-element-1/file>

1.15 RECREATION

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

1.15.1 Environmental Setting

The Town of Colma Recreation Services Department provides programs, activities and events for Colma residents of all age groups ranging from infants to seniors at two park facilities: The Colma Historical Park and Community Center; and Sterling Park and Recreation Center. Some events are conducted elsewhere, and include trips, tours and sporting events. The cost of recreation services to residents varies based on the program or activity and based on six criteria set by the City Council. The collected fees are designed to recover approximately 15 to 20 percent of the cost of providing recreation services, with the remaining costs covered through the General Fund revenue.

The staffing for the department includes an Administrative Services Director, two Recreation Coordinators, seven part-time Facility Attendants and ten part-time Recreation Leaders. The Administrative Services Director spends approximately 20 percent of his time on non-recreation service responsibilities. Outside instructors and services are used to augment staff resources.

The Town of Colma recreational services budget for fiscal year 2015-2016 includes the following budgeted amounts:

Salaries, wages and benefits:	$542,690.00
Supplies, services and contracts:	$330,000.00
Total:	$872,690.00

This total does not include routine building maintenance of facilities, landscaping services or utility costs. These ongoing costs for Town facilities are budgeted through the General Fund Public Works Maintenance Division.

Of the Town's approximately 1,500 residents, not all of them participate in recreation services. For the two years included in this analysis, participation of the total population ranged from 31 percent to 39 percent. For purposes of determining participation rates for the project, the higher 39 percent participation rate is used. Those which do participate generally participate in many (an average of 9.44) activities in the course of the year. Thus, it is very difficult to gauge the level of participation and cost or subsidy of providing services on a per person basis. The subsidy also varies between youth and teen events which require higher staffing levels by recreation leaders, and adult and senior events which generally require less staffing but which may have a higher cost or subsidy.

The Recreation Services Department provides quarterly reports summarizing activity participation. In general, first quarter participation is lower with higher adult participation. Second quarter increases are attributed to youth summer events. Third quarter increases are generally attributable to the town picnic. The Town held an adult holiday party in the fourth quarter of 2015. The following table summarizes activity participation by quarter:

Table 1.15-1. Activity in Town Recreation Programs

Year	Quarter	# Programs Offered	# Participants	# Facility Rentals	Notes
2014	1	43	805	61	
2014	2	51	1,388	69	Youth Summer Programs
2014	3	58	2,107	65	90th Anniversary Film and Movie Night
2014	4	52	1,184	61	
2015	1	52	746	80	
2015	2	62	1,319	71	Youth Summer Programs
2015	3	63	1,930	66	
2015	4	59	1,419	80	Adult Holiday Party
Averages:		55	1,362	69	
Average # of Programs participated per person per year			9.44*		

* total population times 39 percent participation rate divided by the average number of participants per quarter times 4 quarters, which equals the total average number of programs per participant [(1,480x0.39)/Avg. # participants per quarter x 4 = average number of programs per participant.

Source: Town of Colma

Assuming that staffing levels remain somewhat constant and are fixed and funded by the general fund, instructor and supply costs are almost purely driven by participation. For 2015, this budgeted cost is $330,000.00. To calculate the cost per participating resident, this number is divided by the total average number of annual participants in programs (1,362 x 4 = 5,448). Therefore, the total cost per participant per program is $60.57 ($330,000.00/5,448). Assuming a 15 percent recovery for user fees, the total would be $51.49. When multiplied by the 9.44 programs attended by participating residents, the annual town subsidy is approximately $486.00.

The project will include 66 units, and all except one would be one bedroom units. It is anticipated that a majority of the units will be occupied by only one individual. However, it is possible that a few of the units will be occupied by more than one person. For purposes of this analysis, it is assumed that the total number of occupants will be approximately 80 individuals. These individuals will likely be adults or seniors, and participate only in events for adults or seniors. In an interview with the Administrative Services Director, it was determined that the project will not require additional staffing resources. It is likely that the new adult and senior residents will merely increase participation in existing program offerings.

Assuming the same level of participation as the general population, it is assumed that approximately 39 percent or 31 of the 80 individuals will participate in at least one program during the year. Assuming the same average level of participation of 9.44 activities per participant per year, the additional annual cost is estimated to be at most $15,066.00 ($486.00 x 31) for supplies, services and contracts. As mentioned above, if adults and seniors are participating in a trip or class with an instructor, their participation will merely amortize existing costs if the event is under capacity and, therefore, not add additional costs.

Assuming that the project will have some additional fiscal impact to the Town, the Town can accept this unknown fiscal impact and adjust the annual budget accordingly (which may require decreasing another budget item), or it may incrementally increase participation fees in the future to offset any increase.

1.15.2 Regulatory Setting

Town of Colma General Plan

The Town of Colma General Plan includes the following recreation policies relevant to the proposed project:

Policy 5.02.321: Residential developments having ten or more units should be required to provide park and recreation facilities or contribute to the improvement of community-wide facilities.

1.15.3 Discussion

Would the proposed project:

a) **Increase the use of existing neighborhood or regional parks or other recreational facilities such that significant physical deterioration of the facility would occur or be accelerated?**

b) **Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?**

Less than Significant Impact (Responses a – b). The proposed project is a residential project providing 65 one bedroom units and one two-bedroom unit and would increase the Colma resident population by between 66 and 198 residents (see Section 2.3.10.1 in Project Description). The project also includes on-site recreational facilities for use by the building residents including a social hall, community garden space and dog park.

The Town has determined it is likely that the new adult and senior residents would increase participation in existing program offerings and the impact of the new residents would be a fiscal impact, not an impact to physical recreation facilities. Therefore, while the new resident population would be expected to increase the use of recreational facilities, the use would not be to the degree that it would lead to the physical deterioration of facilities or require the construction or expansion of recreational facilities that might have an adverse effect on the environment. The project would have a less than significant impact on recreation facilities and these issues will not be considered further in the EIR.

Source:

Town of Colma. 2016. Colma Recreation Services Narrative prepared by City Planner Michael Laughlin along with the Administrative Services Director. February 23.

1.16 TRANSPORTATION/TRAFFIC

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☒	☐	☐	☐
b) Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☒	☐	☐	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in significant safety risks?	☒	☐	☐	☐
d) Significantly increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☒	☐	☐	☐
e) Result in inadequate emergency access?	☒	☐	☐	☐
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☒	☐	☐	☐

A Traffic Impact Analysis Report has been prepared for the project by Hexagon Transportation Consultants (April 2016). The report and its findings will be presented in the EIR.

1.16.1 Discussion:

Would the proposed project:

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Potentially Significant Impact. Project consistency with applicable plan, ordinance or policies establishing measures of effectiveness for the performance of the circulation system, will be analyzed in the EIR.

b) Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Potentially Significant Impact. Project impacts to an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways will be analyzed in the EIR.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in significant safety risks?

Potentially Significant Impact. Project impacts to air traffic patterns, including either an increase in traffic levels or a change in location that results in significant safety risks will be analyzed in the EIR.

d) Significantly increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Potentially Significant Impact. Project impacts as a result of increased hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) will be analyzed in the EIR.

e) Result in inadequate emergency access?

Potentially Significant Impact. Project impacts as a result of inadequate emergency access will be analyzed in the EIR.

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

Potentially Significant Impact. Project impacts as a result of conflicts with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities will be analyzed in the EIR.

Source:

Hexagon Transportation Consultants. 2016. Traffic Impact Analysis for the Veterans Village Affordable Housing Project in Colma, California. April.

1.17 UTILITIES AND SERVICE SYSTEMS

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
e) 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?	☐	☐	☒	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

1.17.1 Environmental Setting:

The proposed project is a 66-unit apartment complex on a 2.23-acre site in the Town of Colma. Colma is located in northern San Mateo County, south of Daly City and north of South San Francisco.

Wastewater Treatment

The South San Francisco / San Bruno Water Quality Control Plan (WQCP) provides secondary wastewater treatment for the cities of South San Francisco, San Bruno, and the Town of Colma. The average dry weather flow through the facility is approximately nine million gallons per day and the average peak wet weather flows can exceed 60 million gallons per day (SSF 2016).

Potable Water

California Water Company (Cal Water) South San Francisco District (SSFD) distributes water to the proposed project site. Cal Water is an investor-owned public utility supplying water service to 1.7 million Californians through over 435,000 connections through 24 separate water systems serving over 63 communities throughout the state. Cal Water SSFD is located in northern San Mateo County, and provides water to around 60,000 people in South San Francisco, Colma, Broadmoor, and a portion of Daly City. Cal Water SSFD supplies are a combination of purchased water from the San Francisco Public Utilities Commission and groundwater from its own wells. In 2010, Cal Water delivered 8.084 acre feet (AF) of water to its customers. By 2040, Cal Water anticipates that demand will increase to 9.406 AF (Cal Water 2010).

Stormwater

The San Mateo County Flood Control District (SMCFCD) manages infrastructure within the County, including the Town of Coma. Runoff water at the project site percolates into the ground water and/or drains into an underground storm drain that eventually discharges into the San Francisco Bay.

Solid Waste and Recycling

Allied Waste Services is the Town of Colma's franchised hauler, providing residential curbside collection of recyclables and green waste (yard waste), and commercial collection for recyclables. The majority of the Town's solid waste is directed to the Corinda Los Trancos Sanitary Landfill (known as Ox Mountain), which is a Class III disposal facility located at 12310 San Mateo Road (Highway 92). Based on the San Mateo County 2009 *Five Year Countrywide Integrated Waste Management Plan Review Report,* there is over 20 years of remaining capacity (Town of Colma 2012).

Electric, Gas and Telecommunications Services

The electrical power distribution system within the project area is owned and operated by Pacific Gas & Electric Company (PG&E). This electrical power grid consists of both overhead and underground electrical lines located predominantly in the public street rights-of-way and easements.

The natural gas distribution system within the project area is also owned and operated by PG&E and consists of a pipe network which lies predominantly beneath the roadway in the public street rights-of-way.

The telecommunication distribution system within the project area provides various services such as telephone service, cable TV, etc. The service providers include Comcast, AT&T and others.

1.17.2 Regulatory Setting

Town of Colma General Plan

Land Use Element

Policy 5.02.362: The Town should require all new construction projects to hook up to public water and sewer systems.

Open Space and Conservation Element

Policy 5.04.311: The Town should encourage use of water-saving plumbing fixtures in new construction.

Policy 5.04.312: The Town should encourage but not mandate the use of drought-tolerant plants in the project landscape schemes.

Safety Element

Policy 5.07.443: Measures aimed at significantly decreasing solid waste generation should be promoted. Recycled materials storage and collection areas should be required throughout the Town and in all new developments.

Town of Colma Municipal Code

Subchapter 3.04 Regulation of Sewers and Restrictions on Discharge of Water and Waste

Subchapter 3.04 of the Town's Municipal Code prohibits the unsanitary disposal of human or animal excrement, garbage or other objectionable waste on public or private property (Section 3.04.020) and prohibits the discharge of sewage, industrial waste or polluted waters to any stream or watercourse without treatment (Secton 3.04.030). The ordinance also regulates connections with sewer mains (Section 3.04.080) and sets forth the fees for connecting to the public sewer system (Sections 3.04.130 through 3.04.190), among other things.

Subchapter 3.05 Collection and Disposal of Solid Waste

The purpose of this ordinance is to comply with the recycling and reporting requirements of the California Integrated Waste Management Act of 1989 (hereafter, the "Waste Management Act"). as amended from time to time, including amendments made by AB 939, SB 1016 and AB 341 Specifically, but without limitation, this ordinance was adopted to:

(1) increase recycling participation rates;
(2) improve Recyclable material recovery rates;
(3) improve reporting capabilities to CalRecycle;
(4) comply with state recycling laws;
(5) reduce waste to landfill; and
(6) maintain a cost effective, garbage and recycling collection program for the residents, businesses and institutions of the Town.

The ordinance prohibits illegal dumping (Section 3.05.050), requires proper storage and disposal of solid waste (Section 3.05.060), requires subscription to a solid waste collection service (Section 3.05.070), requires developments to be designed for proper solid waste storage (Section 3.05.080), governs the maintenance and use of solid waste containers (Section 3.05.090), governs the disposal of special waste (Section 3.05.110), regulates recycling (Sections 3.05.130 through 3.05.170), and solid waste collectors (Division Three).

Subchapter 3.08: Water Quality Control – South San Francisco System

The purpose and intent of Subchapter 3.08 is to comply with the standard laws and regulations of South San Francisco, as the Town of Colma has contractual arrangement because they have sewer facilities connected to or affecting South San Francisco sewer facilities. This subchapter sets forth uniform requirements established by South San Francisco for direct and indirect contributors into the wastewater collection and treatment system for the City of South San Francisco and enables South San Francisco to comply with all applicable State of California laws (Water Code Section 1300 et seq.) and Federal laws required by the Clean Water Act of 1977 (33 U.S.C. Section 1251 et seq.) and the General Pretreatment Regulations (40 CFR, Part 403).

1.17.3 Discussion:

Would the proposed project:

- **a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?**
- **b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?**

Less Than Significant Impact (a, b). Through an agreement with South San Francisco and City of San Bruno, the Town of Colma can contribute maximum flows of up to 450,000 gallons per day (gpd) to the WQCP for treatment and disposal. On average, the Town of Colma contributes around 225,000 gpd, which is half of its permissible capacity (ESA 2014). The proposed project would be connected to an existing eight-inch sanitary sewer main along the east side of Mission Road. The Town of Colma anticipates it would have adequate capacity to serve the proposed project (VMWP 2016).

The amount of wastewater that is anticipated by the project is incremental and would not be expected to exceed the wastewater treatment requirements of the San Francisco Bay Regional Water Quality Control Board. Wastewater effluent associated with this land use would not substantially increase pollutant loads, as there is neither heavy industrial use nor agricultural processing where loads and wastewater volumes are heavy. Since Colma is currently contributing half of its permissible daily flow, it is not expected that the Project would conflict with wastewater treatment requirements or exceed the discharge limits established by the San Francisco Bay Regional Water Quality Control Board (RWQCB), therefore, impacts to sanitary wastewater quality would be less than significant.

Water Measurements and Conversions
1 cubic foot of water = 7.48 gallons
1 CCF (100 cubic feet) = 748 gallons
One AF (Acre Foot) = 43,560 cubic feet

c). Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Less Than Significant Impact. The proposed project would increase amount the impervious surface area on the site which could interfere with groundwater recharge in these impervious areas. However, 37,331 square feet or approximately 0.86 acre of the site would remain pervious and the project would also include six bio-retention areas totaling 2,889 square feet. This exceeds the minimum treatment area required by the SMC SWPPP by 174 square feet. Runoff water from the impervious portions of the site would drain into the pervious portions of the site and the bio-retention areas and thus would ultimately percolate into the groundwater as before (VMWP 2016).

As discussed in Section 1.5, Hydrology and Water Quality, the project applicant would be required to prepare and implement an SWPPP consistent with NPDES requirements, which would reduce the potential impacts from stormwater runoff during construction of the bio-retention areas. Compliance with these regulatory measures would offset potential runoff from the proposed project site; therefore, the impact would be less than significant.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Less Than Significant Impact. Colma receives water from the California Water Service Company (Cal Water) and is located within Cal Water's South San Francisco District, which includes most of South San Francisco, Colma, and the unincorporated community of Broadmoor. Sources for Cal Water supply are primarily purchased water from the San Francisco Public Utilities Commission (SFPUC) with a small amount of groundwater supply. In accordance with State law, Cal Water provides reports on its projected water supply and demand. The most recent report is California Water Service Company's 2010 *Urban Water Management Plan, South San Francisco District*, adopted June 2011. As described in this report, Cal Water entered into a Water Supply Agreement with SFPUC in 2009 which provided for a supply guarantee of 35.78 million gallons per day (MGD) to be allocated among its Bear Gulch, South San Francisco and Mid-Peninsula Districts. "SFPUC can meet the demands of its retail and wholesale customers in years of average and above average precipitation." (California Water Service Company 2010).

During periods of drought, there could be shortfalls, which would be met by reduction of customer demand through implementation of the adopted Water Shortage Contingency Plan, and the development of alternative supplies. One such alternative source includes the conjunctive use project, which involves the storage of water during years of average and above average precipitation in the aquifer beneath northern San Mateo County, to be drawn on during drought emergencies (California Water Service Company 2010).

Table 2.2-3, *Population – Current and Projected* of the Cal Water Report shows a population of 58,658 within the District in 2010 which would increase to 60,581 by 2015 and 62,384 by 2020. The projected demand for water includes an increase in demand based on population projections. Table 5.2-4, *Supply and Demand Comparison, Normal Year* of the Cal Water Report projects a surplus supply compared with demand through 2030 for Cal Water's three districts - Bear Gulch, South San Francisco and Mid-Peninsula – combined. The projected demand includes an increase in demand based on population projections. The following table provides an excerpt of the information contained in the Cal Water Report Table 5.2-4.

Table 1.17-1: Projected Water Supply and Demand in Cal Water's Bear Gulch, South San Francisco and Mid-Peninsula Districts Combined (In Acre Feet/Year)

	Projected Supply	Projected Demand	Difference
2015	42,762	42,047	715
2020	42,762	39,900	2,862
2025	42,762	41,046	1,716
2030	42,762	42,225	507
2035	42,762	43,530	(-768)

Source: Table 5.2-4, *Supply and Demand Comparison, Normal Year,* California Water Service Company 2010 Urban Water Management Plan, South San Francisco District, adopted June 2011

After 2035, there is the potential for a shortfall in supply, which would be addressed by conservation programs and the development of alternative supplies.

In 2011, Colma examined its water use and sewer generation rates as part of updating its sewer fees. As part of that analysis, the Public Works Department determined that an average Colma household used 75 CCF (100 cubic feet) of water per year (Public Works Staff, personal communication, 2012). The addition of 66 new dwelling units would increase demand for water by 4,950 CCF per year. This is approximately 11.36 AF (acre feet) of water per year.

As described above, the proposed project would result in a relatively small incremental increase in demand for potable water. This increase would be supplied by existing water entitlements. Based on the Cal Water 2010 Urban Water Management Plan for SSFD, there is sufficient water supply during years of average and above average precipitation and the adopted Water Shortage Contingency Plan to manage water resources during a drought emergency. The proposed project is for 66 units.

New residential development would comply with California's Green Building Code requirements for low-flow plumbing fixtures, and landscaping would comply with State requirements for water conserving landscaping. Colma has adopted these regulations in Colma Municipal Code (CMC § 5.11.010 et seq). Therefore, newly constructed units would be more water efficient. This is a less than significant impact.

e) **Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?**

Less Than Significant Impact. See a) and b) above.

f) **Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs?**

Less Than Significant Impact. Solid waste disposal from the proposed project site would go to the Ox Mountain landfill. Colma participates in recycling to reduce the volume of material that goes into the landfill. This includes requirements for a 50 percent diversion of construction debris, as well as recycling of green waste cans, bottles and paper. Based on average rates of waste generation, there is over 20 years of remaining capacity at Ox Mountain, and sufficient capacity to accommodate the proposed project. Therefore, this impact is less than significant.

g) Comply with Federal, State, and local statutes and regulations related to solid waste?

Less Than Significant Impact. The Town of Colma development regulations would require that any construction project comply with the 50 percent diversion requirement for construction debris. All new housing units would be required to subscribe to solid waste services, which would include the provisions of containers appropriate for the sorting and diversion of recyclable materials. The proposed project would comply with all federal, state and local statutes related to solid waste, thus, the impact is less than significant.

Sources:

California Water Service Company 2010 Urban Water Management Plan, South San Francisco District, adopted June 2011

City of South San Francisco (SSF). 2016. *Water Quality Control Plant.* Accessed June 22, 2016. <http://www.ssf.net/506/Water-Quality-Control-Plant>

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Placeworks. 2016. *Carmax Project Environmental Review Initial Study / Mitigated Negative Declaration for the Town of Colma.* Public Review Draft. February 2016.

Public Works Staff, personal communication, January 2012.

Town of Colma .2012. *Town of Colma Housing Element MND.*

Van Meter Williams Pollack, LLP (VMWP) (2016). *Veterans Village.* A-0.0 Planning Submittal. February 22, 2016.

1.18 MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means the incremental effects of a project are considerable when viewed in connection with the efforts 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?	☒	☐	☐	☐

1.18.1 Discussion:

Would the proposed project:

a) **Does the project have the potential to degrade the quality of the environment, significantly 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?**

Potentially Significant Impact. The proposed project is a 66-unit affordable housing project and would not degrade the quality of the environment, significantly 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. The proposed project is the construction of a 66-unit low-income housing development on a partially developed site in the Town of Colma. The project site does not contain habitat for any sensitive or threatened wildlife or plant species. Construction of the proposed project would require the removal of numerous mature trees which could impact nesting birds (protected by the Migratory Bird Treaty Act and Fish and Game Code), and roosting bats (protected by Fish and Game Code). Mitigation Measures BIO-1 through BIO-2 require measures for preconstruction surveys and buffer zones for nesting birds and roosting bats, tree replacement and protection of retained trees.

The project would have potentially significant and unavoidable impacts to historic resources at the site. Project impacts to cultural and historic resources are analyzed in the EIR/EA.

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.)

Potentially Significant Impact. Evaluation of the project's cumulative effects are analyzed in the EIR/EA.

c) Does the project have environmental effects which will cause significant adverse effects on human beings, either directly or indirectly?

Potentially Significant Impact. As noted above, the project could result in potentially significant and unavoidable impacts and requires the preparation of an EIR/EA. The EIR/EA shall evaluate significant adverse effects shall be noted in Table S-1 of the EIR/EA.

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APPENDIX C

BIOLOGICAL RESOURCES – SPECIAL STATUS SPECIES TABLES

- **Special-Status Plant Species with the Potential to Occur in the Project Area**
- **Special-Status Wildlife Species with the Potential to Occur in the Project Area**

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Table 1. Special-Status Plant Species Potential to Occur in the Project Area

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]
Adobe sanicle (*Sanicula maritima*)	CR 1B.1	Endemic to California. Found in Monterey and San Luis Obispo counties. Thought to be extirpated from Alameda and San Francisco counties.	Adobe sanicle is found in chaparral, coastal prairie, meadow and seeps, and valley and foothill grassland habitats in clay and serpentinite substrates. It occurs at elevations from approximately 100 to 800 feet.	February – May	**None.** No CNDDB occurrences for adobe sanicle have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Alkali milk-vetch (*Astragalus tener* var. *tener*)	1B.2	Endemic to California. Found in Alameda, Merced, Napa, Solano, and Yolo counties. Thought to be extirpated from Contra Costa, Monterey, San Benito, Santa Clara, San Francisco, San Joaquin, Sonoma, and Stanislaus counties.	Alkali milk-vetch is found in alkali playa, valley and foothill grassland and vernal pool habitat. This species prefers low ground, alkali flats, and flooded lands. It occurs at elevations below 200 feet.	March – June	**None.** No CNDDB occurrences for alkali milk-vetch have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Arcuate bush-mallow (*Malacothamnus arcuatus*)	1B.2	Endemic to California. Found in Santa Clara, Santa Cruz, and San Mateo counties.	Arcuate bush-mallow is found growing in gravelly alluvium substrates in chaparral and cismontane woodland habitats. It occurs at elevations between 50 and 1,160 feet.	April – September	**None.** One CNDDB occurrence for arcuate bush-mallow has been documented within 5 miles of the project site near San Andreas Lake. No suitable habitat for this species is present on the site.
Beach layia (*Layia carnosa*)	FE CE 1B.1	Endemic to California. Found in Humboldt, Monterey, and Marin counties. Thought to be extirpated from Santa Barbara and San Francisco counties.	Beach layia is found in coastal dune and sandy coastal scrub habitats. It occurs at elevations from near sea level to 200 feet.	March – July	**None.** One CNDDB occurrence for beach layia has been documented within 5 miles of the project site, but the occurrence has been extirpated. No suitable habitat for this species is present on the site.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]
Bent-flowered fiddleneck (*Amsinckia lunaris*)	1B.2	Endemic to California. Found in Alameda, Contra Costa, Colusa, Lake, Marin, Napa, San Benito, Santa Clara, Santa Cruz, San Mateo, Sonoma, and Yolo counties.	Bent-flowered fiddleneck occurs in coastal bluff scrub, cismontane woodland, and valley and foothill grassland habitats. It occurs at elevations from near sea level to 1,640 feet.	March – June	**Low.** One CNDDB occurrences for bent-flowered fiddleneck has been documented within 5 miles of the project site at San Bruno Mountain State Park. Marginally suitable habitat is present on the site, however, the disturbed nature of the site make this species unlikely to occur.
Blasdale's bent grass (*Agrostis blasdalei*)	1B.2	Endemic to Mendocino, Marin, Santa Cruz, San Mateo and Sonoma Counties.	Blasdale's bent grass occurs in coastal bluff scrub, coastal dunes or coastal prairie. . It occurs at elevations between 16 and 492 feet.	May-June	**None.** No CNDDB occurrences for Blasdale's bent grass have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Blue coast gilia (*Gilia capitata* ssp. *chamissonis*)	1B.1	Endemic to California. Found in Marin, San Francisco, and Sonoma counties.	Blue coast gilia is found in coastal dune and coastal scrub habitats. It occurs at elevations from near sea level to 650 feet.	April – July	**None.** Three CNDDB occurrences for blue coast gilia have been documented within 5 miles of the project site in San Francisco. No suitable habitat for this species is present on the site.
Bristly sedge (*Carex comosa*)	2B.1	Found in numerous states including California. In California, found in Contra Costa, Lake, Mendocino, Sacramento, Santa Cruz, San Joaquin, Shasta, and Sonoma counties. Thought to be extirpated from San Francisco and San Bernardino counties.	Bristly sedge is found in coastal prairie and valley and foothill grassland habitats. It is typically found along the margins of marshes, lakes, or swamps within these habitats. It occurs at elevations from near sea level to 2,050 feet.	May – September	**None.** One CNDDB occurrence for bristly sedge has been documented within 5 miles of the project site, but it is possibly extirpated. No suitable habitat for this species is present on the site.
California seablite (*Suaeda californica*)	FE 1B.1	Endemic to California. Found in San Luis Obispo County. Thought to be extirpated from Alameda, Santa Clara, Contra Costa, and San Francisco counties.	California seablite is found growing in coastal salt marshes and swamps, playas, and vernal pools. It occurs at elevations between 0 and 50 feet.	July – October	**None.** No CNDDB occurrences for California seablite have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]
Choris' popcorn-flower (*Plagiobothrys chorisianus var. chorisianus*)	1B.2	Endemic to California. Found in Alameda, Monterey, Santa Clara, Santa Cruz, San Francisco, and San Mateo counties.	Choris' popcorn-flower grows in mesic chaparral, coastal prairie, and coastal scrub habitats. It occurs at elevations between 50 and 520 feet.	March – June	**None.** Three CNDDB occurrences for Choris' popcorn-flower have been documented within 5 miles of the project site at San Bruno Mountain State Park and on GGNRA land. No suitable habitat for this species is present on the site.
Coast lily (*Lilium maritimum*)	1B.1	California endemic; extant occurrences in Mendocino, Marin and Sonoma Counties.	Broad-leafed upland forest, closed-cone coniferous forest, coastal prairie, coastal scrub, marshes and swamps (freshwater) or North Coast coniferous forest, sometimes on roadsides; 16 to 1558 feet.	May-August	**None.** No CNDDB occurrences for coast lily have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Coast yellow leptosiphon (*Leptosiphon croceus*)	1B.1	Endemic to California. Found in San Mateo and Monterey counties. Thought to be extirpated from Marin County.	Coast yellow leptosiphon is found in coastal bluff scrub and coastal prairie habitats. It occurs at elevations from approximately 30 to 500 feet.	April – May	**None.** No CNDDB occurrences for coast yellow leptosiphon have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Coastal marsh milk-vetch (*Astragalus pyncostachyus var. pynchostachyus*)	1B.2	Endemic to California. Found in Humboldt, Marin, and San Mateo counties.	Coastal marsh milk-vetch is found in mesic coastal dune, and in coastal scrub, and coastal marsh and swamp habitats. It occurs at elevations from sea level to approximately 100 feet.	April – October	**None.** No CNDDB occurrences for coastal marsh milk-vetch have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Coastal triquetrella (*Triquetrella californica*)	1B.2	Found in California and Oregon. In California, found in Contra Costa, Del Norte, Mendocino, Marin, San Diego, San Francisco, San Mateo, and Sonoma counties.	Coastal triquetrella is found in coastal bluff scrub and coastal scrub habitat. It occurs at elevations from approximately 30 to 330 feet.	Not Applicable	**None.** Three CNDDB occurrences for coastal triquetrella have been documented within 5 miles of the project site at San Bruno Mountain State Park and Sweeney Ridge. No suitable habitat for this species is present on the site.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]
Compact cobwebby thistle (*Cirsium occidentale* var. *compactum*)	1B.2	Endemic to California. Found in Monterey and San Luis Obispo counties. Thought to be extirpated from San Francisco County.	Compact cobwebby thistle is found in chaparral, coastal dune, coastal prairie, and coastal scrub habitat. It occurs at elevations from approximately 15 to 500 feet.	April – June	**None.** One CNDDB occurrence for compact cobwebby thistle has been documented within 5 miles of the project site at the San Francisco Golf Club. No suitable habitat for this species is present on the site.
Congested-headed hayfield tarplant (*Hemizonia congesta* ssp. *congesta*)	1B.2	Endemic to California. Found in Mendocino, Marin, San Francisco, San Mateo, and Sonoma counties.	Congested-headed hayfield tarplant is found in valley and foothill grasslands, sometimes along roadsides. It occurs at elevations from approximately 65 to 1,840 feet.	April – November	**Low.** Two CNDDB occurrences for congested-headed hayfield tarplant have been documented within 5 miles of the project site in San Francisco. Marginally suitable habitat is present on the site, however, the disturbed nature of the site make this species unlikely to occur.
Crystal Springs lessingia (*Lessingia arachnoidea*)	1B.2	Endemic to California. Known only near the Crystal Springs Reservoir in San Mateo County. May occur in Sonoma County, but these occurrences need taxonomic verification.	Crystal Springs lessingia grows in cismontane woodland, coastal scrub, and valley and foothill grassland habitat. It often occurs in serpentinite soils and along roadsides. It occurs at elevations between 20 and 650 feet.	July – October	**None.** No CNDDB occurrences for Crystal Springs lessingia have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Crystal Springs fountain thistle (*Cirsium fontinale* var. *fontinale*)	FE CE 1B.1	Endemic to California. Known only near the Crystal Springs Reservoir in San Mateo County.	Crystal Springs fountain thistle is found in serpentinite seeps in openings in chaparral, cismontane woodland, and valley and foothill grassland habitats. It occurs at elevations from 150 to 570 feet.	May – October	**None.** No CNDDB occurrences for Crystal Springs fountain thistle have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Dark-eyed gilia (*Gilia millefoliata*)	1B.2	Endemic to California. Found in Del Norte, Humboldt, Mendocino, Marin, San Francisco and Sonoma counties.	Dark-eyed gilia grows in coastal dunes. It occurs at elevations from 5 to 100 feet.	April - July	**None.** No CNDDB occurrences for dark-eyed gilia have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]
Davidson's bush-mallow (*Malacothamnus davidsonii*)	1B.2	Endemic to California. Found in Los Angeles, Monterey, Santa Clara, San Luis Obispo, and San Mateo counties.	Davidson's bush-mallow grows in chaparral, cismontane and riparian woodland, and coastal scrub habitats. It occurs at elevations between 600 and 2,800 feet.	June – January	**None.** No CNDDB occurrences for Davidson's bush-mallow have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Diablo helianthella (*Helianthella castanea*)	1B.2	Endemic to California. Found in Alameda, Contra Costa, and San Mateo counties. Thought to be extirpated in Marin and San Francisco counties.	Diablo helianthella is found in broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland habitat. It occurs at elevations from approximately 200 to 4,300 feet.	March – June	**None.** One CNDDB occurrence for diablo helianthella has been documented within 5 miles of the project site at San Bruno Mountain State Park. No suitable habitat for this species is present on the site.
Fragrant fritillary (*Fritillaria liliacea*)	1B.2	Endemic to California. Found in Alameda, Contra Costa, Monterey, Marin, San Benito, Santa Clara, San Francisco, San Mateo, Solano, and Sonoma counties.	Fragrant fritillary is often found on serpentine in cismontane woodland, coastal scrub, valley and foothill grassland, and coastal prairie habitats. It occurs at elevations below 1,350 feet, usually on clay soils.	February – April	**None.** No CNDDB occurrences for fragrant fritillary have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Franciscan manzanita (*Arctostaphylos franciscana*)	FE 1B.1	Endemic to California. Found in San Francisco County.	Franciscan manzanita is found in serpentinite coastal scrub habitat. It occurs at elevations from approximately 200 to 980 feet.	February – April	**None.** One CNDDB occurrence for Franciscan manzanita has been documented within 5 miles of the project site near Portola Drive in San Francisco. No suitable habitat for this species is present on the site.
Franciscan onion (*Allium peninsulare* var. *franciscanum*)	1B.2	Endemic to California. Found in Mendocino, Santa Clara, San Mateo, and Sonoma counties.	Franciscan onion is found in clay, volcanic or serpentinite soils in cismontane woodland and valley and foothill grassland habitats. It occurs at elevations from approximately 170 to 980 feet.	May – June	**None.** One CNDDB occurrence for Franciscan onion has been documented within 5 miles of the project site at San Andreas Lake. No suitable habitat for this species is present on the site.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]
Franciscan thistle (*Cirsium andrewsii*)	1B.2	Endemic to California. Found in Contra Costa, Marin, San Francisco, San Mateo, and Sonoma counties.	Franciscan thistle is found in mesic, sometimes serpentinite, broad-leafed upland forest, coastal bluff scrub, coastal prairie, and coastal scrub habitats. It occurs at elevations from sea level to approximately 500 feet.	March – July	**None.** One CNDDB occurrence for Franciscan thistle has been documented within 5 miles of the project site at TPC Harding Park. No suitable habitat for this species is present on the site.
Hall's bush-mallow (*Malacothamnus hallii*)	1B.2	Endemic to California. Found in Contra Costa, Lake, Mendocino, Merced, Santa Clara, San Mateo, and Stanislaus counties.	Hall's bush mallow is found growing in chaparral and coastal scrub habitats. It occurs at elevations between 30 and 2,500 feet.	May – October	**None.** No CNDDB occurrences for Hall's bush-mallow have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Hickman's cinquefoil (*Potentilla hickmanii*)	FE CE 1B.1	Endemic to California. Found in Monterey, San Mateo, and Sonoma counties.	Hickman's cinquefoil is found in coastal bluff scrub, closed-cone coniferous forest, vernally mesic meadows and seeps, and freshwater marshes and swamps. It occurs at elevations from approximately 30 to 490 feet.	April – August	**None.** No CNDDB occurrences for Hickman's cinquefoil have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Hillsborough chocolate lily (*Fritillaria biflora* var. *ineziana*)	1B.1	Endemic to California. Found in San Mateo County in the Hillsborough area.	Hillsborough chocolate lily is found in cismontane woodland and valley and foothill grassland habitats in serpentinite soils. It occurs at elevations below 500 feet.	March – April	**None.** No CNDDB occurrences for Hillsborough chocolate lily have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]
Indian valley bush-mallow (*Malacothamnus aboriginum*)	1B.2	Endemic to California. Found in Fresno, Kings, San Mateo, Santa Clara, Monterey, and San Benito counties.	Indian valley bush-mallow is found in rocky and/or granitic soils in chaparral and cismontane woodland habitat. It often occurs in burned areas. It occurs at elevations from approximately 500 to 5,570 feet.	April – October	**None.** No CNDDB occurrences for Indian valley bush-mallow have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Kellogg's horkelia (*Horkelia cuneata* var. *sericea*)	1B.1	Endemic to California. Found in Santa Barbara, Santa Cruz, San Francisco, San Luis Obispo, and San Mateo counties. Thought to be extirpated from Alameda and Marin counties.	Kellogg's horkelia is found in sandy or gravelly openings in closed-cone coniferous forest, maritime chaparral, coastal dune, and coastal scrub habitats. It occurs at elevations from near sea level to approximately 650 feet.	April – September	**None.** Three CNDDB occurrences for Kellogg's horkelia have been documented within 5 miles of the project site in Colma and San Francisco. No suitable habitat for this species is present on the site.
Kings Mountain manzanita (*Arctostaphylos regismontana*)	1B.2	Endemic to California. Found in Santa Clara, Santa Cruz, and San Mateo counties.	Kings Mountain manzanita occurs in granitic or sandstone soils in broad-leafed upland forest, chaparral, and north coast coniferous forest habitats. It occurs at elevations from approximately 1,000 to 2,400 feet.	January – April	**None.** No CNDDB occurrences for Kings Mountain manzanita have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Marin checker lily (*Fritillaria lanceolata* var. *tristulis*)	1B.1	Endemic to Marin and San Mateo Counties.	Marin checker lily occurs in coastal bluff scrub, coastal prairie or coastal scrub. It occurs at elevations from 50-492 feet.	February-May	**None.** No CNDDB occurrences for Marin checker lily have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Marin western flax (*Hesperolinon congestum*)	FT CT 1B.1	Endemic to California. Found in Marin, San Francisco, and San Mateo counties.	Marin western flax occurs in serpentine soils in chaparral and valley and foothill grassland habitats. It occurs at elevations below 1,213 feet.	April – July	**None.** No CNDDB occurrences for Marin western flax have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]
Marsh microseris (*Microseris paludosa*)	IB.2	California endemic; extant occurrences in Mendocino, Monterey, Marin, San Benito, Santa Cruz, San Luis Obispo and Sonoma Counties.	Marsh microseris occurs in closed-cone coniferous forest, cismontane woodland, coastal scrub or valley and foothill grassland. It occurs at elevations from 16 to 984 feet.	April-June	**None.** No CNDDB occurrences for marsh microseris have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Marsh sandwort (*Arenaria paludicola*)	FE CE 1B.1	In California, extant occurrences are in Los Angeles and San Luis Obispo counties.	Marsh sandwort occurs in sandy openings in marshes and swamps. It occurs at elevations from 10 to 558 feet.	May - August	**None.** No CNDDB occurrences for marsh sandwort have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Montara manzanita (*Arctostaphylos montaraensis*)	1B.2	Endemic to San Mateo County.	Montara manzanita is found in maritime chaparral or coastal scrub habitats. It occurs at elevations from approximately 160 to 1,650 feet.	January – March	**None.** One CNDDB occurrence for Montara manzanita have been documented within 5 miles of the project site at San Bruno Mountain State Park. No suitable habitat is present on the site.
Northern curly-leaved monardella (*Monardella sinuata* ssp. *nigrescens*)	1B.2	Endemic to California. Found in Monterey, Marin, and Santa Cruz counties. Thought to be extirpated from San Francisco County.	Northern curly-leaved monardella is found in sandy soils in chaparral, coastal dune, coastal scrub, and lower montane coniferous forest habitats. It occurs at elevations below 1,000 feet.	April – September	**None.** One CNDDB occurrence for northern curly-leaved monardella has been documented within 5 miles of the project site, but it is possibly extirpated. No suitable habitat for this species is present on the site.
Northern meadow sedge (*Carex particola*)	2B.2	In California, occurs in Del Norte, Humboldt, Lake, Madera, Mono, Marin, Placer, Siskiyou, Tehama, Trinity and Tuolumne counties.	Northern meadow sedge occurs in meadows and seeps. It occurs at elevations from 0 to 10,500 feet.	May - July	**None.** No CNDDB occurrences for northern meadow sedge have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]
Oregon polemonium (*Polemonium carneum*)	2B.2	Occurs in Oregon, Washington, and California. In California, found in northern California and in the San Francisco Bay Area.	Oregon polemonium grows in coastal prairie, coastal scrub, and lower montane coniferous forest. It occurs at elevations below 6,000 feet.	April – September	**None.** No CNDDB occurrences for Oregon polemonium have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Ornduff's meadowfoam (*Limnanthes douglasii* ssp. *ornduffii*)	1B.1	Endemic to San Mateo County.	Ornduff's meadowfoam is found in meadows and seeps and agricultural fields. It occurs at elevations from 30 to 65 feet.	November – May	**None.** No CNDDB occurrences for Ornduff's meadowfoam have been documented within 5 miles of the project area. No suitable habitat for this species is present on the site.
Oval-leaved viburnum (*Viburnum ellipticum*)	2B.3	In California, occurs in Alameda, Contra Costa, El Dorado, Fresno, Glenn, Humboldt, Lake, Mendocino, Mariposa, Napa, Placer, Shasta, Solano, Sonoma and Tehama counties.	Oval-leaved viburnum occurs in chaparral, cismontane woodland and lower montane coniferous forest. It occurs at elevations from 705 to 4,593 feet.	May - June	**None.** No CNDDB occurrences for oval-leaved viburnum have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Pacific manzanita (*Arctostaphylos pacifica*)	CE 1B.2	Known only from San Bruno Mountain in San Mateo County.	Pacific manzanita is found in chaparral and coastal scrub habitats. It is only known from San Bruno Mountain.	February – April	**None.** One CNDDB occurrence for Pacific manzanita have been documented within 5 miles of the project site at San Bruno Mountain State Park. No suitable habitat is present on the site.
Pappose tarplant (*Centromadia parryi* ssp. *parryi*)	1B.2	Endemic to California. Found in Butte, Colusa, Glenn, Lake, Napa, San Luis Obispo, San Mateo, Solano and Sonoma counties.	Pappose tarplant is found in chaparral, coastal prairie, meadows and seep, coastal salt marsh and swamp, and vernally mesic valley and foothill grassland habitats. It occurs at elevations from near sea level to approximately 1,370 feet.	May – November	**Low.** One CNDDB occurrence for pappose tarplant has been documented within 5 miles of the project site in Pacifica. Marginally suitable habitat is present on the site, however, the disturbed nature of the site make this species unlikely to occur.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]
Point Reyes salty bird's-beak (*Chloropyron maritimum* ssp. *Palustre*)	1B.2	Endemic to California. Found in Humboldt, Marin, San Francisco, and Sonoma counties.	Point Reyes bird's-beak is found in coastal salt marshes and swamps. It occurs at elevations below 30 feet.	June – October	**None.** No CNDDB occurrences for Point Reyes salty bird's beak have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site
Point Reyes horkelia (*Horkelia marinensis*)	1B.2	Endemic to California. Found in Marin, Mendocino, San Mateo, and Santa Cruz counties.	Point Reyes horkelia occurs in sandy soils in coastal dunes, coastal prairie, coastal strand, and northern coastal scrub habitats. It occurs at elevations from near sea level to approximately 2,480 feet.	May – September	**None.** One CNDDB occurrence for Point Reyes horkelia has been documented within 5 miles of the project site in Colma, but the occurrence is from 1909. No suitable habitat for this species is present on the site.
Presidio clarkia (*Clarkia franciscana*)	FE CE 1B.1	Endemic to California. Found in Alameda and San Francisco counties.	Presidio clarkia occurs in coastal scrub and valley and foothill grassland (serpentinite). . It occurs at elevations from approximately 82 to 1,100 feet.	May – July	**None.** No CNDDB occurrences for Presidio clarkia have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Presidio manzanita (*Arctostaphylos montana* ssp. *ravenii*)	FE CE 1B.1	Endemic to San Francisco County.	Presidio manzanita is found on serpentine outcrops in chaparral, coastal prairie, and coastal scrub habitats. It occurs at elevations from approximately 150 to 700 feet.	February – March	**None.** One CNDDB occurrence for Franciscan manzanita has been documented within 5 miles of the project site near Portola Drive in San Francisco. No suitable habitat for this species is present on the site.
Robust spineflower (*Chorizanthe robusta* var. *robusta*)	FE 1B.1	Endemic to California. Found in Monterey, Marin, Santa Cruz, and San Francisco counties. Thought to be extirpated from San Mateo, Santa Clara, and Alameda counties.	Robust spineflower is found growing in sandy or gravelly soils in maritime chaparral, openings in cismontane woodland, coastal dunes, and coastal scrub habitats. It occurs at elevations from approximately sea level to 1,000 feet.	April – September	**None.** Two CNDDB occurrences for robust spineflower have been documented within 5 miles of the project site but these occurrences are listed as "possibly extirpated." No suitable habitat for this species is present on the site.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]
Rose leptosiphon (*Leptosiphon rosaceus*)	1B.1	Endemic to California. Found in San Mateo and Marin counties. Thought to be extirpated from San Francisco and Sonoma counties.	Rose leptosiphon is found in coastal bluff scrub habitats. It occurs at elevations from sea level to approximately 330 feet.	April – July	**None.** Two CNDDB occurrences for rose leptosiphon have been documented within 5 miles of the project site, but these occurrences are possibly extirpated. No suitable habitat for this species is present on the site.
Round-headed Chinese-houses (*Collinsia corymbosa*)	1B.2	Endemic to California. Found in Humboldt, Mendocino, Marin, San Francisco and Sonoma counties.	Round-headed Chinese-houses occurs in coastal dunes. It occurs at elevations from sea level to 65 feet.	April – June	**None.** No CNDDB occurrences for round-headed Chinese-houses have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Round-leaved filaree (*California macrophylla)*	1B.2	Scattered locations throughout California west of the Sierra Nevada and south of Red Bluff.	Round-leaved filaree occurs in cismontane woodland or valley and foothill grassland on clay soils. It occurs at elevations from approximately 50 to 3,937 feet.	March - May	**None.** No CNDDB occurrences for round-leaved filaree have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Saline clover (*Trifolium hydrophilum*)	1B.2	Endemic to California. Found in Alameda, Colusa, Monterey, Napa, San Benito, San Luis Obispo, San Mateo, Santa Clara, Santa Cruz, Solano, and Sonoma counties.	Saline clover occurs in marshes and swamps, mesic and alkaline valley and foothill grassland, and in vernal pool habitats. Many previously extant sites are thought likely to be extirpated. It occurs at elevations below 1,000 feet.	April – June	**None.** No CNDDB occurrences for saline clover have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
San Bruno Mountain manzanita (*Arctostaphylos imbricata*)	CE 1B.1	Endemic to San Mateo County.	San Bruno Mountain manzanita is only known from San Bruno Mountain. It is found in rocky soils in chaparral and coastal scrub habitats. It occurs at elevations from approximately 900 to 1,200 feet.	February – April	**None.** Two CNDDB occurrences for San Bruno Mountain manzanita have been documented within 5 miles of the project site at San Bruno Mountain State Park. No suitable habitat for this species is present on the site.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]
San Francisco Bay spineflower (*Chorizanthe cuspidata* var. *cuspidata*)	1B.2	Endemic to California. Found in Marin, San Francisco, San Mateo, and Sonoma counties. Thought to be extirpated from Alameda County.	San Francisco Bay spineflower grows in sandy soils in coastal bluff scrub, coastal dunes, coastal prairie, and coastal scrub habitats. It occurs at elevations from near sea level to 700 feet.	April – August	**None.** Several CNDDB occurrences for San Francisco Bay spineflower have been documented within 5 miles of the project site at San Bruno Mountain State Park, in San Francisco and in Pacifica. No suitable habitat for this species is present on the site.
San Francisco campion (*Silene verecunda* ssp. *Verecunda*)	1B.2	Endemic to California. Found in Santa Cruz, San Francisco, San Mateo, and Sutter counties.	San Francisco campion is found in sandy soils in coastal bluff scrub, chaparral, coastal prairie, coastal scrub, and valley and foothill grassland habitats. It occurs at elevations between 100 and 2,100 feet.	March – August	**None.** Two CNDDB occurrences for San Francisco campion have been documented within 5 miles of the project site at San Bruno Mountain State Park and Mt. Davidson Park. No suitable habitat for this species is present on the site.
San Francisco collinsia (*Collinsia multicolor*)	1B.2	Endemic to California. Found in Monterey, Marin, Santa Clara, Santa Cruz, San Francisco, and San Mateo counties.	San Francisco collinsia is found in closed-cone coniferous forest and coastal scrub habitats, sometimes in serpentinite soils. It occurs at elevations from approximately 100 to 820 feet.	March – May	**None.** Seven CNDDB occurrences for San Francisco collinsia have been documented within 5 miles of the project site at San Bruno Mountain State Park and in San Francisco. No suitable habitat for this species is present on the site.
San Francisco lessingia (*Lessingia germanorum*)	FE CE 1B.1	Endemic to California. Found in San Francisco and San Mateo counties.	San Francisco lessingia occurs on remnant dunes in coastal scrub and northern coastal scrub habitats. It occurs at elevations from approximately 80 to 360 feet.	June – November	**None.** Two CNDDB occurrences San Francisco lessingia have been documented within 5 miles of the project site near San Bruno Mountain State Park and at TPC Harding Park. No suitable habitat for this species is present on the site.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]
San Francisco owl's clover. (*Triphysaria floribunda*)	1B.2	Endemic to California. Found in Marin, San Mateo, and San Francisco counties.	San Francisco owl's clover usually occurs in serpentinite soils in coastal prairie, coastal scrub, and valley and foothill grassland habitat. It occurs at elevations from approximately 30 to 520 feet.	April – June	**None.** Three CNDDB occurrence for San Francisco owl's clover have been documented within 5 miles of the project site at San Bruno Mountain State Park and TPC Harding Park. No suitable habitat for this species is present on the site.
San Francisco popcorn flower (*Plagiobothrys diffusus*)	CE 1B.1	California endemic; extant occurrences in Alameda, Santa Cruz and San Mateo Counties.	San Francisco popcorn flower occurs in coastal prairie or valley and foothill grassland. It occurs at elevations from approximately 197 to 1,180 feet.	March – June	**None.** No CNDDB occurrences for San Francisco popcorn flower have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
San Joaquin spearscale (*Extriplex joaquinana*)	1B.2	Endemic to the Coast Ranges and Central Valley of central California.	San Joaquin spearscale occurs in chenopod scrub, meadows and seeps, playas and valley and foothill grassland in alkaline soils. It occurs at elevations from approximately 3 to 2,740 feet.	April-October	**None.** No CNDDB occurrences for San Joaquin spearscale have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
San Mateo thorn-mint (*Acanthomintha duttonii*)	FE SE 1B.1	Endemic to San Mateo County.	San Mateo thorn-mint grows in serpentinite soils in valley and foothill grassland and chaparral habitats. It occurs at elevations between 160 and 980 feet.	April – June	**None.** No CNDDB occurrences for San Mateo thorn-mint have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
San Mateo woolly sunflower (*Eriophyllum latilobum*)	FE CE 1B.1	Endemic to San Mateo County.	San Mateo woolly sunflower is found growing in cismontane woodland habitats often on serpentinite soils and on roadcuts. It is known from two extant occurrences. It occurs at elevations between 150 and 500 feet.	May – June	**None.** No CNDDB occurrences for San Mateo woolly sunflower have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]
Santa Cruz microseris (*Stebbinsoseris decipiens*)	1B.2	Endemic to California. Found in Monterey, Marin, Santa Cruz, San Francisco, San Luis Obispo and San Mateo counties.	Santa Cruz microseris occurs in open areas of broadleafed upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, and valley and foothill grassland, sometimes serpentinite. It occurs at elevations between 33 and 1,640 feet.	April – May	**None.** No CNDDB occurrences for Santa Cruz microseris have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Santa Cruz tarplant (*Holocarpha macradenia*)	FT CE 1B.1	California endemic; extant occurrences in Monterey, Santa Cruz and Solano counties.	Santa Cruz tarplant occurs in coastal prairie, coastal scrub and valley and foothill grassland often on clay or sandy areas. It occurs at elevations between 33 and 722 feet.	June - October	**None.** No CNDDB occurrences for Santa Cruz tarplant have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Short-leaved evax (*Hesperevax sparsiflora* var. *brevifolia*)	1B.2	Found in California and Oregon. In California, found in Del Norte, Humboldt, Mendocino, Marin, Santa Cruz, San Francisco, San Mateo, and Sonoma counties.	Short-leaved evax is found in sandy soils in coastal bluff scrub, coastal dunes, and coastal prairies. It occurs at elevations between sea level and 700 feet.	March - June	**None.** One CNDDB occurrence for short-leaved evax has been documented within 5 miles of the project site in San Francisco. No suitable habitat for this species is present on the site.
Showy Indian clover (*Trifolium amoenum*)	FE 1B.1	Endemic to California. Found in Marin, San Mateo, and Sonoma counties. Thought to be extirpated from Napa, Santa Clara, and Solano counties.	Showy rancheria clover is found in coastal bluff scrub and valley and foothill grassland habitats. It occurs at elevations from near sea level to approximately 1,360 feet.	April – June	**Low.** One CNDDB occurrence for showy rancheria clover has been documented as overlapping a large area of Colma, including the project site, but it is from 1907. Marginally suitable habitat is present on the site, however, the disturbed nature of the site make this species unlikely to occur.
Sonoma spineflower (*Chorizanthe valida*)	1B.1	California endemic; extant occurrences in Marin County.	Sonoma spineflower occurs in coastal prairie in sandy areas. It occurs at elevations between 33 and 1,000 feet.	June - August	**None.** No CNDDB occurrences for Sonoma spineflower have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]
Water star-grass (*Heteranthera dubia*)	2B.2	Found in numerous states including California. In California, found in Butte, Colusa, Lassen, Mendocino, Modoc, Marin, San Francisco, Shasta, and San Mateo counties.	Water star grass is found alkaline marshes and swamps with still or slow-moving water. It requires a pH of 7 or higher and is usually found in slightly eutrophic waters. It occurs at elevations from approximately 100 to 4,900 feet.	July – October	**None.** One CNDDB occurrence for water star grass has been documented within 5 miles of the project site, but it's from 1879. No suitable habitat for this species is present on the site.
Western leatherwood (*Dirca occidentalis*)	1B.2	Endemic to California. Found in Alameda, Contra Costa, Marin, Santa Clara, San Mateo, and Sonoma counties.	Western leatherwood is found in mesic habitats including broad-leafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, north coast coniferous forest, and riparian forest and woodland. It occurs at elevations from approximately 80 to 1,400 feet.	January – April	**None.** Two CNDDB occurrences for western leatherwood have been documented within 5 miles of the project site near San Andreas Lake. No suitable habitat for this species is present on the site.
White-rayed pentachaeta (*Pentachaeta bellidiflora*)	FE CE 1B.1	Endemic to California. Found in San Mateo County. Thought to be extirpated from Marin and Santa Cruz counties.	White-rayed pentachaeta grows in cismontane woodland and valley and foothill grassland habitats and is often in serpentinite soils. It occurs at elevations between 100 to 2,000 feet.	March – May	**None.** Two CNDDB occurrences for white-rayed pentachaeta have been documented within 5 miles of the project site at San Bruno Mountain State Park and at San Andreas Lake. No suitable habitat for this species is present on the site.
Woodland woolythreads (*Monolopia gracilens*)	1B.2	Endemic to California. Found in Alameda, Contra Costa, Monterey, San Benito, Santa Clara, Santa Cruz, San Luis Obispo, and San Mateo counties.	Woodland woolythreads grows in serpentine soils in openings in broad-leafed upland forests, openings in chaparral, cismontane woodlands, north coast coniferous forests, and valley foothill grassland habitats. It occurs at elevations between 330 and 4,000 feet.	February – July	**None.** No CNDDB occurrences for woodland woolythreads have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.

Species Name	Federal, State, and CNPS Listing Status[1]	Geographic Distribution	Habitat Preferences and Elevation Range	Blooming Period	Potential to Occur[2]

[1] Status explanations:

Federal:

FE = Listed as endangered under the Federal Endangered Species Act.

FT = Listed as threatened under the Federal Endangered Species Act.

State:

CE = Listed as endangered under the California Endangered Species Act.

CT = Listed as threatened under the California Endangered Species Act.

CR = Listed as rare in California.

Calfornia Rare Plant Rank:

Rank 1A = Presumed extinct in California;

Rank 1B = Rare, threatened, or endangered in California and elsewhere;

Rank 2A = Plants presumed extirpated in California, but more common elsewhere;

Rank 2B: Rare, threatened, or endangered in California, but more common elsewhere;

.1 = Seriously endangered in California

.2 = Fairly endangered in California

.3 = Not very endangered in California

[2] Potential Occurrence explanations:

Present: Species was observed on the project site, or recent species records (within five years) from literature are known within the project area.

High: The CNDDB or other reputable documents record the occurrence of the species off-site, but within a 5-mile radius of the project area and within the last 10 years. Highly suitable habitat is present within the project area.

Moderate: Species does not meet all terms of High or Low category. For example, CNDDB or other reputable documents may record the occurrence of the species near but beyond a 5-mile radius of the project area, or some of the components representing suitable habitat are present within or adjacent to the project area, but the habitat is substantially degraded or fragmented.

Low: The CNDDB or other documents may not record or may record few occurrences of the species within a 5-mile radius of the project area. Few components of suitable habitat are present within or adjacent to the project area.

None: CNDDB or other documents do not record the occurrence of the species within or reasonably near the project area and within the last 10 years, and no or extremely few components of suitable habitat are present within or adjacent to the project area; or the project area is outside of specie’s known geographic and/or elevation range.

<u>Species listed by the CNDDB and/or CNPS Rare Plant Inventory that do not meet the definition of special-status species</u>

Coast rockcress, *Arabis blepharophylla*, CRPR 4.3
Carlotta Hall's lace fern, *Aspidotis carlotta-halliae*, CRPR 4.2
Ocean bluff milk-vetch, *Astragalus nuttallii* var. *nuttallii,* CRPR 4.2
Oakland star-tulip, *Calochortus umbellatus*, CRPR 4.2
Johnny-nip, *Castilleja ambigua var. ambigua*, CRPR 4.2
Clustered lady's-slipper, *Cypripedium fasciculatum*, CRPR 4.2
California bottle-brush grass, *Elymus californicus,* CRPR 4.3
Marsh horsetail, *Equisetum palustre,* CRPR 3
Slender cottongrass, *Eriophorum gracile*, CRPR 4.3
San Francisco wallflower, *Erysimum franciscanum,* CRPR 4.2
San Francisco gumplant, *Grindelia hirsutula* var. *maritima*, CRPR 3.2
Coast iris, *Iris longipetala*, CRPR 4.2
Woolly-headed lessingia, *Lessingia hololeuca,* CRPR 3
San Mateo tree lupine, *Lupinus arboreus var. eximius,* CRPR 3.2
Mt. Diablo cottonweed, *Micropus amphibolus,* CRPR 3.2
Marin knotweed, *Polygonum marinense,* CRPR 3.1
Lobb's aquatic buttercup, *Ranunculus lobbii,* CRPR 4.2

Table 2. Special-Status Wildlife Species Potential to Occur in the Project Area

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Invertebrates				
Bay checkerspot butterfly (*Euphydryas editha bayensis*)	FT	Restricted to native grasslands on outcrops of serpentine soil Santa Clara and San Mateo Counties, California.	Bay checkerspot butterfly is found in shallow, serpentine-derived soils in native grasslands supporting larval host plants, including dwarf plantain (*Plantago erecta*) or purple owl's clover (*Castilleja densiflora* or *Castilleja exserta*).	**None.** Three CNDDB occurrences for Bay checkerspot butterfly have been documented within 5 miles of the project site at San Bruno Mountain State Park and near Portola Drive. No suitable habitat for this species is present on the site.
Callipe silverspot (*Speyeria callipe callipe*)	FE	The vast majority of habitat lies within the cities of San Francisco, Oakland, and Berkeley. Also occurs in areas of San Mateo County, including San Bruno Mountain, and Alameda County.	Callippe silverspot butterfly is found in native grassland and adjacent habitat. Females lay their eggs on the dry remains of the larval host plant Johnny jump-up (*Viola pedunculata*). Most adults are found on east-facing slopes. During the breeding season (mid-May to late July) males congregate on hilltops in search of females.	**None.** Five CNDDB occurrences for Callippe silverspot butterfly have been documented within 5 miles of the project site at San Bruno Mountain State Park. No suitable habitat this species is present on the site.
Mission blue butterfly (*Plebejus icarioides missionensis*)	FE	Found in only a few locations in the San Francisco Bay Area, including the Marin Headlands in Marin County, skyline ridges and San Bruno Mountain in San Mateo County, and Twin Peaks in San Francisco County.	Mission blue butterfly requires a host plant and the appropriate nectar plants in coastal grassland habitat. Host plants include silver lupine (*Lupinus albifrons*), varicolor lupine (*L. variicolor*), and summer lupine (*L. formosus*). Nectar plants include various composite flowers in the sunflower family (*Asteraceae*) that grow in association with the larval host plants.	**None.** Ten CNDDB occurrences for mission blue butterfly have been documented within 5 miles of the project site at San Bruno Mountain State Park and vicinity and at Milagra Ridge. No suitable habitat for this species is present on the site.

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Myrtle's silverspot (*Speyeria zerene myrtleae*)	FE	Currently only found in northwestern Marin County, including Point Reyes National Seashore, and southwestern Sonoma County.	Myrtle's silverspot is coastal dune or prairie habitat. Females lay their eggs on the debris and dried stemps of hooked spur violet (*Viola adunca*). Adult butterflies are typically found in areas that are sheltered from wind below 810 feet in elevation and within 3 miles of the coast. Adult flight season ranges from late June to early September. Adults feed on nectar from flowers, including hairy gumweed (*Grindelia hirsutula*), coastal sand verbena (*Abronia latifolia*), mints (*Monardella* spp.), bull thistle (*Cirsium vulgare*), and seaside fleabane (*Erigeron glaucus*).	**None.** One CNDDB occurrence for Myrtle's silverspot has been documented within 5 miles of the project site, but it has been extirpated. No suitable habitat for this species is present on the site.
San Bruno elfin butterfly (*Callophrys mossii bayensis*)	FE	Found in only three locations around the San Francisco Bay Area, including Milagra Ridge, San Bruno Mountain, and Montara Mountain in San Mateo County.	San Bruno elfin butterfly occurs only on north-facing slopes within the fogbelt where its host plant stonecrop (*Sedium spathulifolium*) grows. Stoncrop grows in coastal grassland and low scrub on thin, rocky soils.	**None.** Three CNDDB occurrences for San Bruno elfin butterfly have been documented within 5 miles of the project site at San Bruno Mountain State Park and at Milagra Ridge. No suitable habitat is for this species present on the site.
Fish				
Hardhead (*Mylopharodon conocephalus*)	CSSC	Found in streams at low to mid elevations in the Sacramento-San Joaquin River and Russian River drainages. Also present in the Napa River although the population is very restricted in its distribution in this river.	Hardhead are found at low to mid elevations in relatively undisturbed habitats of larger streams with clear, cool waters. Prefer pools and runs with deep (greater than 80 centimeters) clear water, slow velocities, and sand-gravel-boulder substrates.	**None.** One CNDDB occurrence for hardhead has been documented within 5 miles of the project site in Lake Merced. No suitable habitat for this species is present on the site.

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Longfin smelt (*Spirinchus thaleichthys*)	FC CT CSSC	Found in nearshore coastal environments from San Francisco Bay north to Lake Earl, near the Oregon Border. Specifically, found in the Sacramento-San Joaquin Delta, San Pablo Bay, San Francisco Bay, the Gulf of Farallones, the Humboldt Bay, and the Eel River estuary.	Longfin smelt is found in open waters of estuaries, mostly in the middle or bottom of the water column. It prefers salinities of 15 to 30 parts per thousand, but it can be found in completely freshwater to almost pure saltwater.	**None.** One CNDDB occurrence for longfin smelt has been documented within 5 miles of the project site in the San Francisco Bay. No suitable habitat for this species is present on the site.
Steelhead- Central California coast Distinct Population Segment (DPS) (*Oncorhynchus mykiss irideus*)	FT	This DPS includes all populations of steelhead from the Russian River south to Aptos Creek. Steelhead in drainages of San Francisco, San Pablo, and Suisun Bays are also part of this DPS.	Adult steelhead migrate from the ocean into streams in the late fall, winter, or early spring seeking out deep pools within fast moving water to rest prior to spawning. Steelhead spawn in shallow-water gravel beds.	**None.** No CNDDB occurrences for steelhead have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Coho salmon- Central California Coast ESU (*Oncorhynchus kisutch*)	FE CE	The federal listing includes populations between Punta Gorda and the San Lorenzo River. The state listing includes populations south of Punta Gorda.	Coho salmon requires beds of loose, silt-free, coarse gravel for spawning; also needs cover, cool water and sufficient dissolved oxygen.	**None.** No CNDDB occurrences for coho salmon have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Tidewater goby (*Eucyclogobius newberryi*)	FE CSSC	Found in scattered locations from the mouth of the Smith River in Del Norte County to Agua Hedionda Lagoon in northern San Diego County.	Tidewater goby inhabits brackish shallow lagoons and lower stream reaches where the water is fairly still, but not stagnant. It prefers a sand substrate component for breeding, but is also found on rocky, mud, and silt substrates. Tidewater goby is found in waters with salinity levels between 2 and 27 parts per thousand.	**None.** One CNDDB occurrence for tidewater goby has been documented within 5 miles of the project site, but it has been extirpated. No suitable habitat for this species is present on the site.

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Amphibians				
California red-legged frog (*Rana draytonii*)	FT CSSC	Found from Riverside County to Mendocino County along the Coast Range, from Calaveras County to Butte County in the Sierra Nevada, and in Baja California.	California red-legged frog is found in lowlands and foothills in or near permanent sources of deep water. It prefers shorelines with extensive vegetation since it disperses far during and after rain. Larvae require 11-12 weeks of permanent water for development.	**None.** Several CNDDB occurrences for California red-legged frog have been documented within 5 miles of the project site at Sharp Park, Milagra Ridge, Sweeney Ridge and vicinity. No suitable habitat for this species is present on the site.
California tiger salamander (*Ambystoma californiense*)	FT CT CSSC	Found in the Coast Range and Sierra Nevada foothills of California. In the Coast Range, it occurs from southern San Mateo County south to central San Luis Obispo County, and also in the vicinity of northwestern Santa Barbara County. In the Sierra Nevada foothills, it occurs from northern Yolo County to northwestern Kern County and northern Tulare County.	California tiger salamander are found in grasslands and open oak woodlands. Necessary habitat components for this species include California ground squirrel (*Otospermophilus beecheyi*) or gopher burrows for underground retreats and breeding ponds, such as seasonal wetlands, vernal pools, or slow moving streams that do not support predatory fish or frog populations.	**None.** No CNDDB occurrences for California tiger salamander have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Reptiles				
Western pond turtle (*Emys marmorata*)	CSSC	Found from Baja California, Mexico north through Klickitat County, Washington. In California, found west of the Sierra-Cascade crest. Absent from desert regions, except the Mojave Desert along the Mojave River and its tributaries.	Western pond turtle requires permanent or nearly permanent bodies of water including ponds, marshes, rivers, streams, and irrigation ditches. It requires basking sites, such as submerged rocks, logs, open mud banks, or floating vegetation mats. This species also requires sandy banks or grassy open fields up to 0.5 kilometers from the water's edge for egg laying.	**None.** One CNDDB occurrence for western pond turtle has been documented within 5 miles of the project site at TPC Harding Park. No suitable habitat for this species is present on the site.

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
San Francisco garter snake (*Thamnophlis sirtalis tetrataenia*)	FE CE	Historically, occurred in scattered wetland areas on the San Francisco Peninsula from approximately the San Francisco County line south along the eastern and western bases of the Santa Cruz Mountains. Found at least from the Upper Crystal Springs Reservoir in San Mateo County south to Año Nuevo State Reserve in Santa Cruz County. Currently, although the geographical distribution may remain the same, reliable information regarding specific locations and population status is not available. Much of the remaining suitable habitat is located on private property that has not been surveyed for the presence of the snake.	San Francisco garter snake is a highly aquatic species that is found in or near densely vegetated freshwater ponds with adjacent open hillsides where they can bask, feed, and find cover in rodent burrows.	**None.** The closest CNDDB occurrences for San Francisco garter snake to the project site have been extirpated. No suitable habitat for this species is present on the site.
Birds				
Alameda song sparrow (*Melospiza melodia pusillula*)	CSSC	Restricted to the tidal marshes on the fringes of the south San Francisco Bay.	Alameda song sparrow is a resident of salt marshes bordering the south arm of the San Francisco Bay. It prefers tidally influenced habitats. This species is found in all relatively large marshes (e.g., Dumbarton Marsh, Palo Alto Baylands) and in most remnant patches of marsh vegetation along sloughs, dikes, and levees, including some highly disturbed and urbanized sites. Vegetation is required for nesting sites, song perches, and concealment from predators. In addition, Alameda song sparrow requires some upper marsh vegetation for nesting in order to ensure the nests remain dry during high tide.	**None.** One CNDDB occurrence for Alameda song sparrow has been documented within 5 miles of the project site in South San Francisco. No suitable habitat for this species is present one the site.

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
American peregrine falcon (*Falco peregrinus anatum*)	CFP	Occurs throughout the Central Valley, coastal areas, and northern mountains of California.	American peregrine falcon uses steep cliffs and buildings for nesting. It forages over a variety of habitats, especially wetlands.	**None.** No CNDDB occurrences for American peregrine falcon have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Bank swallow (*Riparia riparia*)	CT	Occurs in scattered locations in northern and central California in major lowland valleys and coastal areas where alluvial soils exist. The major breeding population is confined to the Sacramento and Feather Rivers and their major tributaries.	Bank swallow is a colonial nester and requires vertical banks and cliffs with fine-textured or sandy soils near streams, rivers, ponds, lakes, and the ocean for nesting. Nest sites consist of burrows dug into a vertical earthern bank to a depth of 18 to 36 inches.	**None.** Two CNDDB occurrences for bank swallow have been documented within 5 miles of the project site at TPC Harding Park. No suitable habitat for this species is present on the site.
Burrowing owl (*Athene cunicularia*)	CSSC	Found year-round throughout much of California, except the coastal counties north of Marin and mountainous areas.	Burrowing owl is found in open, dry annual grasslands and scrublands characterized by low-growing vegetation. It is dependent upon burrowing mammals, especially the California ground squirrel for nesting and wintering sites.	**None.** No CNDDB occurrences for burrowing owl have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
California black rail (*Laterallus jamaicensis coturniculus*)	CT	The majority found in the tidal salt marshes of the northern San Francisco Bay region, primarily in San Pablo and Suisun Bays. Smaller populations occur in San Francisco Bay, the Outer Coast of Marin County, freshwater marshes in the foothills of the Sierra Nevada, and in the Colorado River Area.	California black rail is found in marshlands with unrestricted tidal influence (estuarine, intertidal, emergent, or regularly flooded). It prefers areas dominated by pickleweed (*Salicornia virginica*), bulrushes (*Scirpus* sp.), matted salt grass (*Distichilis spicata*), and other marsh vegetation.	**None.** One CNDDB occurrence for California black rail has been documented within 5 miles of the project site at TPC Harding Park. No suitable habitat for this species is present on the site.

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
California least tern (*Sternula antillarum browni*)	FE CE	Nests along the coast from San Francisco Bay south to Northern Baja California.	California least tern forages primarily in shallow estuaries or lagoons where small fish are abundant. It nests in loose colonies in areas relatively free of human or predatory disturbance on bare or sparsely vegetated, flat substrates in sand beach, alkali flat, or landfill habitats near shallow-water feeding areas.	**None.** No CNDDB occurrences for California least tern have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Marbled murrelet (*Brachyramphus marmoratus*)	FT CE	Feeds near shore; nests inland along coast from Eureka to Oregon border and from Half Moon Bay to Santa Cruz.	Marbled murrelet nests in old growth redwood-dominated forests, up to six miles inland, often in Douglas fir.	**None.** No CNDDB occurrences for marbled murrelet have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Northern harrier (*Circus cyaneus*)	CSSC	Breed from sea level near the coast to at least 9,000 feet in the Glass Mountain region of Mono County.	Northern harrier is predominantly found in grassland and wetland communities; however, it uses various habitats. It nests on the ground in shrubby vegetation, usually at marsh edges.	**None.** No CNDDB occurrences for northern harrier have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Ridgeway (California clapper) rail (*Rallus obsoletus* spp. *obsoletus*)	FE SE	This California endemic inhabits salt water and brackish marshes traversed by tidal sloughs in the vicinity of the San Francisco Bay.	Associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs.	**None.** Three CNDDB occurrences for Ridgeway's rail have been documented within 5 miles of the project site at San Bruno Point and south of Candlestick Park. . No suitable habitat for this species is present on the site.

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Saltmarsh common yellowthroat (*Geothylpis trichas sinuosa*)	CSSC	Found year-round in the vicinity of San Francisco Bay, from Tomales Bay in Marin County and Napa Sloughs in southern Sonoma County on the north, east to Carquinez Straight, and south to vicinity of San Jose in Santa Clara County. Historic locations of confirmed breeding include Lake Merced in San Francisco County, and Coyote Creek, Alviso, and Milpitas in Santa Clara County	Saltmarsh common yellowthroat nests and forages in fresh and saltwater marshes and seasonal wetlands. It breeds on the ground or up to 8 centimeters off the ground under the cover of dense shrubs and emergent aquatic vegetation.	**None.** Three CNDDB occurrences for saltmarsh common yellowthroat have been documented within 5 miles of the project site at TPC Harding Park, Sweeney Ridge and San Andreas Lake. . No suitable habitat for this species is present on the site.
San Pablo song sparrow (*Melospiza melodia samuelis*)	CSSC	Resident of salt marshes along the north side of San Francisco and San Pablo Bays.	San Pablo song sparrow inhabits tidal sloughs in Salicornia marshes; nests in Grindelia bordering slough channels.	**None.** No CNDDB occurrences for San Pablo song sparrow have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Western snowy plover (*Charadrius alexandrines nivosus*)	FT CSSC	Occurs along the entire coastline of California.	Western snowy plover is found on sandy beaches, salt pond levees, and shores of large alkali lakes. It needs sandy, gravelly, or friable soils for nesting.	**None.** No CNDDB occurrences for snowy plover have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
White-tailed kite (*Elanus leucurus*)	CFP	Found year-round in nearly all areas of California up to the western Sierra Nevada foothills and southeast deserts. Common in the Central Valley of California and along the entire length of the coast, possibly breeding in more arid regions east of the Sierra Nevada and Transverse Range (Inyo and eastern Kern Counties). Documented breeding in Imperial County, western Riverside County, and eastern San Diego County. In the Sacramento Valley, populations have predominantly increased in irrigated agricultural areas where the California vole (*Microtus californicus*) often occurs.	White-tailed kite nests in rolling foothills or valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. It forages in open grasslands, meadows, or marshes with perching sites.	**None.** No CNDDB occurrences for white-tailed kite have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Mammals				
Alameda Island mole (*Scapanus latimanus parvus*)	CSSC	Found only on Alameda Island in the San Francisco Bay.	Alameda Island mole is found in a variety of habitats, but prefers annual and perennial grasslands with moist friable soils. This species avoids flooded soils.	**None.** This species is only known from Alameda Island. No suitable habitat for this species is present in the project area.
American badger (*Taxidea taxus*)	CSSC	Occurs throughout California, the western United States, and Canada.	American badger is rare in western San Francisco Bay area. It occurs in grasslands and open stages of forest and scrub habitats with friable soils and good prey base of burrowing rodents.	**None.** No CNDDB occurrences for American badger have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Big free-tailed bat (*Nyctinomops macrotis*)	CSSC	Rare in California. Found only in low lying arid areas of southern California and as a vagrant elsewhere.	Big free-tailed bat needs high cliffs or rocky outcrops for roosting. This species prefers rugged, rocky canyons. It feeds principally on large moths.	**None.** One CNDDB occurrence for big free-tailed bat have been documented within 5 miles of the project site south of Sharp Park. No roosting habitat for this species is present on the site.

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Pallid bat (*Antrozous pallidus*)	CSSC	Common throughout low elevations of California. Not found in the high Sierra from Shasta to Kern counties and the northwestern corner of the State from Del Norte and western Siskiyou counties to northern Mendocino County.	Pallid bat is uncommon, especially in urban areas. This species roosts in caves and large trees and forages in grasslands and oak savannah. It is most common in open, dry habitats with rocky areas for roosting.	**Low.** No CNDDB occurrences for pallid bat have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site. Trees are present in the project area that could provide roosting habitat for pallid bat; however, this habitat is marginal since it is fairly urban.
Point Reyes jumping mouse (*Zapus trinotatus orarius*)	CSSC	Occurs primarily in bunch grass marshes on the uplands of Point Reyes. Also present in coastal scrub, grassland, and meadows.	Point Reyes jumping mouse eats mostly grass seeds with some insects and fruit taken. Builds grassy nests on the ground under vegetation. Burrows in winter.	**None.** No CNDDB occurrences for Point Reyes jumping mouse have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Saltmarsh harvest mouse (*Reithrodontomys raviventris*)	FE CE	Occurs only in the saline emergent wetlands of the San Francisco Bay and its tributaries.	Saltmarsh harvest mouse is only found in saline emergent wetlands in the San Francisco Bay and its tributaries. It uses pickleweed as its primary cover. It also uses non-submerged, salt-tolerant vegetation for escape during extremely high tides.	**None.** No CNDDB occurrences for saltmarsh harvest mouse have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*)	CSSC	Found throughout the San Francisco Bay area in grasslands, scrub and wooded areas.	San Francisco dusky-footed woodrat is found in forest and scrub habitats of moderate canopy and moderate dense understory.	**None.** No CNDDB occurrences for San Francisco dusky-footed woodrat have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.
Southern sea otter (*Enhydra lutris nereis*)	FT CFP	Inhabits nearshore marine environments from about Ano Nuevo in San Mateo County to Point Sal in Santa Barbara County.	Southern sea otter needs canopies of giant sea kelp for rafting and feeding. Prefers rocky substrates with abundant invertebrates.	**None.** No CNDDB occurrences for southern sea otter have been documented within 5 miles of the project site. No suitable habitat for this species is present on the site.

Species Name	Federal and State Listing Status[1]	Geographic Distribution	Habitat Requirements	Potential to Occur[2]
Townsend's big-eared bat (*Corynorhinus townsendii*)	CPT CSSC	Found throughout California, but details of its distribution are not well known. Found in all but subalpine and alpine habitats.	Townsend's big-eared bat roosts in caves, mines, and large trees. It forages within woodlands and along stream edges. This species is extremely sensitive to human disturbance.	**None.** Two CNDDB occurrences for Townsend's big-eared bat have been documented within 5 miles of the project site near Portola Drive and San Andreas Lake. Trees are present in the project area that could provide roosting habitat for Townsend's big-eared bat; however, no tree hollows large enough to support a colony were observed on or adjacent to the site.
Western red bat (*Lasiurus blossevillii*)	CSSC	Roosts primarily in trees, 2 to 40 feet above ground, from sea level up through mixed conifer forests.	Western red bat prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.	**Low.** No CNDDB occurrences for western red bat have been documented within 5 miles of the project site. Trees are present in the project area that could provide roosting habitat for western red bat; however, this species prefers riparian habitats for roosting.

<table>
<tr><th>Species Name</th><th>Federal and State Listing Status[1]</th><th>Geographic Distribution</th><th>Habitat Requirements</th><th>Potential to Occur[2]</th></tr>
<tr><td colspan="3">[1] Status explanations:
Federal:
FE = Listed as endangered under the Federal Endangered Species Act.
FT = Listed as threatened under the Federal Endangered Species Act.
FC = Candidate species to be listed under the Federal Endangered Species Act.
State:
CE = Listed as endangered under the California Endangered Species Act.
CT = Listed as threatened under the California Endangered Species Act.
CPT = Proposed as threatened under the California Endangered Species Act.
CSSC = Species of Special Concern designated by California Department of Fish and Wildlife.
CFP = Fully Protected Species under California Fish and Game Code.
SA1 = Listed in California as a special animal.</td><td colspan="2">[2] Potential Occurrence explanations (also see Section 3.2.2):
Present: Species was observed on the project site, or recent species records (within five years) from literature are known within the project area.
High: The CNDDB or other reputable documents record the occurrence of the species off-site, but within a 5-mile radius of the project area and within the last 10 years. Highly suitable habitat is present within the project area.
Moderate: Species does not meet all terms of High or Low category. For example, CNDDB or other reputable documents may record the occurrence of the species near but beyond a 5-mile radius of the project area, or some of the components representing suitable habitat are present within or adjacent to the project area, but the habitat is substantially degraded or fragmented.
Low: The CNDDB or other documents may not record or may record few occurrences of the species within a 5-mile radius of the project area. Few components of suitable habitat are present within or adjacent to the project area.
None: CNDDB or other documents do not record the occurrence of the species within or reasonably near the project area and within the last 10 years, and no or extremely few components of suitable habitat are present within or adjacent to the project area; or the project area is outside of specie’s known geographic and/or elevation range.</td></tr>
</table>

1 Included in the table for informational purposes, but not normally considered a special-status species in California Environmental Quality Act documents or biological resource reports.

Animal species listed in the CNDDB that do not meet the definition for special-status species

Edgewood blind harvestman, *Calicina minor*
*incredible harvestman, *Banksula incredula*
*obscure bumble bee, *Bombus caliginosus*
*western bumble bee, *Bombus occidentalis*
*stage's dufourine bee, *Dufourea stagei*
*San Francisco Bay leafcutter bee, *Trachusa gummifera*
sandy beach tiger beetle, *Cicindela hirticollis gravida*
Ricksecker's water scavenger beetle, *Hydrochara rickseckeri*
*Leech's skyline diving beetle, *Hydroporus leechi*
*bumblebee scarab beetle, *Lichnanthe ursina*
*Opler's longhorn moth, *Adela oplerella*
monarch- California overwintering population, *Danaus plexippus* population 1
*San Francisco forktail damselfly, *Ischnura gemina*
mimic tryonia, *Tryonia imitator*
Tomales isopod, *Caecidotea tomalensis*
Marin Hesperian, *Vespericola marinensis*
California giant salamander, *Dicamptodon ensatus*
Cooper's hawk, *Accipiter cooperii*
*merlin, *Falco columbarius*
*double-crested cormorant, *Phalacrocorax auritus*
Santa Cruz kangaroo rat, *Dipodomys venustus venustus*
*hoary bat, *Lasiurus cinereus*
*fringed myotis, *Myotis thysanodes*
Angel Island mole, *Scapanus latimanus insularis*
Alameda Island mole, *Scapanus latimanus parvus*

*= known occurrences within 5 miles of the site

APPENDIX D

CULTURAL RESOURCES REPORTS

- **Holman & Associates Archaeological Consultants, 2015 (December). Archaeological Reconnaissance of a Proposed Mercy Housing Project at 1670-1692 Mission Road, Town of Colma, San Mateo County, San Mateo County and Finding of No Historic Properties Affected.**
- **Finding of Effect, prepared by Ward Hill and Denise Bradley, February 2016**
- **SHPO Consultation Letter, March 2016**

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Archaeological Reconnaissance of a Proposed Mercy Housing Project at 1670-1692 Mission Road, Town of Colma, San Mateo County, California and Finding of No Historic Properties Affected

by

Matthew R. Clark
Registered Professional Archaeologist #10310

December 2015

Report Prepared For

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INTRODUCTION AND PROJECT SUMMARY

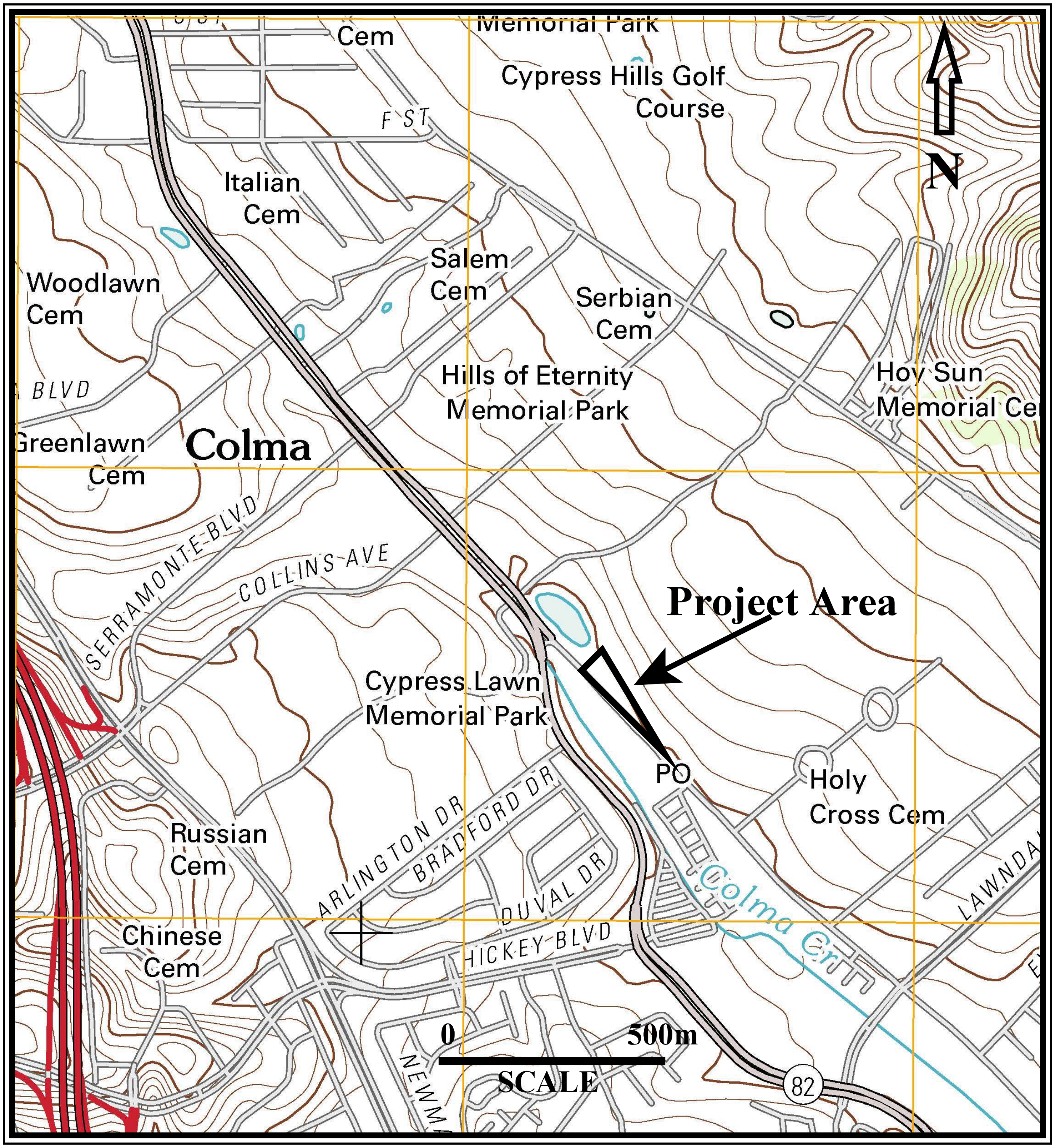
During September 2015, Holman & Associates Archaeological Consultants (H&A) contracted with Mercy Housing California in San Francisco to complete an archaeological study and report for a proposed housing project in the Town of Colma, "Colma Veterans Village." This project will be partially funded by the Department of Housing and Urban Development (HUD), and so is an undertaking requiring compliance with Section 106 of the National Historic Preservation Act (1966 et. seq.). Section 106 regulations for "Protection of Historic Properties," are in the Code of Federal Regulations at 36 CFR Part 800. Review for Section 106 compliance will be by HUD and concurrence sought from the State Historic Preservation Officer (SHPO). This report details archaeological resources inventory work done for Section 106 compliance, and provides resource management recommendations for 106 compliance with regards to potential archaeological historic properties.

In early October H&A contacted the California Native American Heritage Commission (NAHC) to initiate consultation with Native Americans, subsequently conducting a historical resources records search for the approximately 3.3 acre Project's Area of Potential Effects (APE) located at 1670-1692 Mission Road in the Town of Colma, San Mateo County, California (the "Mercy Colma Project Area" or MCPA). The records search was followed by a general surface reconnaissance on 28 October 2015. The APE contains two parts, the 2.2 acre property to be developed by Mercy Housing and adjacent property of 1.1 acres that will become access and parking on the east side of the housing development. Because the proposed construction project could effect any archaeological resources on the property, this reconnaissance and initial evaluation was required by the Town of Colma under the California Environmental Quality Act (CEQA), and Town General Plan and Administrative Code Sections 5.08.100–300. This study addresses only the potential for archaeological resources and does not address any historical structures or features.

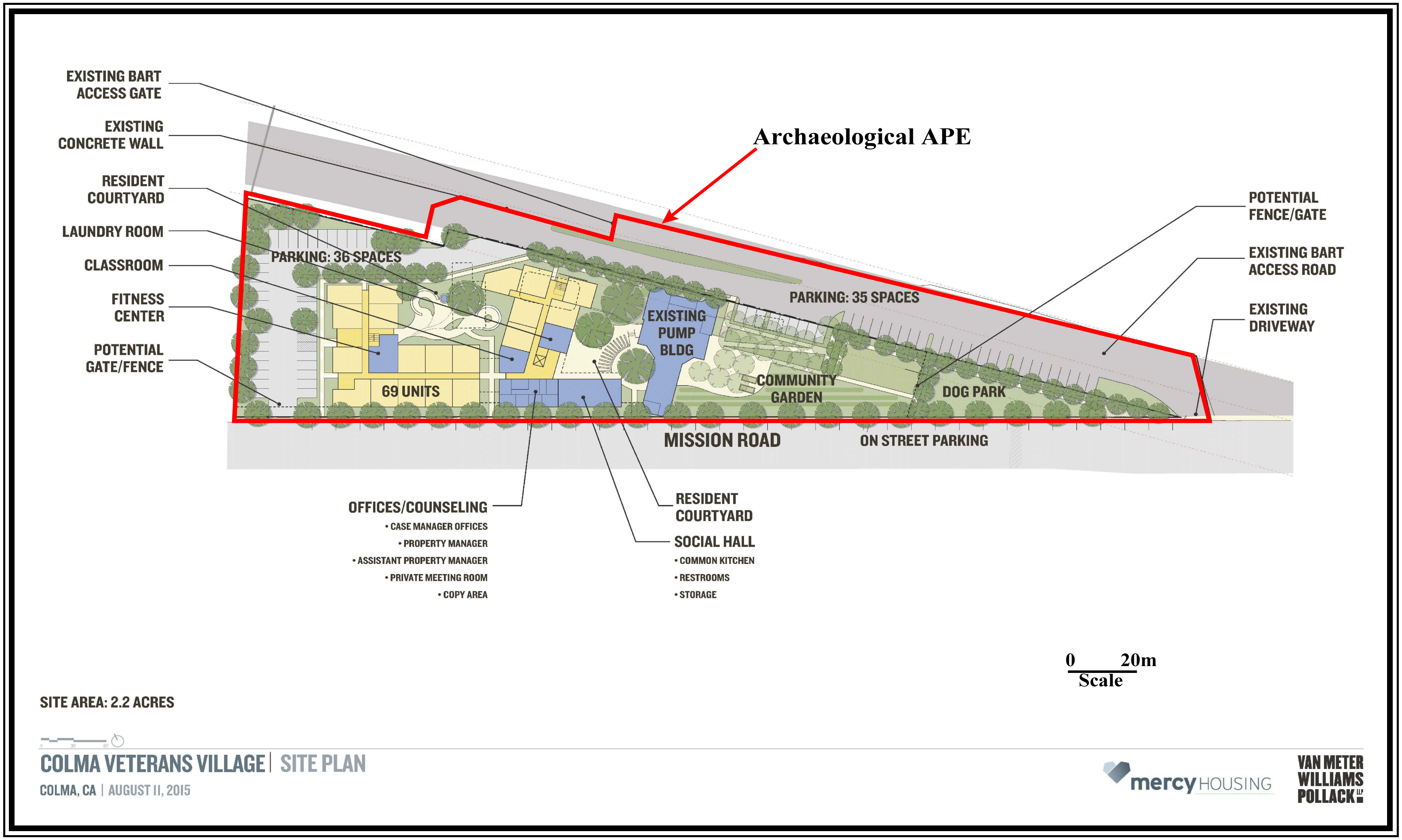
The initial archaeological evaluation of the Mercy Colma Project Area entailed four steps. A search of relevant records and maps maintained by the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS) at Sonoma State University was conducted to determine whether the property and/or areas nearby had been previously surveyed or contained previously recorded cultural resources. Consultation with recognized local Native American representatives was conducted and no responses were received. An on-foot reconnaissance of the APE and immediate surroundings was completed by the author. This report and the recommendations below constitute the third step of initial archaeological evaluation for this Project Area.

The records search revealed the Mercy Colma Project Area has been previously surveyed for historic architectural resources, but not for archaeological resources; 14 historical resources survey reports were found in the search perimeter, but none recorded archaeological sites within 400 meters/¼ mile of the APE, the nearest sites being over 2,000 m away. Reconnaissance was significantly hampered by surface conditions, as a large majority of the APE is being used or is paved, with only the southernmost tip open surface that could be adequately examined. However, surface visibility, aided by minor scraping by hand, was sufficient to complete an adequate surface reconnaissance, given the archaeological record of the vicinity.

No evidence of archaeological resources was found in the Mercy Colma APE by either archival or field research, and the location appears to be of low archaeological sensitivity. A "Finding of No Historic Properties Affected" under Section 106 procedures is warranted for this Project APE. Should unanticipated resources be discovered during construction, procedures in the event of surprise discoveries given at the end of this report should be implemented.



Map 1: Mercy Housing Project Location at 1670-1692 Mission Road, Colma.
((USGS “San Francisco South” 7.5 minute topographic quadrangle, 2012)



MAP 2: Mercy Housing Colma Project Area "Area of Potential Effects" (APE).
(Source: Mercy Housing California 2015)

THE PROJECT AREA

Location and Legal Description

The Mercy Colma Project Area (MCPA) is a roughly triangular property located at the northeast side of Mission Road between the intersection with El Camino Real/State Route 82 to the north and the entrances to Holy Cross Cemetery to the south. The MCPA development property (~2.2 acres) is owned by Holy Cross Cemetery and contains several reinforced concrete/stucco structures, including the pump house, a well house, a water reservoir, and a carpentry shop, now all out of service or converted to other uses. Holy Cross Cemetery is a National Register of Historic Places (NRHP) eligible property, but this portion along Mission Road was mistakenly evaluated as a portion of Cypress Lawn Memorial Park in 1994, an error that has been recently corrected by Architectural Historian Ward Hill (Archaeological/Historical Consultants 1994; Hill 2015). The easterly portion of the APE (~1.1 acres) is owned by the Bay Area Rapid Transit District (BART) and is nearly entirely paved to provide access to a BART ventilation facility and the right-of-way.

The MCPA APE is contained on the U.S. Geological Survey 7.5 minute "San Francisco South" topographic quadrangle, a portion of which is reproduced here as Map 1. The Project Area vicinity, between the southwestern slopes of San Bruno Mountain and the westerly hills above the ocean beach, was within the Mexican-era *Rancho Buri Buri* land grant and is therefore not surveyed into the township-and-range system. The Project APE is portrayed as Map 2, showing the proposed housing development. The APE extends ~268.2 m/880 feet along Mission Road and is about 74 m/243 feet wide at the north end.

Area of Potential Effects Determination

Resource inventory efforts–that is, finding out whether a project will or could affect historic properties–should be commensurate with potential impacts and utilize any previously developed information including "..past planning, research and studies ... and the likely nature and location of historic properties within the area of potential effects" (36 CFR §800.4(b)(1)), to appropriately scope the "reasonable and good faith effort" required under 106 regulations (§800.4(b)). This effort is confined to the designated "Area of Potential Effects" (APE) but the level of effort can vary within the APE, and APEs may vary, depending on elements of the specific project, such as anticipated effects, slope, prior ground disturbance, geotechnical data, prior archaeological research, relationship to existing features, etc.

To begin the identification effort, the Advisory Council on Historic Preservation (ACHP) advises that four steps be taken either in sequence or simultaneously: "(1) determining and documenting the area of potential effects; (2) reviewing existing information about historic properties; (3) seeking information from parties likely to have knowledge of or concerns about the area; and (4) gathering information from Indian tribes ... about properties to which they attached religious or cultural significance..." (ACHP Section 106 Regulations: Flow Chart Explanatory Material 2001: 4). Step 1 is presented in this section. Step 2 was initiated with an historic resources records search and additional archival research, detailed below. Steps 3 and 4 were completed with consultation with Native American tribes, mandatory under Section 106 regulations, and additional archival research with other interested or informative parties. Consultation efforts are detailed in the "Consultation" section below.

The Area of Potential Effects "means the geographical area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties" (36 CFR §800.16 (d); "*Effect* means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register" (§800.16(I)). APE designation should not assume large zones around potential impact areas or be made from incomplete plans, because that would require much more identification effort than necessary or supportable. For this project we have the plan utilized for the APE map above (Map 2), which shows the final development design but lacks construction notes and details. For the MCPA the APE for archaeological resources could perhaps have been restricted to likely areas of actual physical impacts, that is, the development property of 2.2 acres, based on an assumption that potential impacts on the BART portions would be minimal, but without solid information about possible excavations on those portions, the entire ~3.3 acres is designated the APE. For this study the APE has been restricted to consideration of archaeological resources, because project impacts will extend below the surface; Section 106 considerations for historical structures and features are being handled separately.

The APE should also includes Project staging areas, where equipment and materials will be stored during construction, potentially disturbing archaeological resources on or near the surface. It is assumed project staging will take place within the ~3.3 acre APE, and perhaps on the adjacent paved street, so other areas were not considered. Consideration of potential effects to the surface and near surface areas was therefore restricted to the surface reconnaissance. Field inventory research for the entire APE was completed with the surface examination.

Project impacts are defined as from the surface down and could affect archaeological resources, so the APE must also be defined vertically and researched subsurface. As per the ACHP Archaeology Guidance,

> Since an undertaking's effects are not restricted to the surface... the APE is three dimensional, [so] agencies should consider how the undertaking might impact historic properties on the surface, above it, and below it. ... In setting the APE's lower limits, the federal agency should rely on scientific and engineering analyses to define a depth beyond which alteration to any ... archaeological site, if present, is not reasonably expected to occur. ...[and] would not be effected through changes in soil compaction or soil chemistry, for example. The challenge is to determine a vertical limit below which a knowledgeable person can reasonably say there will be no effect to the integrity of a site, should one be present [ACHP 2009:17].

To define the vertical APE for the Mercy Housing Colma Project, only basic plans were available and examined, which did not show areas of excavations or utility trenching. However, the APE is entirely developed now, has been through several stages of historic land use and constructions, and the largest structure–the pump house–will remain and be re-purposed for the Project. Based on surface conditions, surface reconnaissance, and the general archaeological record in the vicinity, subsurface reconnaissance was deemed both quite difficult to accomplish and unlikely to produce meaningful results; it was therefore not recommended. Provision is made below for procedures to be implemented should subsurface evidence of archaeological resources be discovered during construction.

Biophysical Description

Archaeological resources and/or historic properties likely to exist in the Project Area are products of humans interacting with the physical environment; i.e, they record adaptations that utilize resources allowing human use and occupation. To find, understand the genesis and uses, and interpret the meanings of cultural resources in the Project Area, knowing the past and present environmental and cultural context is essential. Following is a basic description of the natural setting, current conditions, and cultural past of the Project Area vicinity.

The MCPA is located on the flood plain of Colma Creek, which runs southeastward just about 55 m west of the northwest corner of the APE. Though the creek has been channelized and/or under-grounded in most stretches, the creek about a half block from the Project Area runs in or very near its historic alignment. The property gently slopes down from east to west, but the majority of the APE is artificially leveled where the buildings and other structures are located. Elevation ranges from about 102 feet at the northernmost APE corner to about 92 feet at the southernmost. The area is underlain by recent alluvial fan and fluvial sandy deposits from Colma Creek, interbedded layers of sand, clayey sand and silty sand that are highly erosive. Open surface soil at the south end is a very fine-grained light grey-brown sandy silt, gravelly and rocky due to the inclusion of imported materials. Both angular and rounded gravels and pebbles, chunks of concrete, red brickbats, pieces of broken glass and rusted metal, broken and intact beverage containers, bits of paper and plastic sheeting, and miscellaneous trash are abundantly incorporated into the surface soil wherever it could be seen. Large portions of the APE are covered by gravel, pavement, and structures; the entire eastern margin is a paved access road to BART facilities.

The southern end of the APE west of the BART driveway and along Mission Road between the sidewalk and fence were the only portions of the APE with good to very good surface visibility; an unpaved island between lanes of the driveway had thicker dried grasses and green forbs, allowing fair visibility, but this is clearly an artificially created slope. A recent geotech boring was noted in this open southern zone, and near the existing entryway off Mission, several large pipes and utility boxes protrude from the surface. Other than the open southernmost end of the triangle and the paved access road, the properties are entirely fenced. North of the open soil and east of the BART driveway the APE is fenced into three zones. The southern portion, where the historic pump house is located, is now occupied by Baca's Racing Engines & Machine Shop, which appears to be primarily an automotive body repair business, with a mostly graveled fenced parking lot to the south of the pump house building. That parking area afforded poor to nonexistent surface visibility and was tightly packed with vehicles. The pump house building, well house, above surface reservoir, and other features in the center of the APE are surrounded by thickly grown trees producing a thick layer of duff, shrubs, and ground covers (Monterey Cypress, Monterey Pine, acacia, eucalyptus, and a few wild fruit trees; English Ivy, wild blackberry vines, fennel, iceplant, annual grasses of Eurasian origins); this area afforded very poor to no surface visibility.

The middle zone of the APE just north of the auto shop contains the reservoir, the overgrown well house and the overgrown former carpentry shop; it also contains the same types of closely growing trees, shrubs, plus several stone-fruit and at least one spruce tree, and ground covers as around the pump house and had the same poor to no visibility of the surface. Another recent geotech boring was noted in this area. Under the bushes and duff modern trash and discards, including auto parts, rusting metal whatnots, were even more abundant in this area. The northwest of the APE is another parking lot, with an Image Auto Body sign on the fence, not quite as crowded but also largely paved or covered by gravel and imported rock, surrounded on east and west and down the middle from the north by large duff-producing trees. As noted, none of the zones north of the small southerly open triangle provided good, usually not even fair, surface visibility; the northern parking lot was virtually entirely invisible.

Historical Sketch

The Project APE was part of the 1820s Mexican "*Rancho Buri Buri*" land grant. There is no record of specific rancho activities within the APE, though the vicinity is known to have been used as pasture, but the old Spanish wagon trail that became El Camino Real passed through the MCPA vicinity. The Colma Creek corridor has been a primary travel corridor through the region prehistorically, during the Hispanic Era, during early American development of the Peninsula, and now. The original route of El Camino Real, now Mission Road adjacent to the APE, probably meandered through Colma more than it does now, and the first railroad down the Peninsula also ran through the same corridor as meandering Colma Creek. By 1810 small private ranches along El Camino had introduced the cattle and sheep that denuded the hillsides and accelerated erosion in the Colma Creek drainage (Hynding 1982). Little is recorded about the rest of the Hispanic or early American periods in the vicinity of the Project, where no real towns existed until the 1890s.

This vicinity of the APE in the Town of Colma was platted (private property mapped and bought or simply seized, or vice versa) and development began in the mid-nineteenth century around the junctions of main roads and the route of the San Francisco–San Jose Railroad, built in the early 1860s, and soon settlers built communities with farms, a school, and cemeteries on the sandy hills drained by Colma Creek. When San Francisco prohibited interments within its bounds in 1902, nearby Colma became the location of cemeteries that became the major business and covered the majority of the town. Colma was originally incorporated as the City of Lawndale in 1924 (or, it was originally incorporated in 1924 as Colma; see Postel 2007:198), but a city with that name already existed in California so in 1941 it became the Town of Colma (Town of Colma 2015).

The origin of the name "Colma" is unknown, but it "may be a transfer name from Switzerland, where Colma is found as a place name" (Gudde 1959:18) and may relate to the icy winds typical of both locations. Colma was originally a term applied to a much larger area than the incorporated town, including all of present Daly City, Broadmoor, and "all the land from San Bruno Mountain to the Pacific Ocean" south of the San Francisco border (Svanevik and Burgett 1995:15). This area was also known by the aptly descriptive name "Sand Hills." By the late 1850s the region had been settled by farmers growing potatoes and cole crops for the San Francisco market. The first dairy in San Mateo County was established in the Colma region in 1853, and John Daly established a larger dairy on 250 acres near Mission Road in the late 1860s (Hynding 1982:97). In 1863 railroad tracks from downtown San Francisco reached Schoolhouse Station, in the Sand Hills or Colma region (now in Daly City), making supplying the San Francisco markets daily the mainstay of the local economy (Chandler 1973). By 1867 the "Eleven Mile House" public house is spotted on the east side of El Camino just south of the current Colma Town Hall (actually seven miles from Mission San Francisco; there is another "7 Mile House" in Brisbane) (U.S. Coast Survey 1867).

Anticipating a connection with the transcontinental railroad, real estate speculators subdivided areas both east and west of the Project APE in the 1870s, but the anticipated rush of settlement never happened and later the many smaller lots were reconsolidated into cemeteries (Bromfield 1894). By the late 1870s potato blight had driven out most of the original Irish farmers, who were replaced by Italians; both ethnic groups soon turned to stone carving and monument making and still dominate this important business in the cemetery town of modern Colma (Svanevik and Burgett 1995). The first cemetery, Holy Cross, opened in 1887 (Hynding 1982:99). At the start of the twentieth century Colma boasted about 20 businesses and many small farms and dairies, and by 1920 16 cemeteries (plus one for pets only). In 1911, Daly City was incorporated and the name Colma was no longer applied to the northernmost portion of San Mateo County. By the time of incorporation in 1924, Colma had already gained fame as the "City of the Dead."

During all this period of development, redevelopment, and beginnings as a necropolis, the El Camino remained the primary thoroughfare southward from San Francisco. The first electric trolley from the city to San Mateo was constructed along the route in 1891, later paralleled and replaced by regular train lines operated by the United Railways of San Francisco, still in operation in the 1920s. The railroad route was replaced by the State highway (El Camino Real/SR 82) next to the APE in 1927; the railroad tracks are still visible through the asphalt in numerous locations.

Historic maps show the "County Road," later El Camino Real, by the late 1860s, and development of the railroad and cemeteries, but do not supply much detail about the small APE. The 1867 Coast Survey maps shows the railroad and Mission Road/El Camino in place, but no structures or features in or very near the APE. The 1896 and 1899 15-minute San Mateo topographic quadrangles show the railroad, several cemeteries, Mission Road/El Camino, and indicates the creek, but no structures or features in the APE. By the 1915 topographic map, the small artificial lake just north of the APE is shown and there is one structure near if not in the APE.

The Official Maps of San Mateo County illustrate the subdivisions of land in Colma from before incorporation, but also do not show much detail of development. The 1868 Official Map (Easton 1868) shows the APE, what would become Holy Cross Cemetery, and additional land within a large parcel owned by "F. Auceresse & J. Montero" but no indications of development. The 1877 Map (Cloud 1877) indicates the large parcels in the north end of the County had mostly been broken into smaller units, but the same parcels around the APE. Holy Cross Cemetery was consecrated in 1877 and the 1894 Official County Map shows the cemetery with the same pattern of roads as still existing (Bromfield 1894), but no structures. The next two County Maps (Neuman 1909; Kneese 1927), show the growth of new cemeteries in Colma but actually less detail of road alignments. The last Official Map basically shows the same, with some new or expanded cemeteries north of the APE (Grant 1950).

Prehistoric/Ethnographic Background

The Native Americans who owned the San Francisco Bay region, Santa Cruz Mountains and East Bay Hills, and the Monterey Bay area at the 1769 Spanish invasion are now most commonly known as "Ohlones," the name taken from a San Mateo County coastal village. Archaeological evidence indicates the ancestral Ohlones arrived in the San Francisco Bay region–depending on location–somewhere around 500 C.E. (Moratto 1984), possibly from the lower Sacramento Valley/Delta, and in the Santa Cruz/Monterey Bay region somewhat later, displacing earlier populations. Anthropologists and the federal government labeled these people "Costanoans," from the Spanish "costanos," coast-dwellers, also a linguistic term describing groups speaking related languages and occupying the coast from the Golden Gate to Point Sur and inland to about the crest of the Diablo Range. Some Ohlone descendants still prefer the term "Costanoan," while others prefer "Ohlone" or more readily identify with more specific tribelet names such as *Chochenyo*, *Amah Mutsun*, or *Rumsen/Rumsien*.

The presence of numerous prehistoric archaeological sites along upper and lower San Mateo Creek, in the westerly hills above San Mateo, and along the shores of the Bay indicates this region was used over a period of thousands of years by prehistoric Native American populations. The near-creekside location of the Project parcels would have made it attractive to prehistoric populations, and the presence of some resources, particularly oak, bay, and other trees, would probably have brought the aboriginal populations to the property regularly even if it was not actually occupied either seasonally or permanently.

At the Spanish arrival, the *Urebure* tribelet was based in "... the San Bruno Creek area just south of San Bruno Mountain on the San Francisco Peninsula..." and later "The Mexican land grant of Buriburi, patented in the year 1826, included lands from the present city of Millbrae north to the present city of South San Francisco" (Milliken 1995:258-259). The nearest other groups, the *Yelamu* to the north in San Francisco, the *Ssalson* to the south around San Mateo, and the *Pruristac* on the coast in Pacifica, are all mapped and described as far enough away that the *Urebure* very likely were the owners of the Project Area vicinity. "The group was entirely absorbed into the Mission San Francisco community by the end of 1785" (Milliken 1995:259).

Marriage alliance analysis and the number of neophytes recorded at the Mission indicate the *Urebure* were a small group prior to missionization, who were closely affiliated with proximate groups along the Bay shore and nearby hills, but were known to be adversaries of the *Ssalson* to the south (Brown 1973). Clearly the Project Area vicinity was permanently if sparsely occupied, with both small permanent and seasonally occupied villages, and likely had been for millennia, but any traces of habitation are lacking in the highly disturbed Project Area and near vicinity. The vicinity certainly was used aboriginally for habitation and for specific tasks, such as gathering and processing food resources, and the banks of permanent and seasonal streams as well as the Bay shore contain numerous archaeological sites, but population was probably low. The Project Area vicinity would be considered sensitive for prehistoric archaeological resources, and there are several sites along lower Colma Creek, but despite several research efforts, prehistoric sites have not been found near the MCPA (see Records Search below).

Natural resources of their home areas provided for nearly all the needs of the aboriginal Ohlones. The prehistoric Ohlones were "hunters and gatherers," a term that may connote a transient, unstable and "primitive" life, materially poor, constantly fending off starvation; it should not. While undoubtedly periodic lack of resources and cultural strife did not make life perpetually easy, in many ways the Indians of Central California, without agriculture, practiced a lifestyle similar to contemporary agricultural peoples elsewhere. The Ohlones had adapted to and managed their abundant local environment so well that some places were continuously occupied for literally thousands of years. Compared to modern standards, population density always remained relatively low, but the Ohlone area, especially around Monterey and San Francisco Bays, was one of the most densely lived-in areas of prehistoric California for centuries. The Ohlones had perfected living in and managing myriad slightly differing local environments, some rich enough to allow large permanent villages of "collectors" to exist, others less abundant and more encouraging of a more mobile "forager" way of life. Littoral (shoreline) and riparian environments were obviously more productive and therefore most sought out, most intensively utilized and occupied, and most jealously defined and guarded. Uplands and redwood areas were less productive, less intensively used and occupied than the coasts and riparian corridors. As throughout Central California, the acorn was an Ohlone dietary staple, with Black and Tanoak most favored, but a huge number of floral and faunal resources were utilized. Like other native Californians, the Ohlone managed their environment to improve it for their use; for example, by burning grass and brush lands annually to improve forage for deer and rabbits, keep the land open and safer from predators and their neighbors, and improve productivity of many resources they used.

The basic unit of Ohlone society was the "tribelet," a small independent group of usually related families occupying a specific territory and speaking the same language or dialect. An incredible diversity of languages had evolved in Central California, evidence of centuries of in-place divergence of very small social groups. Early linguists encountered some groups of only 50-100 people speaking distinct languages sometimes but not generally unintelligible to neighbors. Inter-tribelet relationships were socially and economically necessary however, to supply both marriage partners and goods and services not available locally. Trade and marriage patterns were usually but not always dictated by proximity; traditional enemies were usually also defined by proximity. Regional festivals and religious dances would bring groups together during periods of suspended hostilities

Traditional trade patterns thousands of years old were operating when the Spanish invaded. Trade supplied the Ohlones with products from sources sometimes several hundred kilometers distant and allowed export of products unique to their region. Ohlone groups traded most with each other, but also exchanged regularly with the Bay, Plains and Coast Miwok, Yokuts, Salinans and Esselens, and indirectly with North Coast Ranges groups such as the Pomo. Of particular interest archaeologically are imported obsidian and exported marine mollusc shell beads and ornaments. Obsidian sources each have a unique chemical "fingerprint," allowing artifacts to be sourced to a specific locality, as well as being datable by technical methods ("hydration"). Obsidian was obtained by the Ohlones from the North Coast Ranges and Sierran sources, in patterns that changed through time. By 1769, some Ohlones had been trading for finished obsidian arrowheads of specific forms, manufactured by North Coast Range tribes, for hundreds of years.

Shell beads and ornaments, a major export from the Ohlone regions, were made primarily from the shells of Purple Olive snail (*Olivella*), abalone (*Haliotis*), and later Washington clam (*Saxidomus*), all ocean coast species. Shell beads and ornaments evolved through many different and definable types over the millennia, allowing chronological typing of these common artifacts to serve as a key to the age and relative cultural position of archaeological complexes. Traded for thousands of years, these beads have been found in prehistoric sites up and down California and many kilometers east, into the Great Basin, showing that prehistoric peoples on the coast were tied into an "international" system of trade. At the European incursion, some Central Californians had developed a system of exchange currency or "money" based on clam shell disk beads; the extent to which the Ohlones related to that system is unknown.

The small Ohlone groups were at once independent and interdependent. Trade with neighbors in goods, and wives, is strongly attested in both the archaeological record and ethnographic accounts. These relationships often moved both goods–particularly obsidian and shell beads–and sometimes individuals long distances, though again proximity was always the key factor in intensity of interaction (Milliken 1995). As noted, control of territory and resources was jealously guarded. Interaction also included a significant component of interpersonal and intergroup violence, from individual disputes and clan feuds up to a level reasonably described as warfare (with the goal of displacing neighbors and claiming their desirable resources). Typical weapons were the short thrusting spear and the bow and arrow; archaeological evidence of use of both on human victims is abundant. The Spanish reported ongoing multigenerational feuds or warfare in Ohlone territory. Such violence was accorded social approval and prestige, as exemplified by dismembering dead foes, taking and displaying trophy heads, and composing powerful "songs of insult or vengeance" toward one's enemies (Kroeber 1925:468-469). Postmortem dismemberment of human remains is documented at numerous Ohlone area sites (Wiberg 1993, 2002; Grady et al. 2001; Hylkema 2002; Schwitalla 2013). The too-common stereotype of Central California natives as altogether peaceable and passive to threats–from their neighbors or the Spanish invasion–is contradicted by both historic and archaeological evidence. As everywhere, the struggle for resources and territory, as well as individual disputes, often led to violent aggression in and between the Ohlone tribelets and others.

Dating of archaeological sites, the linguistic diversity, and demonstrably ancient trade patterns all indicate the Ohlones and other Central California groups had reached a state of demographic and social stability unimaginable to modern city-dwellers–a state in which the same family groups occupied the same location continuously for hundreds or even thousands of years with few or very slow changes in population size or profile. This long term stability is reflected in the homogeneity of archaeological sites spanning wide geographic and temporal ranges.

Archaeological Setting

Reiterating the entirety of the archaeological record of central California is not necessary here, though certainly the San Francisco Peninsula has made some significant contributions to it. Suffice it to note that here, as elsewhere, the number of discovered and recorded sites increases notably as sites become more recent, older sites having been obscured mostly by natural forces since the early Holocene. The Peninsula does have sites over 5000 years old (Clark 1998; Hylkema 1998), sites probably inhabited when the Spanish arrived (Clark 1986; Milliken 1986), and many sites in between. By the time of the European incursion, a unique native settlement pattern was in place along the Peninsula, in which the same group would own a strip across the Peninsula from ocean to Bay, based on drainages. These watercourses formed natural routes across the spine of the Peninsula and the divides between drainages formed natural boundaries for cultural areas. Like other watercourses from the southern Santa Clara Valley to the northern end of the Peninsula, Colma Creek has a series of archaeological sites along its banks, but all found so far are downstream from the Project Area. This is likely due to the landscape along the upper creek having been so highly disturbed during historic times, including the diversion of Colma Creek to purposefully erode the sandy upstream deposits to fill the marshy land above and into what is now downtown South San Francisco, which essentially swept away the near surface soils through the Project Area vicinity (Kauffman 1976; Kneese 1922; South San Francisco Land & Improvement Company 1891)

Prehistorically, the Project Area would probably have been an area of windswept sand dunes fringed by oak grassland alongside the more thickly-vegetated Colma Creek riparian corridor. The open exposure, easy slope, availability of fresh water, and location along one of only two easy routes along the Peninsula made this location attractive to the Ohlone Indians long before the European invasion. One main and perhaps several smaller villages were located in the territory of the *Urebure* when the Spanish arrived, including occupations along Colma Creek. A major site is located at the foot of San Bruno Mountain, just north of the creek (SMA-40), two habitation middens are recorded on the creek downstream of the Project (SMA-299 [Bocek 1989; Rice 1994,1994a, 1994b] and SMA-355), and another on the ocean at the western end of the route up Colma Creek (SMA-72); all were probably in use by the *Urebure* when the Spanish arrived (Milliken 1983, 1986, 1995). SMA-72 and SMA-355 are Late Period sites (Clark 1986, 2002a; Witter 2001) and SMA-40 has a late component (Clark 1998).

Clearly the Colma Creek corridor was a focus of aboriginal settlement and use, making the Project APE archaeologically sensitive for prehistoric deposits. While the creek occasionally runs dry, the area still afforded sources of freshwater year round. Historic accounts affirm the area was "characterized by small lakes and an abundance of springs" (Svanevik and Burgett 1995: 16), and the earliest maps show a lake and springs near the north end of the APE (U.S. Coast Survey 1853), later labeled "Laguna San Bruno" (Easton 1868). Remnants of these lakes are still shown on El Camino/SR 82 plans in 1925 (California Highway Commission 1926).

RESEARCH METHODS

Records and Archival Search

The archaeological evaluation of the Mercy Colma Project Area was initiated with a search of relevant records, maps, and archives maintained by the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS) at Sonoma State University, completed on 15 October 2015 by H&A. The records search extended 400 m/¼ mile from the Project Area is all directions. The records search revealed that the specific MCPA property was included in two reported surveys (Shoup et al. 1994, 1994a); both reports were done for the BART extension through Colma and South San Francisco, both covered the same areas, both utilized the same fieldwork as the basis for the reports, both focused on historic architectural resources and do not address archaeological resources. Shoup et al. 1994 addresses seven Colma cemeteries and evaluated six as NRHP-eligible; Shoup et al. 1994a addresses other historical structures and features in the BART extension APE and recorded 76 resources, evaluating several as NRHP-eligible.

Twelve other survey and/or subsurface reconnaissance reports were found within 400 m of the MCPA; none recorded prehistoric archaeological resources within that same perimeter (Chavez 1977; Baker 1979; Young 1976; Clark 1991, 2002, 2003; Rice 1994, 1994a; Roop and Bacchetti 1993; Lapin 2003; Pastron and Touton 2011; SFPUC 2011). Chronologically, the nearest studies looking for indications of archaeological resources were: Young 1976, a Caltrans survey for widening of El Camino Real/SR 83; Chavez 1977, a study for improvements in the Colma wastewater collection system; Clark 1991, a survey for expansion of Serramonte Boulevard in Colma; Roop and Bacchetti 1993, an evaluation of 27 paved acres on El Camino Real quite near the MCPA, and; Clark 2002 and 2003, a survey report including subsurface reconnaissance along Colma Creek that began about 100 m north of the MCPA and a monitoring report for a Colma Creek flood control project by San Mateo County Public Works. Again, none of these studies found or recorded archaeological resources along the upper Colma Creek corridor, including studies utilizing subsurface techniques.

The nearest recorded prehistoric site, SMA-299, is over 2,000 m downstream from the Project Area along the west bank of Colma Creek (Bocek 1989), but was initially recorded as largely destroyed and later subsurface reconnaissance failed to find archaeological indications at the recorded location (Rice 1994, 1994a).

The NWIC Records Search File Number for the Mercy Housing Project in Colma is 15-0567. A copy of this report will be submitted for inclusion in the permanent archives of the CHRIS.

Field Survey

A "general" pedestrian reconnaissance for archaeological resources was conducted on the MCPA property by the author. Field conditions–poor to nonexistent surface visibility over the majority of both portions, the historic Holy Cross Cemetery area with structures and features and the nearly entirely paved BART area–reduced coverage to the level of a "general" reconnaissance (cf. King, Moratto, and Leonard 1973). Wherever open surface could be found, intensive survey was conducted, but this amounted to a small proportion of the APE, including the southernmost triangle between Mission Road and the paved BART access, along the east side of the fenced southern parking lot, along the sidewalk south of the auto shop business in the old pump building, the small island on the east side between the paved lane to the BART facilities and the lane to the back of the cemetery property, and the edges of the property next to the sidewalk north of the auto shop. The majority of the property was unsurveyable due to pavement and/or gravel covering in the north and south parking areas, the large historic structures, thick surface vegetation and duff from the closely spaced mature trees, and the miscellany of dumped, discarded, and often overgrown recent trash, auto and auto body parts and trailers, etc. It was apparent that the entire surface of the APE has been highly altered during historic land use.

NATIVE AMERICAN CONSULTATION

As per Section 106 regulations at §800.2(c) requiring consultation with Native American tribes that might be concerned about potential project effects to historic properties, Native American tribes and representatives recognized by California's Native American Heritage Commission (NAHC) were solicited for information and comments on the Mercy Colma Housing Project. The NAHC was contacted by letter dated 05 October 2015, provided with the topographic quadrangle marked with the Project Area (Map 1 here), and requested to conduct a search of the Sacred Lands files and provide the current list of Ohlone/Costanoan Native American Contacts for San Mateo County. The NAHC responded via email on 29 October with a letter dated October 26th that "A record search of the sacred land file has failed to indicated the presence of Native American cultural resources in the immediate project area." A list of eight Native American representative individuals and groups affiliated with the Ohlone/Costanoan Native Americans for San Mateo County was provided. As all representatives' emails were supplied on the list, the eight were contacted by letter dated 05 November sent via email on 06 November 2015, providing the topographic map with the Project Area and a succinct project description, noting that no prehistoric sites were recorded nor found during field survey in the Project APE or vicinity, and providing for written responses by email, regular mail, or fax.

The following Native American contacts were sent letters:

Rosemary Cambra, Chairperson, Muwekma Ohlone Tribe of the San Francisco Bay Area, Milpitas, CA;
Jakki Kehl, Ohlone/Costanoan, Patterson, CA;
Andrew Galvan, The Ohlone Indian Tribe, Inc., Ohlone/Costanoan, Bay Miwok, Plains Miwok, Patwin, Fremont, CA;
Ramona Garibay, Representative of the Trina Marine Ruano Family, Ohlone/Costanoan, Bay Miwok, Plains Miwok, Patwin, Union City, CA;
Ann Marie Sayers, Chairperson, Indian Canyon Mutsun Band of Costanoan, Hollister, CA;
Irenne Zwierlein, Chairperson, Amah/Mutsun Tribal Band, Woodside, CA;
Tony Cerda, Chairperson, Coastanoan Rumsen Carmel Tribe, Pomona, CA;
Linda G. Yamane, Ohlone/Costanoan, Seaside, CA.

As per previous Native American consultation guidelines by the State Historic Preservation Officer (SHPO), H&A waited over three weeks from the day the letters were sent for possible responses, until this writing (02 December 2015); as of this date no responses have been received. Consultation documents are provided in Appendix A.

RESULTS, FINDING, AND RECOMMENDATIONS

Neither archival research nor field survey found any previously recorded or new indications of archaeological resources within, adjacent to, or in the immediate vicinity of the Mercy Colma Housing Project Area of Potential Effects. Surface survey was significantly hampered by current conditions. The entire APE appears to have been highly disturbed by historic and recent land uses, including clearing, grading, construction of existing structures and features; it is also likely the property was subjected to purposeful "grading" by guided erosion to move sand and soils downstream early in the twentieth century. The easterly third of the APE is paved access roads and parking and appears to have greatly disturbed when BART was extended past it; the central portion is occupied by early twentieth century structures related to the early history of the adjacent Holy Cross Cemetery and landscaping plantings and trees that now blanket much of the surface; to north and south of the historic structures in-use parking lots are paved and/or graveled on the surface, and were thickly occupied by vehicles in various states of repair at the time of the field survey.

Other archaeological surveys within about 400 m of the Project APE, including those applying subsurface reconnaissance techniques, have also not found archaeological resources. Although the lower Colma Creek corridor is known to be archaeologically sensitive, the upper portion from at least 1.5 kilometers upstream and downstream from the APE has been subjected to subsurface reconnaissance with negative results. The section of the immediate creek corridor in the vicinity of the Project APE appears to now be of low archaeological sensitivity.

Finding of No Historic Properties Affected

The foregoing presents, as per §800.11(d), documentation on the nature of the undertaking and designation of the Area of Potential Effects, description of the steps taken to inventory potential archaeological historic properties and efforts to obtain additional information through consultation, and the basis for a finding that no historic properties are present in the APE and therefore a Finding of No Historic Properties Affected is appropriately made.

Recommendations

At §800.13, the Section 106 regulations provide for procedures in the event of "Post-Review Discoveries," that is, when appropriate good faith efforts have been completed to inventory and assess potential effects to historic properties and no properties have been found, generating the Finding above, but the possibility is recognized that undetected potential historic properties may still be found during project construction. It is concluded that the likelihood of discovery of potential archaeological historic properties during construction within the subject APE is very low, but project proponents should still acknowledge the responsibility for Section 106 compliance in that unlikely event.

In this area, the most common and recognizable evidence of prehistoric archaeological resources are deposits of marine shell, usually in fragments (mussels, clams, abalone, crabs, etc.), and/or bone, usually in a darker fine-grained soil (midden); obsidian and other stone flakes left from manufacturing stone tools, or the tools themselves (mortars, pestles, arrowheads and spear points), and human burials, often as dislocated bones. Prehistoric archaeological sites farther downstream along Colma Creek exhibit these characteristics. Historic materials older than 45 years–bottles, artifacts, structural remains, etc.–may also have scientific and cultural significance and should be more readily identified. If during the proposed construction project any such evidence is uncovered or encountered, all excavations within 10 meters/30 feet should be halted long enough to call in a qualified archaeologist to assess the situation and propose appropriate measures. Any potential historic properties discovered should be mapped, recorded, and initially assumed to be eligible for the National Register of Historic Properties until a formal (in-field) evaluation can be completed and substantiated.

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APPENDIX A:

NATIVE AMERICAN CONSULTATION RECORD AND DOCUMENTS

MERCY HOUSING CALIFORNIA

COLMA HOUSING PROJECT

holman & ASSOCIATES
Archaeological Consultants
"SINCE THE BEGINNING"

3615 FOLSOM ST. SAN FRANCISCO,
CALIFORNIA 94110 415/550-7286

Debbie Pilas-Treadway
Native American Heritage Commission
1550 Harbor Boulevard, Suite 100
West Sacramento, CA 95691

05 October 2015

Dear Ms. Pilas-Treadway,

Holman & Associates is conducting consultation with Native Americans for the "Mercy Housing Project" at 1670 Mission Road in the City of Colma, San Mateo County. The Project is located adjacent to Holy Cross Cemetery, as shown on the enclosed "San Francisco South" quad topographic map, and includes about three acres. The Project vicinity is not surveyed into the township-and-range system, being in the northern end of the *Rancho Buri Buri* land grant. An archaeological records search has shown no Native American sites recorded in or near the Project Area. Please review the Sacred Lands File for any Native American cultural resources that may be within or adjacent to the study area. Please notify us if you have any information or concerns.

We also request the **current list of Native Americans** who are recognized representatives of the Costanoan/Ohlones and wish to be contacted regarding cultural resources in **San Mateo County.** To reach me, please call or fax to my home office number (**650-726-6269**) or use email to MRCCRM@comcast,net, **not** the main office number (above), unless you can't reach me or would like to talk to Miley about the project.

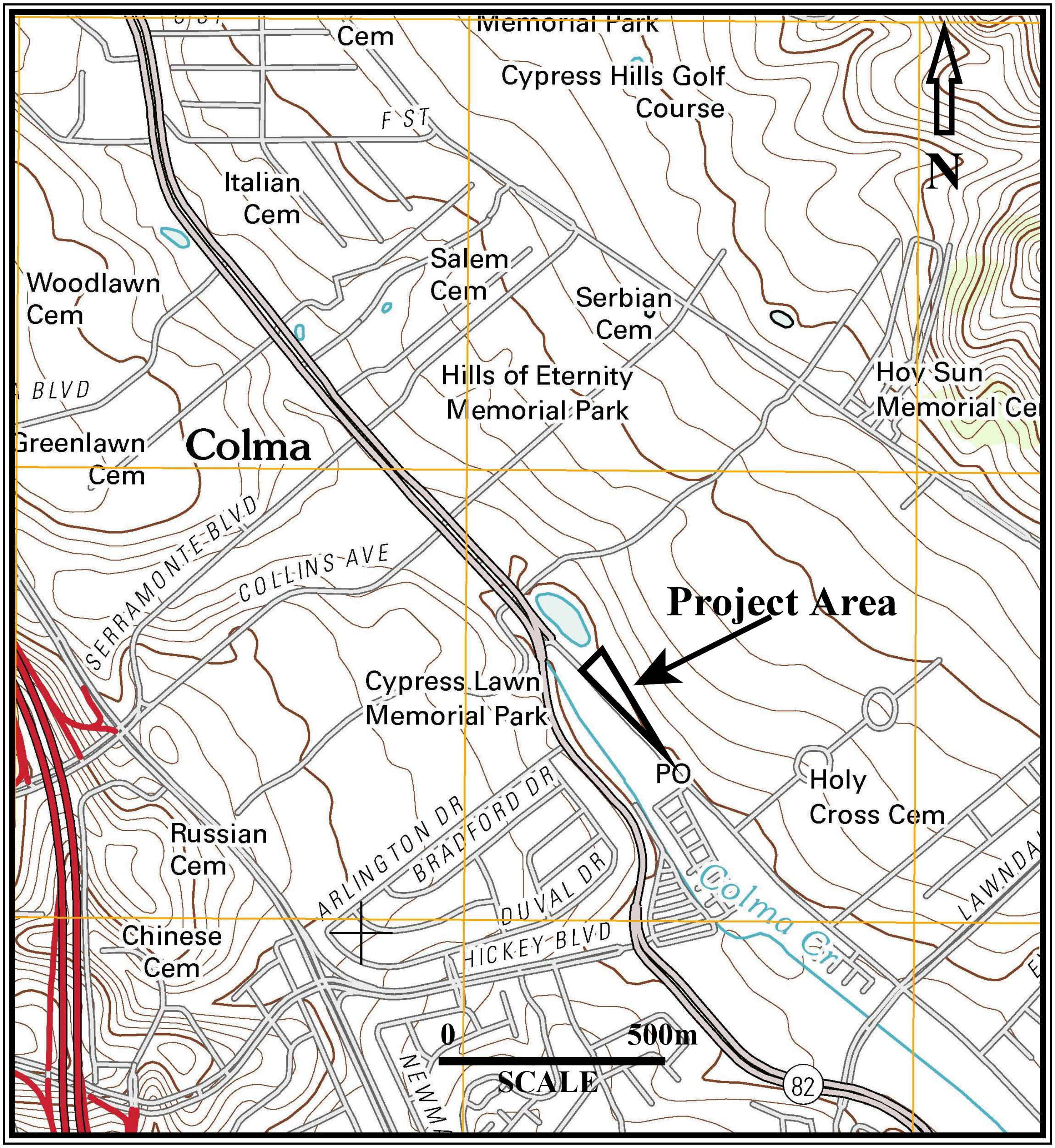
PLEASE FAX RESULTS TO: 650-726-6269. This is a **voice/fax** line, so just send the fax when the outgoing message comes on and it will go through.

We look forward to hearing from you. Thank you.

Cordially yours,

Matthew R. Clark, RPA
Senior Associate

enc: San Francisco South 7.5 min. topo w/ Project Area



Map 1: Mercy Housing Project at 1670 Mission Road, Colma, Location.
((USGS "San Francisco South" 7.5 minute topographic quadrangle, 2012)

NATIVE AMERICAN CONSULTATION

As per Section 106 regulations at §800.2(c) requiring consultation with Native American tribes that might be concerned about potential project effects to historic properties, Native American tribes and representatives recognized by California's Native American Heritage Commission (NAHC) were solicited for information and comments on the Mercy Colma Housing Project. The NAHC was contacted by letter dated 05 October 2015, provided with the topographic quadrangle marked with the Project Area (Map 1 here), and requested to conduct a search of the Sacred Lands files and provide the current list of Ohlone/Costanoan Native American Contacts for San Mateo County. The NAHC responded via email on 29 October with a letter dated October 26th that "A record search of the sacred land file has failed to indicated the presence of Native American cultural resources in the immediate project area." A list of eight Native American representative individuals and groups affiliated with the Ohlone/Costanoan Native Americans for San Mateo County was provided. As all representatives' emails were supplied on the list, the eight were contacted by letter dated 05 November sent via email on 06 November 2015, providing the topographic map with the Project Area and a succinct project description, noting that no prehistoric sites were recorded nor found during field survey in the Project APE or vicinity, and providing for written responses by email, regular mail, or fax.

The following Native American contacts were sent letters:

Rosemary Cambra, Chairperson, Muwekma Ohlone Tribe of the San Francisco Bay Area, Milpitas, CA;
Jakki Kehl, Ohlone/Costanoan, Patterson, CA;
Andrew Galvan, The Ohlone Indian Tribe, Inc., Ohlone/Costanoan, Bay Miwok, Plains Miwok, Patwin, Fremont, CA;
Ramona Garibay, Representative of the Trina Marine Ruano Family, Ohlone/Costanoan, Bay Miwok, Plains Miwok, Patwin, Union City, CA;
Ann Marie Sayers, Chairperson, Indian Canyon Mutsun Band of Costanoan, Hollister, CA;
Irenne Zwierlein, Chairperson, Amah/Mutsun Tribal Band, Woodside, CA;
Tony Cerda, Chairperson, Coastanoan Rumsen Carmel Tribe, Pomona, CA;
Linda G. Yamane, Ohlone/Costanoan, Seaside, CA.

As per previous Native American consultation guidelines by the State Historic Preservation Officer (SHPO), H&A waited over three weeks from the day the letters were sent for possible responses, until this writing (02 December 2015); as of this date no responses have been received.

holman & ASSOCIATES
Archaeological Consultants
"SINCE THE BEGINNING"
3615 FOLSOM ST. SAN FRANCISCO,
CALIFORNIA 94110 415/550-7286

Mrs. Jakki Kehl
Ohlone/Costanoan Representative
720 North 2nd Street
Patterson, CA 95363

05 November 2015

Dear Mrs. Kehl,

Holman & Associates is conducting consultation with Native Americans for the "Mercy Housing Project" at 1670 Mission Road in the City of Colma, San Mateo County. The Project is about three acres adjacent to Holy Cross Cemetery, as shown on the enclosed "San Francisco South" quad topographic map, within the *Rancho Buri Buri* land grant. An archaeological records search found no Native American sites recorded in or anywhere near the Project Area even though the Project Area and vicinity have been surface surveyed several times and nearby Colma Creek has been subsurface surveyed. A Native American Heritage Commission review of the Sacred Lands File found no Native American cultural resources within or near the study area.

We are contacting Ohlone representatives for San Mateo County listed by the NAHC. We invite your participation in consultation. Please review the enclosed map to locate any Native American cultural resources not identified but known to you that may be affected by the Project. Please notify us if you have any information, recommendations, or concerns, or have any other sources of information for this area that might be contacted.

Your input and any recommendations will be given due consideration. We request that you address this matter and provide a written response within 15 days of receipt of this letter, which we will incorporate into our documentation.

To reach us, please use my email (mrccrm@comcast.net), or you may fax a response to 415-282-6239. If you use regular mail, please send your written response to the address above.

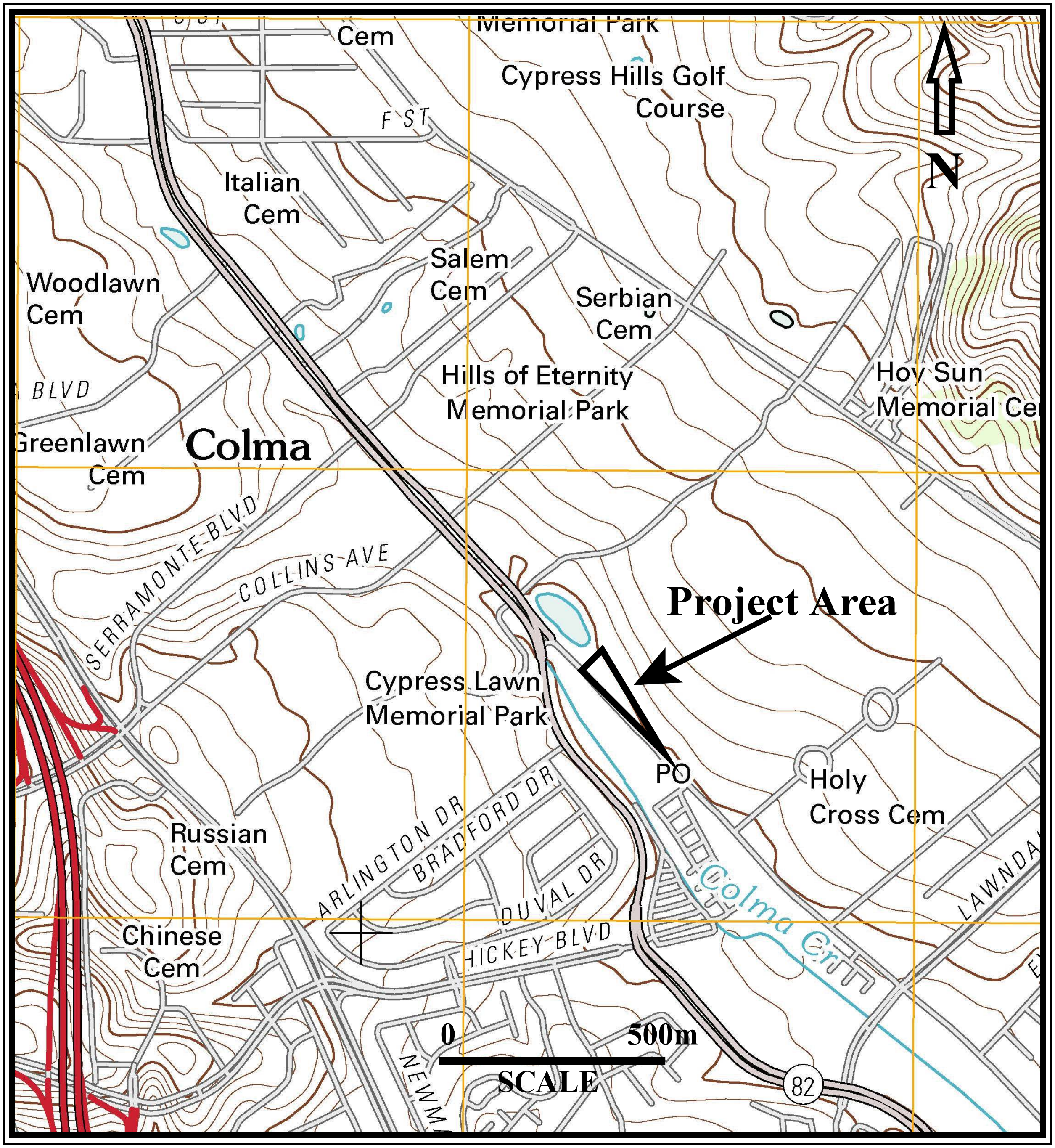
We look forward to hearing from you.

Cordially yours,

Matthew R. Clark

Matthew R. Clark, RPA #10310
Senior Associate

enc: Map: Mercy Housing Colma Project Location, San Francisco South 7.5 min. quad.



Map 1: Mercy Housing Project at 1670 Mission Road, Colma, Location.
((USGS "San Francisco South" 7.5 minute topographic quadrangle, 2012)

FINDING OF EFFECT

Colma Veterans Village
1690 Mission Road, Colma, California

Submitted
to
Michael Kaplan
Mercy Housing California
1360 Mission Street, Suite 300
San Francisco, CA 94103

Prepared
by
Ward Hill
3124 Octavia Street, No. 102
San Francisco, CA 94123

and

Denise Bradley
520 Frederick Street, No. 37
San Francisco, CA 94117

February 2016

TABLE OF CONTENTS

1.0 INTRODUCTION

The purpose of this report is to analyze the potential adverse effects of the Veterans Village Project, Colma, California under the Criteria of Adverse Effect (36 CFR Part 800.5(a) (1) for compliance with Section 106 of the National Historic Preservation Act. The Veterans Village project proposes to construct a 66-unit apartment complex (65 one bedroom units and a single two bedroom unit, 41,400 square feet residential square footage) on a 2.2 acre site on Mission Road in the northwest corner of the Holy Cross Cemetery in Colma, California; the project plans are attached in Appendix E. The project site is triangular in shape and is defined on its west side by Mission Road, on its east side by an access road to a BART ventilation structure, and on the north by a shared boundary with Cypress Lawn East cemetery.[1] The project includes the rehabilitation of the historic Holy Cross Cemetery pump house. The other four buildings which contribute to the historic district will be demolished.

A Historic Resources Evaluation Report of Seven Colma Cemeteries, Colma, California (1994) prepared for the BART-San Francisco Airport Extension Project (hereinafter referred to as the BART report) concluded that the Holy Cross Cemetery Historic District was eligible for listing on the National Register of Historic Places under Criteria A, B, and C at a state level of significance. The period of significance is 1886-1945. The five contributing Holy Cross Cemetery Historic District buildings/structure on the project site are described in more detail in Section 3.0 below. Cypress Lawn Memorial Park (adjacent to Holy Cross Cemetery) was identified as a National Register eligible historic district at a state level of significance. In 1994, the California State Historic Preservation Officer concurred with the findings of the BART Report that Holy Cross Cemetery and Cypress Lawn Memorial Park are National Register-eligible Historic Districts.

Historic research and field survey were conducted to update the BART report's 1994 evaluations of the Holy Cross Cemetery and Cypress Lawn Memorial Park historic districts. Architectural historian Ward Hill conducted a field review (26 January, 15 April 15, 3 November, and 17 November 2015) of the overall property that focused on the architectural resources, and landscape historian Denise Bradley conducted a similar field review (15 April, 28 April, 22 May, and 3 November 2015) that focused on the cultural landscape.

In applying the Criteria of Adverse Effect (36 CFR Part 800.5), San Mateo County initiates consultation with the State Historic Preservation Officer (SHPO) regarding the Finding of Adverse Effect (FAE) for the construction of the Veterans Village Project pursuant to 36 CFR Part 800.5. The proposed project will have an adverse effect on the Holy Cross Cemetery Historic District (36 CFR Part 800.5(a)(l)) since the water reservoir and three associated buildings contributing to the Holy Cross Cemetery Historic District will be demolished as part of the proposed project. The Veterans Village building represents a significant change in the "character of the use" of the water works lot at Holy Cross Cemetery from what was essentially a light industrial use associated with the cemetery (a character retained by its later use by Baca's Machine Shop) to new a multi-unit residential use. This change in use from its historic light

[1] Cardinal directions are used throughout this report in describing the triangular-shaped site; west refers to the side next to Mission Road, north refers to the side adjacent to Cypress Lawn East, and east refers to the side adjacent to the BART access road.

industrial use to a multi-unit residential use constitutes an adverse effect under 36 CFR Part 800.5(2)(iv). Concurrence is requested with this Adverse Effect Determination.

2.0 DESCRIPTION OF THE UNDERTAKING

Project Description

The Veterans Village project proposes to construct a 66-unit apartment complex (65 one bedroom units and a single two bedroom unit, 41,400 square feet residential square footage) on a 2.2 acre site on Mission Road in the northwest corner of Holy Cross Cemetery in Colma, California; the project plans are attached in Appendix E. The project site is triangular in shape and is defined on its west side by Mission Road, on its east side by an access road to a BART ventilation structure, and on the north by a shared boundary with Cypress Lawn East cemetery. Currently, the site is the location of the Holy Cross Cemetery pump house (currently housing Baca's Racing Engines & Machine Shop), a reservoir, two well houses, and a carpenter's shop. Portions of the northern and southern ends of the site are used for the storage of automobiles.

The project will include the construction of a three-story residential building, which will be 36 feet 3 inches tall at the roof ridge line. The materials and color palette of the new building include a variety of cladding materials and muted colors to respond to both the historic pump building and the light industrial context of Mission Road. Alternating bays of cement plaster (muted maroon and beige) and fiber cement siding (pale green and beige) articulate the street frontage along Mission Road and are punctuated by an entry breezeway that provides a visual connection to the courtyard beyond. The third floor corridor unites the building elevation along Mission Road using a standing seam metal siding (gray). As the building steps down adjacent to the pump house, a fiber cement board and batten siding with a decorative random pattern is used to highlight the one-story social hall and building entry.

The historic Holy Cross Cemetery pump house will be rehabilitated as part of the project and will be used as a community space for the residents of Veterans Village. The rehabilitated pump house will include a workshop space, a bicycle storage area, storage and a maintenance room. The other four buildings and structures currently extant on the property (two well houses, a carpenter shop, and an aboveground reservoir) will be removed as part of the project. These existing buildings and the landscape are described in detail in Section 5.0: Description of Eligible Property.

The rehabilitation of the pump house will include removing an existing modern metal roll up door on the west façade, removal of non-historic interior partition walls and removal of modern doors on the east façade. The existing multi-pane windows will be retained and repaired or, if too deteriorated to repair, will be replaced with windows matching the size and design of the existing windows. The concrete floor will be resurfaced to meet accessibility requirements. Existing exposed concrete interior structural features including wall, beams and columns will remain.

The new building will be located on the portion of the site that is north of the pump house. The building massing is articulated on the first floor by a breezeway that separates the building into two sections that are bridged by a corridor on the second and third floors. The building steps down along Mission Road both at the north end adjacent to the parking area (two stories) and at the south end at the social hall adjacent to the pump house (one story). The massing of the building wraps around two distinct inner courtyards for residents. The southern courtyard integrates the new and historic buildings with an entry trellis that curves around the social hall and leads to the main building lobby. The paved courtyard—with outdoor seating, a barbeque, and a fire pit—also provides access to the pump house main entry. The northern courtyard is a more private, secluded area and includes outdoor seating, a water feature and a fire pit between the two building wings.

An L-shaped parking lot—with spaces for 36 cars—will be located in the north end of the site, adjacent to the Cypress Lawn East cemetery; access to this lot will be from both Mission Road and the BART access road. A second parking lot along the east side of the site has 35 spaces which will be accessed directly from the BART access road.

The portion of the site south of the pump house will contain a paved patio, a community garden, and a dog park. Paved sidewalks will connect the development's outdoor spaces, buildings, and parking lots. The public sidewalk along Mission Road will remain.

One of the mature deodar cedar trees to the north of the pump house will remain; all of the other existing trees and vegetation on the site will be removed as part of the construction. Rows of new trees will be planted along each of the site's three sides; these will include street tree species along the east and west sides and evergreen species along the north boundary and around the northeast corner, as a way to buffer views to and from the adjacent Cypress Lawn cemetery and BART ventilation structure. The courtyard and garden spaces around the pump house will include accent trees to provide color and interest while retaining visibility.

Area of Potential Effects (APE)

The boundaries of the Area of Potential Effects (APE) for the Veterans Village project were determined by the extent of potential visual impacts of the project on both the Holy Cross Cemetery and the Cypress Lawn Memorial Park Historic Districts (see Appendix A, Figure 3: Area of Potential Effects). Because of a combination of steep topography and dense forest adjacent to the east side of the project site, the project itself will not be visible from most of the Holy Cross Cemetery Historic District. Consequently, the project APE only includes a limited part of the Holy Cross Cemetery Historic District. The project will be visible primarily at the cemetery entrance along Mission Road to the south. The project area is not visible from the main cemetery area (to the east and south) where the monuments and graves are located. Mission Road to the west of the project area is developed with various auto repair and commercial uses not related to the Holy Cross Cemetery Historic District and was not included in the APE.

The project will be visible from parts of the east and west sides of Cypress Lawn Memorial Park Historic District in the vicinity of El Camino Real. Once again because of the steep and hilly topography and mature vegetation, the project will not be visible from most of the Cypress Lawn Memorial Park (particularly the area in the east cemetery where many of the major historic monuments are located). In particular, the project will be visible from the prominent eastern entrance area to Cypress Lawn Memorial Park and the Catacombs area in the west cemetery. Thus the project APE includes these areas in the Cypress Lawn Memorial Park Historic District.

3.0 EFFORTS TO IDENTIFY HISTORIC PROPERTIES AND STATUS OF NATIONAL REGISTER PROPERTIES

Holy Cross Cemetery Historic District

The project site is located in the Holy Cross Cemetery Historic District. The BART report concluded that the Holy Cross Cemetery Historic District appeared to qualify for listing on the National Register of Historic Places under Criteria A, B, and C at a state level of significance. The period of significance was 1886-1945. The period encompassed the start of the development of the cemetery and extended to the end of 1945. The California State Historic Preservation Officer concurred with the findings of the BART Report that Holy Cross Cemetery is a National Register-eligible Historic District (September 22, 1994 letter, Re BART SF Airport Extension, Cherilyn Widell, SHPO, to Stewart Taylor, Regional Administrator, Federal Transit Administration; on file at the Colma Planning Department); a copy of this letter is included in Appendix D.

Given that is has been 22 years since the field survey for the BART report was conducted, a field review of the current existing conditions within the Holy Cross Historic District was undertaken to determine if the district still retained integrity. As part of this update, the status of the contributing features that were specifically listed in the BART report (page 25) was reviewed. Additions to the cemetery that have occurred since 1993 (the date of the field survey for the BART report) were noted and analyzed for their impact on integrity.

Although the 1994 evaluation identified the landscape design of the cemetery as one of the areas of significance and generically identified "landscape features dated prior to 1946" (Shoup et al. 1994: 23) as contributing resources, the BART report only provided a cursory description of the cultural landscape features and mainly described the buildings and major structures. As part of this update, a more detailed and systematic description of the cultural landscape was prepared to meet current documentation standards, to aid in the analysis of integrity and to provide a baseline for evaluating the potential for adverse effects to the historic district from the proposed Veterans Village project.

The Holy Cross Cemetery Historic District continues to be significant under National Register Criteria A, B, and C. The Holy Cross Cemetery Historic District has not been substantially altered since 1994 and thus appears to retain its integrity and to continue to be eligible for listing on the National Register. A detailed description of the recent field survey and its conclusions regarding the eligibility of Holy Cross Cemetery Historic District is included in Appendix B of this report.

Five Holy Cross Cemetery buildings or structures on the triangular-shaped parcel at 1690 Mission Road were mistakenly identified (CL # 25/Baca's Engines and Machine Shop) as being within the Cypress Lawn Historic District in the BART report (Shoup et al. 1994: 25) and on the Historic Resources Inventory Form (Shoup et al. 1993). Two of these five features—the pump house and the aboveground reservoir—were identified as contributing features in the BART report; the contributory status of the other three features—the two well houses and a carpenter's shop—was not clearly stated in the BART report. However, all five of these features are and always have been a part of the Holy Cross Cemetery property and are located on what was known in 1923 as the “Water Lot” (Pope 1923). The land on which these features are located was correctly shown as being within the Holy Cross Cemetery Historic District on Figure 8 of the BART report; however, Figure 6 in the BART report incorrectly showed this area as being a part of the Cypress Lawn Historic District.

Based on the additional research and field survey undertaken for this report, all five features are associated with the Holy Cross Cemetery water system. The pump house, the reservoir, the carpenter’s shop (with an interior well), and the well house north of the pump house were all shown on a 1923 map (see Figure B-2 in Appendix B). The well house south of the pump house appears to have been a part of the site by 1945 (the end of the period of significance); it has a similar construction as the other well house, has architectural details that resemble the pump house, and a building with a similar footprint is shown on a 1937 aerial photograph. In conclusion these five buildings/structures all appear to be contributing features to the Holy Cross Cemetery Historic District; this correction has been shown on Figure B-1 in Appendix B.

Cypress Lawn Memorial Park Historic District

The current report includes an updated evaluation of Cypress Lawn Memorial Park Historic District because of potential visual impacts of the project to the historic district.

The 1994 BART report concluded that the Cypress Lawn Memorial Park Historic District appeared to qualify for listing on the National Register of Historic Places under Criteria A, B, and C at the state level. The period of significance was 1892-1945, a period that encompassed the founding of the development of the cemetery and extended to the end of 1945. The California State Historic Preservation Officer (SHPO) concurred with the findings of the BART Report that Cypress Lawn Memorial Park is a National Register-eligible Historic District (September 22, 1994 letter, Re BART SF Airport Extension, Cherilyn Widell, SHPO, to Stewart Taylor, Regional Administrator, Federal Transit Administration; on file at the Colma Planning Department); a copy of this letter is included in Appendix D.

Since it has been 22 years since the field survey for the BART report, a field review of the current existing conditions within the Cypress Lawn Memorial Park was undertaken to determine if the historic district still retained integrity. Additions to the cemetery that have occurred since 1993 (the date of the field survey for the BART report) were noted and analyzed for their impact on integrity. Finally, although the 1994 evaluation identified the landscape design of the cemetery as one of the areas of significance and generically identified “landscape features dated prior to 1946” (Shoup et al. 1994: 23) as contributing resources, the BART report only provided a cursory description of the cultural landscape features and mainly described the buildings and major structures. As part of this update, a more detailed and systematic description of the cultural landscape was prepared to meet current documentation standards, to aid in the analysis of integrity and to provide a baseline for evaluating the potential for adverse effects to the historic district from the proposed Veterans Village project.

The Cypress Lawn Memorial Park Historic District continues to be significant under National Register Criteria A, B, and C. The Cypress Lawn Memorial Park Historic District has not been substantially altered since 1994 and thus appears to retain its integrity and to continue to be eligible for listing on the National Register. A detailed description of the field survey and its conclusions regarding the eligibility of the Cypress Lawn Memorial Park Historic District is included in Appendix C of this report.

4.0 COORDINATION AND PUBLIC PARTICIPATION

The project developer Mercy Housing has met and has been working closely with the Town of Colma and its Planning Department in the design and development of the project design. The Town of Colma has identified the project site in both their 2009 and 2015 Housing Elements as a future site for housing, and has indicated that the project appears consistent with the Housing Element, General Plan and zoning based on a preliminary review of the proposed plans. The Planning Department has encouraged Mercy Housing to proceed with a full application to be reviewed by the City Council.

Mercy Housing has met with various members of the community to discuss the project and the historic resources on site. Cypress Lawn Cemetery, which is adjacent to and across from the street from the project site, has been supportive of the project. In addition to these two neighboring cemeteries, Mercy Housing has also met with businesses and residents in the vicinity who did not express any concerns regarding project impacts to historic resources. Finally, Mercy Housing met with the Colma Historical Association about the proposed project. The Historical Association has supported having the Holy Cross pump house preserved as part of the project, and they did not oppose the removal of the other buildings or express concerns about potential visual impacts of the project on the cemeteries in Colma.

During August and September 2015, Mercy Housing also hosted three community meetings open to the public at large. Approximately 15 to 20 people attended each community meeting. Plans and renderings were shown, including the plans for the re-use of the pump house and the landscaping plan. No comments were received about the removal of the existing buildings/structure on site, and no issues were brought up with respect to the visual impacts of the projects in the cemeteries in Colma. The meeting attendees supported the preservation of the pump house and expressed an interest in using the building for community events. Members from the Colma Historical Association were present at all three meetings and indicated general support for the design and layout of the project. See Appendix F for letters received from the community about the project.

5.0 DESCRIPTION OF ELIGIBLE PROPERTY

Spatial Organization, Boundaries, Topography, and Land Uses

The site for the proposed Veterans Village project is a 2.2 acre, triangular-shaped lot in the northwest corner of Holy Cross Cemetery on Mission Road in Colma, California; see Appendix A for the Figure 1: Regional Vicinity Map, Figure 2: Project Location Map, and photographs of the project site and setting. The site is defined on its west side by Mission Road, on its east side by a BART ventilation structure and its access road (originally the right-of-way for the Southern Pacific Railroad), and on the north by a shared boundary with Cypress Lawn Memorial Park. The land slopes down from the east to the west, with the slope being more pronounced on the narrower southern half of the site (i.e., the portion of the site south of the pump house) (Photos 1 to 5).

The site is the location of the original water system for Holy Cross Cemetery and on a 1923 map was identified as the "Water Lot" (Pope 1923). A pump house (currently housing Baca's Racing Engines & Machine Shop), an aboveground reservoir, two well houses, and a carpenter's shop—all historically associated with the cemetery's water system—are located in the central portion of the lot. The length of the pump house is oriented east-to-west and essentially divides the site into two sections (Photo 6).

One of the small, well houses and the aboveground reservoir are 40 feet and 65 feet, respectively, to the north of the pump house. The reservoir is located near the eastern edge of the site. A chain-link fence encloses the pump house complex (the pump house, the reservoir, and the well house to the north of the pump house) creating a large open yard between the trees and structures that is currently used by Baca's for parking and storing automobiles (Photos 7 and 8).

The carpenter's shop is located along the eastern edge of the site approximately 165 feet to the north of the reservoir; this building is outside of the chain-link fence that surrounds the pump house complex and is surrounded by open land (Photo 9).

The land north of the carpenter's shop is undeveloped and is enclosed by a chain-link fence. This area is currently being used for automobile storage (Photos 10 and 11).[2]

The land to the south of the pump house is undeveloped and a portion is enclosed with a chain-link fence; the area inside the fence is currently being used for automobile storage; the second, well house is located 50 feet south of the pump house, inside this fenced area. The southern tip of the site is unfenced and is vacant (Photos 12 and 13).[3]

Circulation Features

Access into the pump house complex and the two auto storage areas is through gates in the chain-link fencing that surrounds each of these three areas; graveled access drives extend from Mission Road into the site for a short distance at each of these three gates. An unpaved drive runs along the north side of the carpenter's shop connecting Mission Road to the BART access road; a free-standing metal gate blocks the entrance at Mission Road, and a gate in the chain-link fence blocks access onto the site from the BART access road. The gates and entrance to the two automobile storage areas and the unpaved road between Mission Road and the BART access road all post-date the addition of the BART structure in 2000-2002. Based on a review of aerial photographs the entrance into the pump house complex has consistently been near the southwest corner of the structure (as it is today) since at least 1937 (Photo 14).

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[2] From at least the early 1920s (Pope 1923) until the 1960s, this northern portion of the site had a small building complex that contained a monuments shop (with a show room, office, stone yard, polishing house, and garage). Based on a review of aerial photographs, these buildings were removed sometime between 1961 and 1969. From 1969 through the end of the 1980s, the site was used as a plant nursery. It appears to have been cleared as part of the BART construction project, and automobiles have been stored on the site since 2000.

[3] The well house shed appears to date from before 1945. Based on a review of aerial photographs, this area was heavily vegetated portion from 1937 until 2000, when it may have been cleared as part of the construction project for the BART ventilation structure and access road. The fence was added in 2002, and automobiles have been stored within this fenced area since early 2012.

A public sidewalk runs along Mission Road and borders the western boundary of the site.

Vegetation Features

The most notable vegetation features are the large trees along the edges of the site and within the pump house complex. Trees around the edges of the site include four eucalyptus trees along the northern edge; eight eucalyptus trees scattered along the eastern edge; a row of 15 Monterey cypress trees next to the Mission Road public sidewalk at the north end of the western side; and a sycamore, a Monterey pine, and a New Zealand Christmas tree south of the Monterey Cypress row. In the pump house complex, there are four deodar cedar trees south of the reservoir and six more west of this structure; there is also a large incense cedar growing near an entrance to the pump house. Two acacia trees are located south of the pump house. Other than these trees, vegetation features include grass throughout the site and a variety of shrubs (some that appear to have been planted and some that appear to be weeds) along the edges (Photos 3, 4, and 7).

The exact date when the trees were planted is difficult to determine. A review of aerial photographs (1937 to the present) indicates that the deodar cedar trees within the pump house complex and one of the eucalyptus trees at the north end of the site may have been present in 1937 and 1946. What is clear from these images is that the area around the pump house complex was planted with some type of vegetation by 1937. However, the row of Monterey cypress trees along Mission Road were not planted until the 1970s.

The area south of the pump house was the most heavily vegetated portion of the site in 1937 and 1946, and trees remained in this area until around 2000 when the site was cleared as part of the construction project for the BART ventilation structure and access road.

Land Uses and Setting Surrounding the Site

The setting to the west of the project site consists of a variety of small businesses (Molloy's Restaurant and about a half dozen auto repair shops) along the west side of Mission Road (Photo 15). Two small buildings belonging to Cypress Lawn are located on the west side of Mission Road just northwest of the site.[4] Cypress Lawn East is located immediately north of the site. A steep wooded slope is located immediately to the east of the BART access road, which borders the eastern side of the project site; this hillside and trees separate the project site physically and visually from the main body of the Holy Cross Cemetery (Photos 1 and 2). An open lawn, part of Holy Cross Cemetery, is located immediately south of the site.

Views

From the project site, the immediate views to the west are of the businesses along Mission Road (Photo 15). Immediate views to the north are of the shop yard of Cypress Lawn East, with more distant views of the Cypress Lawn's Lakeside Columbarium and Section B of the cemetery (Photo 5 and 10). Views to the east are of a BART ventilation structure, its access road, and the wooded hillside that separates the site from Holy Cross Cemetery's Our Lady of Garden Courts,

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[4] These two buildings were identified as a vehicle barn and a "clubhouse" in the 1993 Historic Resources Inventory Form that accompanied the 1994 BART report.

a mausoleum development (Photos 1, and 11). Views to the south are of small trees and shrubs (Photo 16).

Views into the northern portion of the project site are possible from within the Cypress Lawn Memorial Park. From Cypress Lawn East, the site is visible from the entrance road (Photo 17), from the Lakeside Columbarium and the road that provides access to it and Newall Chapel (Photo 18), from portions of Section B (Photo 19), and from the grounds adjacent to Noble Chapel (Photo 20). From Cypress Lawn West, the site is visible from the area in front of the Catacombs (Photo 21), from a portion of Cypress Avenue (Photo 22), and from the southern edge of the Laurel Hill Garden section (Photo 23)

Views into the south portion of the project site are possible from a limited area of Holy Cross Cemetery. The pump house and portion of the site south of this structure are visible from the lower portion of Section E; currently, from this location only the tops of trees are visible for portion of the site north of the pump house (Photo 24).

Buildings and Structures Description

The five Holy Cross Cemetery buildings on the project site were constructed in circa 1914-1915 as part of the cemetery's extensive water and irrigation system (the parcel is identified as the "water works lot" on a 1923 site plan; see Figure 2 in Appendix A, Figure B-2 in Appendix B, and the current site plan in Appendix E). The buildings are arranged on the middle of the triangular shaped parcel with the main building—large pump house—on the south side of the building complex. North of the pump house are a well house, a water reservoir and a carpenter's shop/well house. An additional well house is adjacent to and south of the pump house. Photographs of the buildings are included in Appendix A.

The Pump House

The reinforced concrete pump house has a T-shaped plan with 45 degree angle bays on the east and west (Photos 25-28) (plans and elevations of the pump house are included in Appendix E with the project plans). The walls connect to the "head" of the T also at 45 degree angles (the width is 25 feet on the south, the building width increases to 45 feet on the north); the overall length is 110 feet). The twelve inch thick concrete walls are covered with smooth stucco and the building has a flat roof. The middle of the single-story pump house has a two-story octagonal rotunda in the center, likely providing ventilation for the original high pressure water pumps located here. A series of simple pilasters divide the north and south facades into window bays.

The building has a variety of multi-pane wood-sash windows. The main north façade has three 15 light windows east of the garage opening and three (larger) 25 light windows to the west. The same arrangements of windows flank the entrance on the south. The east and west facades have primarily narrow, vertical windows with ten lights. The garage opening on the west has a modern metal roll-up door below a plain pediment. Much of the eastern half of the south façade is not visible because of dense foliage.

Inside the largely open space has exposed roof beams and structural columns (Photo 29). The thick columns supporting the octagonal rotunda are sixteen inches square. A small office has been separated off by modern partition walls on the west. The west side of the interior includes several storage rooms, a large electrical panel and a restroom. A door in the southeastern area of the interior opens out to the south side of the building. There are openings in the floor still where the original wells were located (their locations are noted on the 1923 Water Works lot plan, Appendix B-2).

The Water Reservoir

The reinforced concrete water reservoir has a rectangular shape (about 50 by 28 feet) with rounded corners (Photos 30-32). The walls are covered with smooth stucco. The top rim of the reservoir has a projecting fascia. A chain link fence is now around the perimeter of the top. According to the 1923 “water works lot” site plan of this area, the reservoir has an 110,000 gallon capacity (Appendix B-2). The original February 1914 water reservoir plans and elevations (on file at Holy Cross Cemetery) indicate the reservoir is 15 feet deep and that it has internal walls for stability (not visible because the structure is still filled with dark water)[5]. The interior also had baffles for sifting sand from the water. Water stored in the reservoir was piped to the pump house where it was pumped to the cemetery area to the southeast.

Well Houses

The two well houses north and south of the pump house are both concrete structure with the same dimensions (12 by 16 feet). The well house on the north has double wooden hinged door on the east façade (Photos 33-34). A concrete beam runs the width of the open interior space.

The well house adjacent to pump house on the southeast has a shed-roof plywood addition on the east, probably a storage structure (Photos 37-38). The exterior walls are eight inches thick and the roof is flat. The building has double wooden hinged doors on the west. The pilasters flanking the door are similar to the pilasters on the pump house.

Carpenter’s Shop (Well House)

The carpentry shop northeast of the water reservoir is an L-shaped wood-frame building (the overall dimensions are 30 by 60 feet; the building narrows to 20 feet on the east) (Photos 35-36). Much of the building’s exterior is not visible because of dense foliage. The exterior walls are covered with stucco. The gable roof is covered with corrugated metal. The building has a garage sliding wooden tongue and groove doors on the east and two single hinged doors on the south flanking a central window. Other windows are boarded over. According to the 1923 “water works lot” site plan, this building included a well inside on the west.

6.0 APPLICATION OF THE CRITERIA OF ADVERSE EFFECT

The purpose of this report is to analyze the potential adverse effect of the under the Criteria of Adverse Effect (36 CFR Part 800.S(a) (1-3) for compliance with Section 106 of the National Historic Preservation Act. The conclusion of this analysis is that the Veterans Village project will have an adverse effect on under (36 CFR Part 800.S(a)(l)) on the National Register-eligible

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[5] Civil Engineer John Pope, 422 Crocker Building, San Francisco prepared the plans for the water reservoir. The plans indicate construction of the reservoir will require 4.5 tons of steel and 180 cubic years of concrete.

Cross Cemetery Historic District. The proposed undertaking will demolish the water reservoir and three associated building on the original "water works lot" and replace it with new housing.

Criteria of Adverse Effect

The *Criteria of Adverse Effect* under Section 106 [36 CFR Part 800.S(a)(l) May 18, 1999 revised regulations] states that an undertaking has an adverse effect on a historic property:

> *. . . when the undertaking may alter, directly or indirectly, any of the characteristics of the property that may qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register.*

If under the above *Criteria of Adverse Effect* it is determined that an undertaking will not alter the characteristics that qualify the property for the National Register, it is appropriate to find that the undertaking will have not have an adverse effect. Examples of adverse effects on historic properties are presented in 36 CFR Part 800.5(2):

(i) *Physical destruction of or damage to all or part of the property;*

(ii) *Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;*

(iii) *Removal of the property from its historic location;*

(iv) *Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;*

(v) *Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;*

(vi) *Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and*

(vii) *Transfer, lease or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to insure long-term preservation of the property's historic significance.*

Project Effects

Historic Landscape

The project site is separated from the main body of Holy Cross Cemetery by its location (in the northwest corner of Holy Cross) and by a wooded hillside to the east. Historically, this site contained features associated with the Holy Cross Cemetery water system, and the arrangement of the buildings in the central portion of this triangular-shaped parcel (i.e., the site's spatial organization) and its vegetation features and circulation features were related to this utilitarian function and not to the design of the main body of the cemetery. The effects of the removal of four buildings and structures—which are contributing resources to the Holy Cross Cemetery Historic District—are identified in next subsection. The circulation features (the entrances to three fenced areas on the site), most of the vegetation features (trees along the edges of the site, trees south of the pump house, the grass throughout the site, and a variety of shrubs [some that appear to have been planted and some that appear to be weeds]), and miscellaneous objects (mainly chain-link fencing) all appear to be non-historic features added after 1945 (the end of the period of significance), and their removal would have no adverse effect on the cultural landscape of the Holy Cross Cemetery Historic District. One of the eucalyptus trees at the north end of the site and the deodar cedar trees in the pump house complex may have been planted before 1945. However, the loss of these trees would not alter the characteristics of the cultural landscape that contribute to the significance of Holy Cross Cemetery Historic District; that is, they would not alter the spatial organization, circulation features, topographic modifications, vegetation features, and burial monuments and objects that contribute to the historic design of the main body of the cemetery, and thus would have no adverse effect on the historic property.

The project site is not visible throughout most of the Holy Cross Cemetery Historic District due to its location in the northwest corner of the cemetery and to the wooded hillside (just east of the project site). A portion of the proposed project will be visible from the road that borders the lower (western) portion of Section E (Photo 24). These views will be primarily of the historic pump house and the new landscape features (the community garden, a dog park, and street trees) south of the pump house. The upper portion of the new buildings will be partially visible from this location. However, the cladding materials and muted colors of the new buildings (chosen to respond to the historic pump building) and the new trees proposed for the project will lessen the visibility of the new buildings, and this view will have no adverse effect on the Holy Cross Cemetery Historic District. The view of the community garden, the dog park, and the street trees from the road that borders the lower (western) portion of Section E will have a similar character as the existing view (i.e., will be mainly vegetation) and will no adverse effect on the Holy Cross Cemetery Historic District.

The project site is also visible from the adjacent Cypress Lawn Memorial Park Historic District. Views of the northern portion of the project will be possible from multiple locations in the west end of Cypress Lawn East—for example, from the entrance road (Photo 17), the lower (western) portion of Section B (Photo 19), and in vicinity of Lakeside Columbarium, Newall Chapel (Photo 18), and Noble Chapel (Photo 20). A portion of the project adjacent to Mission Road will be visible from several vantage points in the east end of Cypress Lawn West—for example from the Catacombs (Photo 21), from Cypress Avenue as it climbs the hill into the main body of the cemetery (Photo 22), and from the southern edge of the Laurel Hill Garden section (Photo 23). However, the cladding materials and muted colors of the new buildings, the evergreen species of trees that will be planted along the north boundary (between the project and Cypress Lawn East) and around the northeast corner of the project site, and the street trees that will planted along the west boundary (along Mission Road) will all lessen the visibility of the project from these vantage points. These views will not alter the historic characteristics of the cemetery, and the project will have no adverse effects on the Cypress Lawn Memorial Park Historic District.

Buildings

The Pump House

The historic Holy Cross Cemetery pump house will be rehabilitated as part of the project and will be used as a community space for the residents of Veterans Village. The rehabilitation of the pump house will include removing an existing modern metal roll up door on the north façade, removal of non-historic interior partition walls and removal of modern doors on the south façade. The existing multi-pane windows will be retained and repaired or, if too deteriorated to repair, will be replaced with windows matching the size and design of the existing windows. The concrete floor will be resurfaced to meet accessibility requirements. Existing exposed concrete interior structural features including wall, beams and columns will remain.

The rehabilitation of the pump house will not alter or destroy significant character-defining features of the building and thus it is consistent with the Secretary of Interior's Standards for the Treatment of Historic Properties and not an adverse effect as per 36 CFR Part 800.5(2) (ii).

The Water Reservoir, the Well Houses and the Carpenter's Shop

The demolition of the water reservoir and the three associated buildings (two well houses and the carpenter's shop), a contributing structure and buildings to the Holy Cross Cemetery Historic District is considered to be an Adverse Effect under 36 CFR Part 800.5(2)(i). The water reservoir and associated buildings are significant as part of the early irrigation system at Holy Cross Cemetery; thus they contribute to the Holy Cross Cemetery Historic District. The Holy Cross Cemetery would not have existed without the "water works lot" building to maintain the landscape. The buildings and the reservoir are contributing "characteristics" of the Holy Cross Cemetery Historic District that would be "directly altered" by the undertaking. The removal of these features will diminish the integrity of design, setting and materials of the Holy Cross Cemetery Historic District.

The Veterans Village Building

The proposed project will replace the four contributing structures on the site of the original "water works lot" that historically provided irrigation water for the Holy Cross Cemetery landscape with a three-story, 66-unit residential building and related uses. The change in the character of the use of this part of the Holy Cross Cemetery Historic District to multi-unit residential use constitutes an adverse effect under 36 CFR Part 800.5(2)(iv) because of the proposed "change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance."

In the 1970s, Holy Cross Cemetery built a new pump house in another part of the cemetery and Baca's Machine Shop (auto engine repair) became the tenant of the pump house. The two well houses and the carpentry building have been used for storage. The change from the "water works" use related to the cemetery to a light industrial use did not substantially change "the character of use of the property." Baca's Machine Shop confined their use to the existing pump house and they did not add any major new buildings related to their use of the site. A small paved parking area was added, which was not a major change is the "character" of use. The spatial relations of the cemetery water works lot buildings to each other and their setting have not changed. Like the later Baca's Machine Shop, the pump house and related structures also represented an essentially "industrial" type of use, i.e., the pumps and related equipment are essentially "machines" associated with the operation of the cemetery. The pump house housed pumping equipment and the complex-related plumbing system (pipes, valves, etc.), other related support structures (like a large electrical panel), and machines related to repairing maintaining the "machinery". Thus the similar light industrial use associated with Baca's Machine Shop does not represent a substantial change in the *character* of the property's original use.

The main change to the water works lot since the period of significance (1886-1945) is the addition of a concrete structure built for the San Francisco Airport BART extension at the northwest corner of the lot. The addition of this structure has not changed historic character of the water works lot so dramatically that it is no longer contributing to the historic district.

In conclusion, the Veterans Village building represents a significant change in the "character of the use" of the water works lot at Holy Cross Cemetery from what was essentially a light industrial use associated with the cemetery (a character retained by its later use by Baca's Machine Shop) to new a multi-unit residential use. This change in use from its historic light industrial use to a multi-unit residential use constitutes an adverse effect under 36 CFR Part 800.5(2)(iv).

7.0 MITIGATION MEASURES

Mitigation Measure 1

Salvaging or moving buildings to a location not on the project site (such as in a museum display at the Colma Historical Association or in another historic building) would reduce project impacts. However, it would be preferable to have any salvaged features preserved in their historic location in the Holy Cross Cemetery. If the buildings are to be demolished, representatives of the Colma Planning Department, the Colma Historical Museum or representatives of local preservation or historical societies, and other interested parties shall be contacted and given the opportunity to examine the building and provide suggestions for salvaging particular elements.

Mitigation Measure 2

Prior to demolishing or salvaging materials at the Holy Cross Cemetery, the water reservoir, the three associated buildings (two well houses and the carpenter's shop) and the site in general shall be documented according to the Outline Format described in the *Photographic Specifications* and *The Guidelines for Preparing Written and Descriptive Data: Historic American Building Survey* (HABS) published by the Pacific West Region Office of the National Park Service. The photo documentation should show the spatial relationships of the buildings and the water reservoir to each other. This documentation shall include archival quality, large format (minimum 4 by 5 inch) photographs of the exterior and interior views of the buildings and a view of their setting within the site. Archival negatives of the original construction drawings and historic views will be included in the documentation. Copies of the documentation, with original photo negatives and prints, shall be donated to the Colma Historical Association Museum, the San Mateo County Historical and others archives (as appropriate) accessible to the public.

Mitigation Measure 3

This mitigation measure would provide a permanent, interpretive exhibit on the project site about the "water works lot" buildings, structures and history. The exhibit should incorporate information from the BART report and other sources about the history of the Holy Cross Cemetery, historic photographs, and HABS documentation or other recordation materials and should be located and designed so that it is accessible to the public and of a durable design. The interpretive exhibit should be developed and designed by a qualified team including an historian and a graphic designer or exhibit designer. If the exhibit cannot be accommodated in the new development, another appropriate public venue can also be considered such as the Colma Historical Association Museum.

8.0 CONCLUSIONS

This *Finding of Adverse Effect* has been prepared in compliance with 36 CFR Part 800.5. The water reservoir and three associated buildings (two well houses and the carpenter's shop) affected by the Veterans Village project appear eligible for the National Register as contributing features to the Holy Cross Cemetery Historic District. The demolition of the water reservoir and the three associated buildings (two well houses and the carpenter's shop), a contributing structure and contributing buildings to the Holy Cross Cemetery Historic District, is considered to be an Adverse Effect under 36 CFR Part 800.5(2)(i). The proposed project will replace the four contributing structures on the site of the original "water works lot" with a three-story, 66-unit residential building and related uses. The new Veterans Village building represents a significant change in the "character of the use" of the water works lot at Holy Cross Cemetery from what was essentially a light industrial use associated with the cemetery (a character retained by its later use by Baca's Machine Shop) to new a multi-unit residential use. This change in use from its historic light industrial use to a multi-unit residential use constitutes an Adverse Effect under 36 CFR Part 800.5(2)(iv). Consequently, the undertaking appears to constitute an Adverse Effect as per 36 CFR Part 800.

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APPENDIX A:

PROJECT FIGURES AND PHOTOGRAPHS

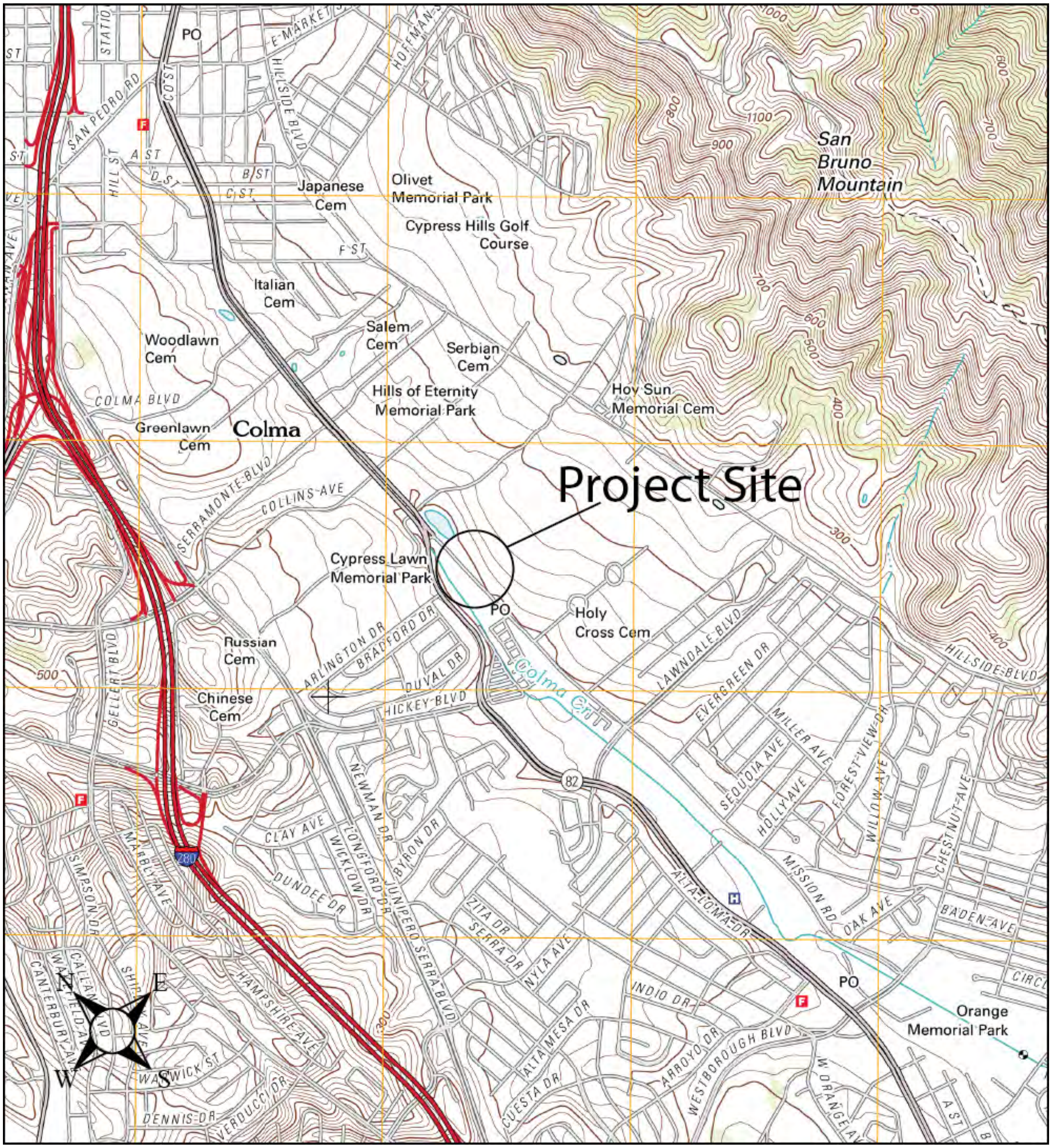

Figure 1. Project Vicinity Map (Source of Base Map: South San Francisco, CA USGS Quadrangle 2012)

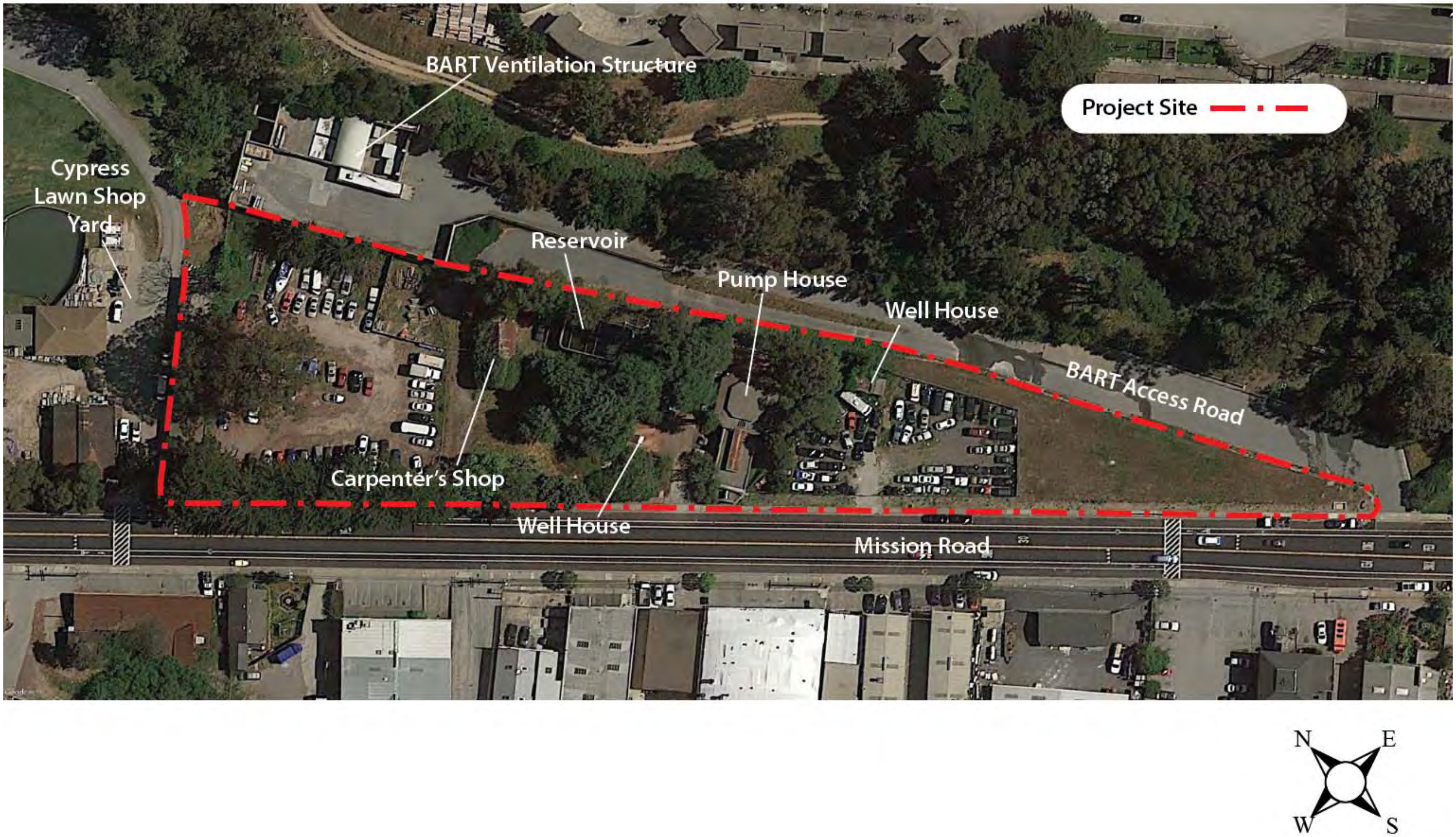

Figure 2. Project Location Map

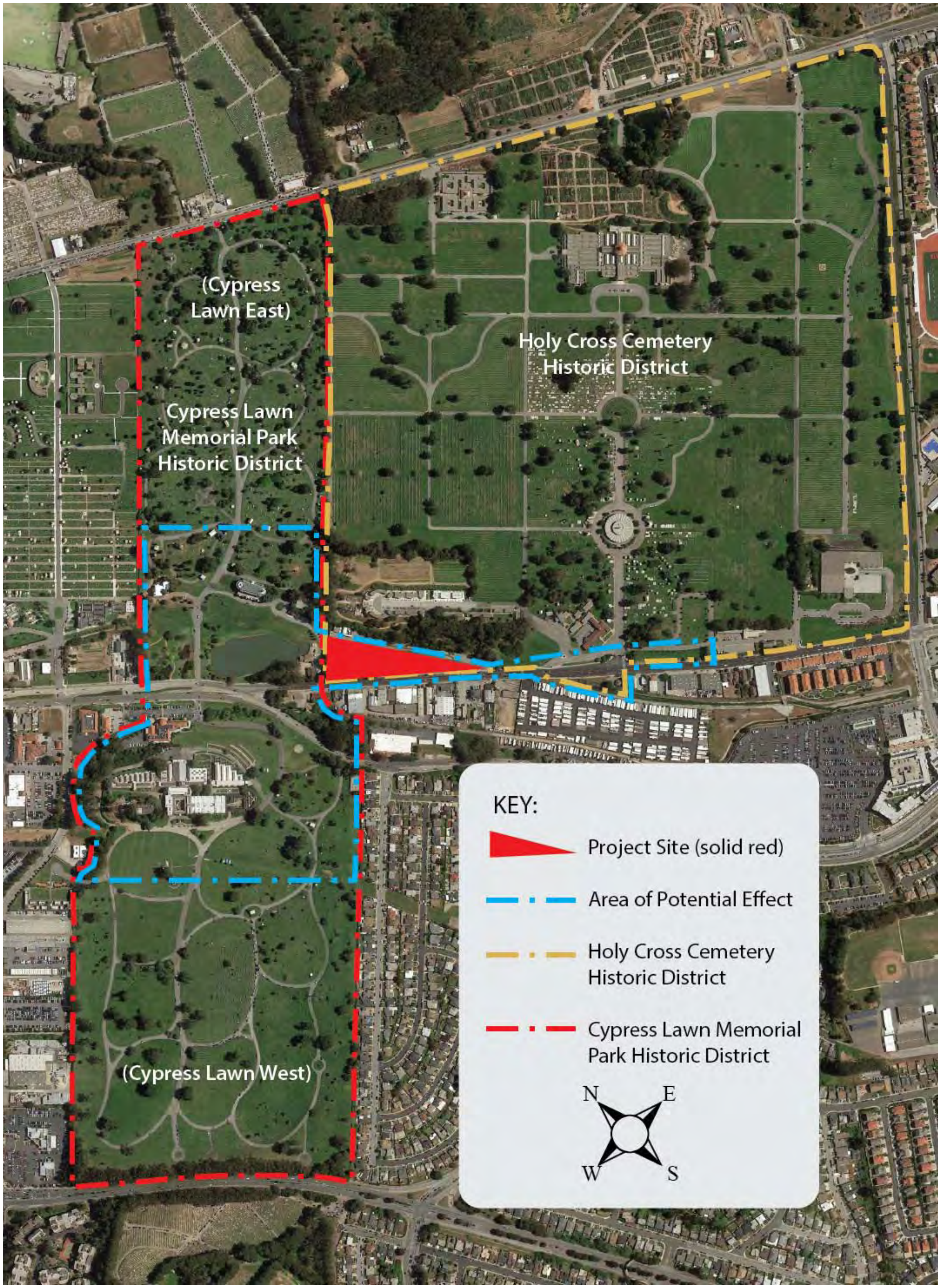

Figure 3. Area of Potential Effects (Source of Base Map: Google Earth)

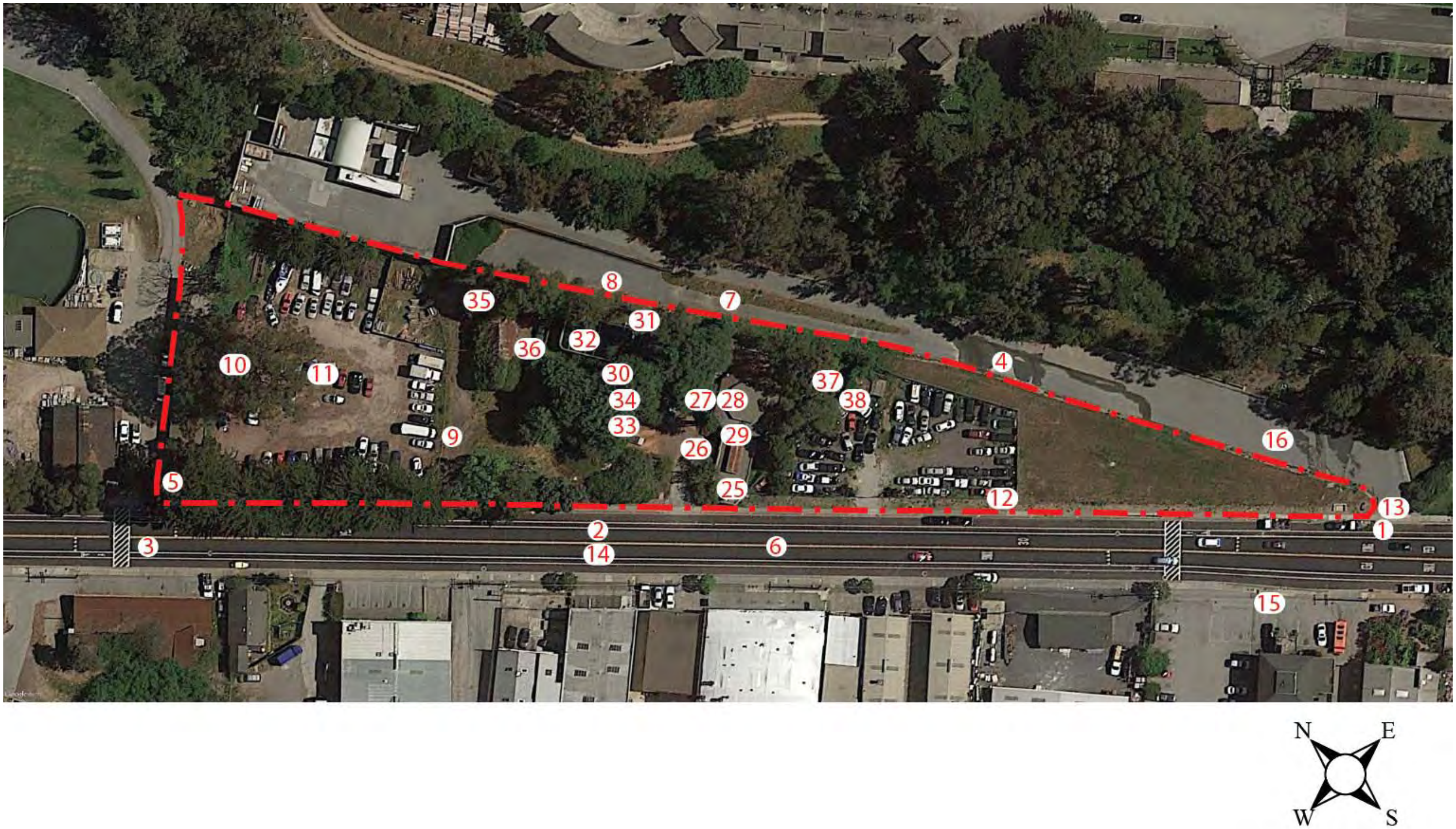

Figure 4A. Location of Photos 1 to 16 and 25 to 38

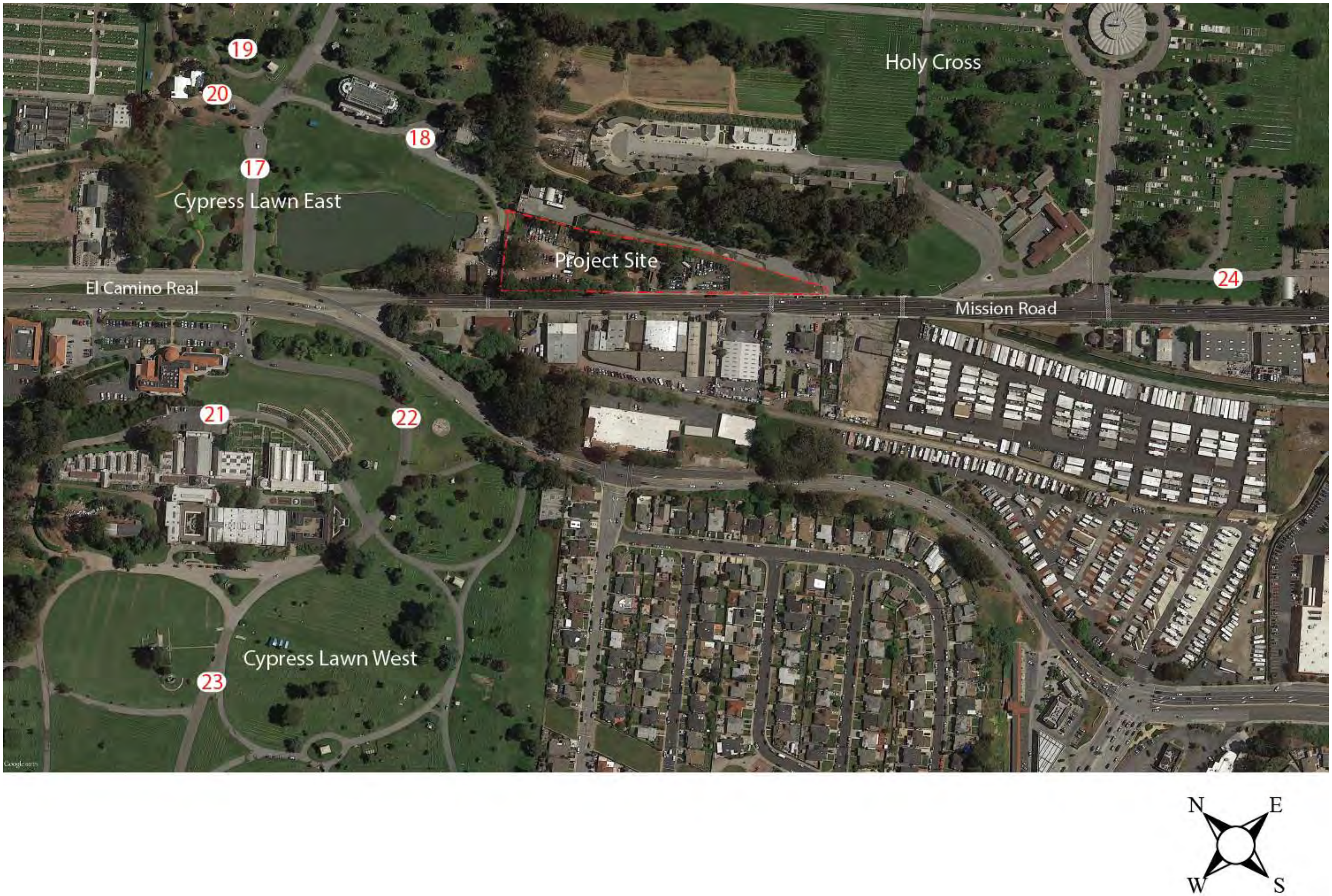

Figure 4B. Location of Photos 17 to 24

Photo 1. South end of Project Site; view to northeast from Mission Road.

Photo 2. Mid portion of Project Site; view to northeast from Mission Road.

Photo 3. North end of Project Site; view to northeast from Mission Road

Photo 4. East side of Project Site; view to southwest from BART road.

Photo 5. North end of Project Site at shared boundary with Cypress Lawn East; view to northeast.

Photo 6. Location of Pump House on the Project Site; view to northeast from Mission Road.

Photo 7. Portion of Project Site to north of Pump House; view to west from BART road.

Photo 8. View along east side of Project Site; view to southwest from BART road.

Photo 9. Carpenter's Shop with view to east of BART structure.

Photo 10. Fenced open area at the north end of Project Site; view to northeast with Cypress Lawn's Lakeside Columbarium in the background.

Photo 11. Fenced open area at the north end of Project Site (currently used to store autos); view to east with BART structure in the background.

Photo 12. Fenced open area to the south of the Pump House (currently used to store autos); view to northeast with Holy Cross hillside in the background.

Photo 13. South end of Project Site; view to north.

Photo 14. Entrance into the fenced Pump House complex; view to east from Mission Road.

Photo 15. Setting along the west side of Mission Road; view to southwest.

Photo 16. Setting to the south of Project Site; view to south.

Photo 17. View into north end of Project Site from Cypress Lawn East entrance road; view to south.

Photo 18. View into north end of Project Site from vicinity of Cypress Lawn East's Lakeside Columbarium; view to south.

Photo 19. View into north end of Project Site from vicinity of Cypress Lawn East's Section B; view to south.

Photo 20. View into north end of Project Site from vicinity of Cypress Lawn East's Noble Chapel view to south.

Photo 21. View into Project Site from vicinity of Cypress Lawn West's Catacombs; view to southeast.

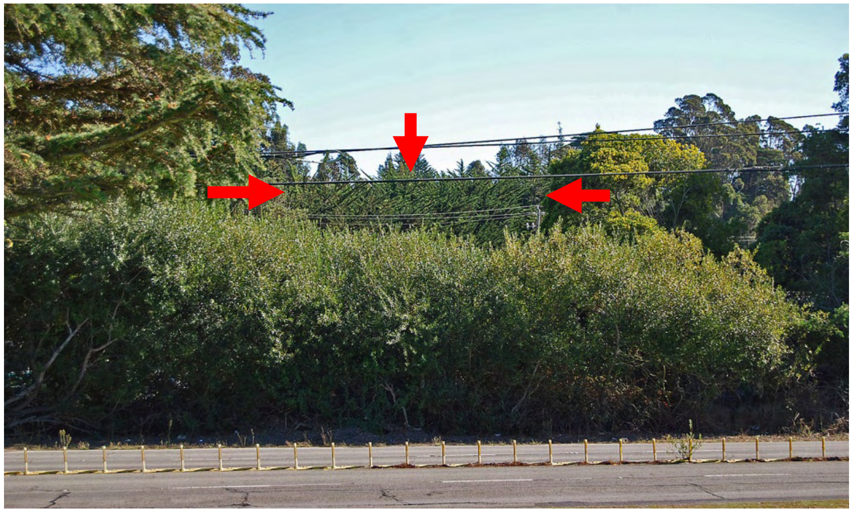

Photo 22. View into Project Site from of Cypress Lawn West's entrance road; view to east.

Photo 23. View into Project Site from Cypress Lawn West's Laurel Hill Garden; view to southeast.

Photo 24. View into south end of Project Site from vicinity of road along south side of Holy Cross Cemetery; view to north.

Photo 25. South side of Pump House.

Photo 26. North side of Pump House.

Photo 27. East end of north side of Pump House.

Photo 28. Entrance at east end of north side of Pump House.

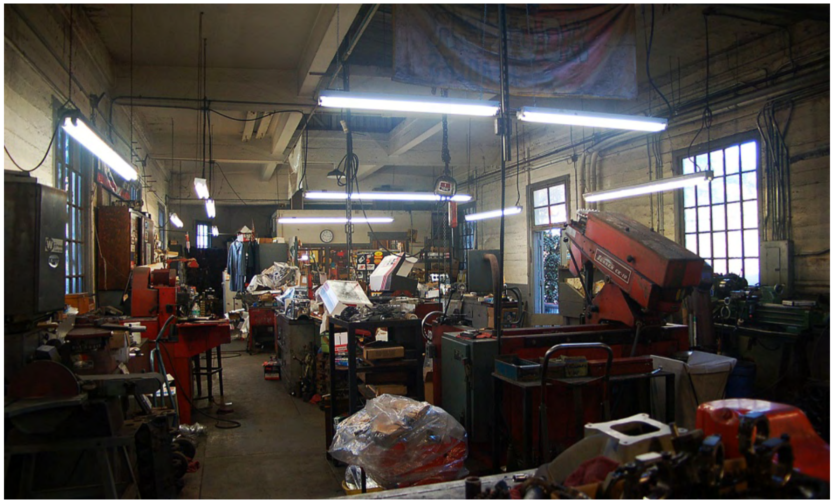

Photo 29. Interior view of Pump House.

Photo 30. South end of Reservoir.

Photo 31. West side and south end of Reservoir.

Photo 32. Top of Reservoir.

Photo 33. West and south sides of Well House to the north of Pump House.

Photo 34. Interior of Well House in Photo 33.

Photo 35. East end of Carpenter's Shop.

Photo 36. East end and south side of Carpenter's Shop.

Photo 37. West side and south end of Well House to the south of Pump House.

Photo 38. Interior of Well House in Photo 37.

APPENDIX B:

HOLY CROSS CEMETERY HISTORIC DISTRICT EVALUATION UPDATE

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APPENDIX B: HOLY CROSS CEMETERY HISTORIC DISTRICT UPDATE

I. Holy Cross Evaluation from 1994 BART Report

A. 1994 Description

A Historic Resources Evaluation Report of Seven Colma Cemeteries, Colma, California (BART Report) was prepared by Laurence H. Shoup, Mark Brack, Nancy Fee, and Bruno Gilberti in 1994 for cemeteries that were within the Area of Potential Effects (APE) for the BART-San Francisco Airport Extension Project; a copy of the evaluation report with the Historic Resources Inventory forms for Holy Cross Cemetery and Cypress Lawn Memorial Park is provided in Appendix F.

Holy Cross Cemetery was evaluated for its eligibility to the National Register of Historic Places as part of this effort. Appendix II in the BART report provided a Historic Resources Inventory form (prepared in 1993) with a description and representative photograph of the cemetery. Page 1 of the form for Holy Cross Cemetery provided the following description:

> *Holy Cross Cemetery is a large and verdant development that features a remarkable collection of elite as well as typical cemetery art. Although several buildings (particularly community mausolea) have been created at the site in the post-war period, the cemetery remains an excellent example of cemetery design from the late 1880s through 1945.*
>
> *The cemetery is primarily laid out as a grid with a central axis running from the Gates on Mission Road to the large* [Holy Cross] *Mausoleum at the other of the cemetery. Most of the cemetery occupies a rolling, sloping site, although the southern and eastern ends of the park tend to be a bit flatter. Several curvilinear streets help give the complex a more picturesque flavor; however, nearly all the gravemarkers are arranged in a rectilinear fashion. The major exception to this pattern are lines of family mausolea in Section E, and the gravemarkers and mausolea arrayed around the circles or roundabouts found on the main axis. The cemetery does not have one consistent appearance, as some areas are crowded with headstones and others are more spacious, with lawns and plantings of mature trees.*
>
> *Unique among the cemeteries evaluated for this* [BART-San Francisco Airport Extension Project] *study are the areas reserved for clergy. Nuns can be found in Section C and priests are within the "Priest's Circle" on the central axis. Another unusual feature is the layout of burials in some of the older sections (e.g., D) that feature gravestones laid out back to back, with burials facing opposite directions. This allows for wide grassy avenues between the double rows of stones.*
>
> *Holy Cross Cemetery displays the full range of gravemarkers dating from the mid-nineteenth century through the twentieth century, including lambs and cherubs (for children), tablets, flush markers, posts, columns, urns, benches, sarcophagi, pyramids, angles, rustic boulders and carved tree-stumps, obelisks,*

tablets, crosses, and Celtic crosses. Marble tends to be the preferred material for construction with granite achieving predominance after World War I. The cemetery also features a great deal of fine figural sculpture reflecting the importance of the Holy Family and saints within Catholic theology. Completely paved family plots with subterranean vaults like those dominating the Italian cemetery can also be found. Several areas in the cemetery also feature the same types of curbs and bollards around family plots as seen in the Jewish cemetery. A very large children's burial section is location in the west side of the cemetery in Section C.

The grounds are nearly entirely covered in mown lawns and also feature a fine collection of trees and shrubs. Evergreens are especially well-represented, including deodar, pine, Monterey pine, Monterey cypress, cedar, Norfolk Island pine, and yew. Other trees include eucalyptus, palm, magnolia, olive, and oak. Holly bushes and box hedges are also represented. A large plant nursery is located to the rear of the large mausoleum (Shoup et al. 1993: 1).

B. 1994 Evaluation

The BART report concluded that the Holy Cross Cemetery Historic District appeared to qualify for listing on the National Register of Historic Places under Criteria A, B, and C at the state level. The period of significance was 1886-1945, a period encompassed the start of the development of the cemetery and extended to the end of 1945; no reason was provided for the end date but it appears to have been chosen because it was 50 years prior to the survey date for the BART project. The BART report provided the following evaluation:

This cemetery appears to qualify for the National Register as a state-level district. As was the case of Home of Peace/Hills of Eternity district, it represents a combination of the traditional [rectilinear] and [picturesque] cemetery styles, illustrating the evolution of these styles. This district appears to qualify under criteria a, b, and c. As was the case for Cypress Lawn, Holy Cross cemetery appears to be associated with significant events, specifically the long conflict over the transferring of cemeteries out of San Francisco. In the case of Holy Cross, the cemetery in question was Calvary Cemetery in San Francisco. Since the association of Holy Cross with the struggle over the transfer of Calvary Cemetery is clear and unmistakable, Holy Cross appears to qualify under criterion a. Holy Cross also appears to qualify under criterion b because it contains the graves of person[s] exceptionally significant in California's economic and political history (Governor John G. Downy, A. P. Giannini of the Bank of America, Mayor and Senator James D Phelan, "Silver King" and Senator James G. Fair) and it is an excellent example of cemetery design for the period 1886-1945. It has a fine collection of historic buildings, grave markers, and mausoleums. It illustrates both the influence of the traditional rectilinear cemetery design and the picturesque curvilinear design and natural[istic] *landscaping of the more modern rural cemetery style. It therefore embodies the distinctive characteristics of design for both of these types of cemeteries. This district has excellent integrity of* *location, setting, design, workmanship, materials, feeling, and association. It is therefore an authentic historic property and appears to meet the special criteria consideration [D] for the National Register* (Shoup et al. 1994: 28-29).[1]

The California State Historic Preservation Officer concurred with the findings of the BART Report that Holy Cross Cemetery was a National Register-eligible Historic District (September 22, 1994 letter, Re BART SF Airport Extension, Cherilyn Widell, SHPO, to Stewart Taylor, Regional Administrator, Federal Transit Administration; on file at the Colma Planning Department); a copy of this letter is included in Appendix D.

C. 1994 Integrity Analysis

The BART report stated that the district retained all seven aspects of integrity but provided no detailed analysis (Shoup et al. 1994: 29).

D. 1994 Boundary

The BART report did not explicitly state the boundary for the Holy Cross Cemetery Historic District but did show a boundary on Figure 8 in Appendix I.

Based on this figure, the boundary for the Historic District follows the property lines between Holy Cross Cemetery and Cypress Lawn East, along Hillside Boulevard, along Lawndale Boulevard, and along Mission Road. The boundary along Mission Boulevard extends around three buildings—the Old Lodge Building, the Native Son Florist (at 1539 Old Mission Road), and Rose & Leona's Flower Shop (at 1539 Old Mission Road)—located on the west side of the road.

E. 1994 Contributing and Non-Contributing Features

The evaluators appear to have recorded the buildings and major structures in each of the cemeteries in the BART report but only recorded representative examples of grave markers and what they deemed to be the "exceptional landscape features" for each of the cemeteries. They explained their rationale for this methodology as follows:

> *Due to the fact that hundreds of thousands of monuments exist in these cemeteries, it is impossible to record them all and produce a comprehensive list of contributing elements at this time. Thus only a sample of significant gravemarkers, as well as all buildings and exceptional landscape features, were recorded. In general, all buildings, gravemarkers, and landscape features dated prior to 1946 are considered to be resources which contribute to each respective district . . . The contributing features listed below are representative examples of the resources in each cemetery and illustrate the reasons why each cemetery district qualifies for the National Register* (Shoup et al. 1994: 23).

[1] Criteria Consideration D in National Register Bulletin 15 states that "a cemetery is eligible if it derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events" (NPS 2002: 34).

The 1994 list of representative features identified for the Holy Cross Cemetery Historic District—which listed only buildings and major structures but no landscape features—included the following:

> *Contributing Features:*
>
> *1. Old Lodge/Office Building – 1902*
> *2. Entrance Gates – 1902*
> *3. Holy Cross Mausoleum – 1921*
> *4. McGuire Mausoleum* – [no date provided]
> *5. Kitterman Mausoleum – c. 1892*
> *6. Governor Downey Monument – 1896*
> *7. Fair Family Mausoleum* – [no date provided]
> *8. Phelan Mausoleum* – [no date provided]
> *9. Priest's Circle – c. 1880s*
> *10. Dunphy-Burnett Mausoleum – c. 1920*
> *11. Caretaker's House – c. 1900*
> *12. Caretaker's House and Reservoirs – c. 1910*
> *13. Native Son Florist – 1935*
>
> *Non-Contributing Features:*
> *14. Interment Chapel – 1964*
> *15. Main Office Building – 1956*
> *16-19. Recent Mausoleums – 1956-1985*
> *20. Rest Rooms – c. 1956*
> *21. Post-[World] War [II] Utility Buildings*
> *22. Flower Building* – [no date provided] (Shoup et al. 1994: 25)

Figure 8 in Appendix I of the BART report showed the location of these 22 features and highlighted the areas within the cemetery that the author identified as non-contributing—that is, portions of the cemetery that were developed after 1945.

II. 2015 Holy Cross Cemetery Update

It has been 22 years since the field survey for the BART report was conducted and a field review of the current existing conditions within the Holy Cross Historic District was undertaken to determine if the district still retained integrity. Architectural historian Ward Hill conducted a field review (26 January, 15 April 15, 3 November, and 17 November 2015) of the overall property that focused on the architectural resources, and landscape historian Denise Bradley conducted a similar field review (15 April, 28 April, 22 May, and 3 November 2015) that focused on the cultural landscape. As part of this update, the status of the contributing features that were specifically listed in the BART report (page 25) were reviewed. Additions to the cemetery that have occurred since 1993 (the date of the field survey for the BART report) were noted and analyzed for their impact on integrity. Finally, although the 1994 evaluation identified the landscape design of the cemetery as one of the areas of significance and generically identified "landscape features dated prior to 1946" (Shoup et al. 1994: 23) as contributing resources, the BART report only provided a cursory description of the cultural landscape features and mainly described the buildings and major structures. As part of this update, a more detailed and systematic description of the cultural landscape was prepared to meet current documentation standards, to aid in the analysis of integrity and to provide a baseline for evaluating the potential for adverse effects to the historic district from the proposed Veterans Village project. This update followed the guidance in *National Register Bulletin 18: How to Evaluate and Nominate Historic Designed Landscapes* (NPS 1987) and *National Register Bulletin 41: Guidelines for Evaluating and Registering Cemeteries and Burial Places* (NPS 1992), which provide guidance for designed landscapes and cemeteries, respectively; the 1994 BART report did not reference the evaluator's use of these bulletins. In addition to the references cited in the 1994 BART report, additional historical maps (USGS maps 1896-2015; Pope 1923), historical aerials (PAS 1937-1993; Google Earth 1993-2015), and an article in the 8 April 1887 edition of the *San Francisco Chronicle*, describing the original design, were reviewed, and this information is incorporated into the updated description.

Figure B-1 located at the end of this appendix uses a current Holy Cross base map to show the location of the historic district's boundaries, the locations of the contributing and non-contributing features listed in the BART report, and the locations of three major additions which have occurred in the western portion of the historic district since the 1994 evaluation. Representative photographs of the historic district are also provided at the end of this appendix.

A. 2015 Description Update

1. Location and Boundaries

Holy Cross Cemetery at 1500 Mission Road in Colma, California occupies approximately 215 acres of land between Mission Road (to the west), Lawndale Boulevard (to the south), Hillside Boulevard (to the east), and the East Gardens of the Cypress Lawn Memorial Park (Cypress Lawn East) (to the north).[2] The shared boundary between Holy Cross and Cypress Lawn East is not defined by any type of structure (HC Update Photo 1).The boundaries on the other three sides are defined by the surrounding roads and by a variety of walls and fencing. A historic cut-stone wall connected to the historic entrance gateway runs along a portion of the Mission Road boundary (HC Update Photo 2), and non-historic chain-link fencing and a masonry wall define the boundaries along Lawndale and Hillside boulevards (HC Update Photo 3).

2. Land Uses

Land uses within the cemetery continue to be those directly related to burial, those associated with the operation of the Holy Cross Cemetery including administrative and maintenance

[2] Measurements throughout this update are approximate and were taken from Google Earth.

Cardinal directions are used throughout this report in describing the features in Holy Cross Cemetery; north is referenced in relationship to Cypress Lawn East; east to Hillside Boulevard; south to Lawndale Boulevard; and west to Mission Road.

functions, and ancillary functions including a nursery for plants used to decorate the graves and retail florists who provide floral arrangements for services and burial sites.

3. Entrances

Access into the cemetery was historically via Mission Road and Hillside Boulevard, and this remains the case today. The historic Main Entrance Gate (1902)[3] on Mission Road is the primary entrance into the cemetery (HC Update Photo 4). This structure consists of six square stone pillars arranged in a semi-circle; the four inner pillars frame the Main Entrance Road and the sidewalk that flanks each side of the road; double-leaf metal gates span each of these three entrances (the road for vehicles and the two sidewalks for pedestrians); the low curved wall connects the outer piers with the gateway piers. The 1993 Historic Resources Inventory form provided a description of this structure under "HC # 2."

There are two additional entrances along Mission Boulevard; one is about 400' north of the historic Main Entrance Gate was added around in the 1950s—probably in conjunction with the addition of the new Main Office Building (1956); the other is about 900' south of the historic Main Entrance Gate and was part of the circulation plan during the period of significance (PAS 1937); both are framed by non-historic stone entrance structures that reference the materials and appearance of the Main Entrance Gate (HC Update Photos 5 and 6).

There are four entrances along Hillside Boulevard. Three of these—the two entrances which connect to the internal road system of the cemetery and the entrance into the reservoir area—were added after Hillside Boulevard was laid out in the early 1900s (USGS 1899 and 1915; PAS 1937). The fourth, which provides access to the Garden County Mausoleum was added in the 1960s in conjunction with the construction of this structure. The primary public entrance is framed by a decorative gateway structure (HC Update Photo 7); each side of this gateway consists of three concrete pillars arranged in a semi-circle and connected by a low, curved concrete wall; the exact date that this structure was added is not known, but a 1937 aerial photograph shows a structure already in place with the same footprint as the current gateway. The other three entrances all have non-historic chain-link gates and/or fencing.

4. Road System and Spatial Organization within the Cemetery

Due to the slope of the land, Holy Cross Cemetery is oriented toward Mission Road. The Main Entrance Road, framed by a large entrance structure, is from Mission Road, and the two major historic buildings are located on the axis formed by this road. The road alignment, grading, arrangement of the grave markers and monument, and placement of the trees all contribute to the creation of a straightforward and orderly arrangement of the cultural landscape within the cemetery. The foundation for this design is the road system, as described below.

The Main Entrance Road into the cemetery begins at the Main Entrance Gate and ends at the Holy Cross Mausoleum. Two circular plots (approximately 200' in diameter) are located along the axis of the Main Entrance Road. The Receiving Chapel was added to the lower (western) of

[3] Construction dates are those provided in the 1993 Historic Resources Inventory Form (Shoup et al. 1993) unless otherwise noted.

the two circular plots in 1964 (HC Update Photos 8 and 10), and the upper plot is the location of the Priests' Circle, the section of the cemetery dedicated for the burial of priests and members of their families (HC Update Photo 9); the 1993 Historic Resources Inventory form provided a general description of this section under "HC # 9." The prominence of the Main Entrance Road is reinforced by the view of the street which is framed by the Main Entrance Gate, the width of the street (40 feet wide compared to the 20-foot-widths for the secondary drives), a concrete curb and sidewalk along each side of the Main Entrance Road between the Main Entrance Gate and the Priest's Circle, and the individual family mausoleums that line each side of the street (HC Update Photos 8 and 10).

On either side of this central axis, a series of secondary drives (20 feet wide, paved with asphalt, and with concrete curbs and gutters) divide the cemetery into a grid of individual sections. The original sections are identified by letters; several sections in the northern corner, established in the 1940s, are identified by numbers, and non-historic sections in the southern addition, which were laid out over the course of several decades beginning in the 1960s, are identified by religious names (for example, St. Rose of Lima). The organization within each section is created by the alignment of the grave markers that identify individual burial plots. These grave markers are aligned in rows that create a series of linear, grass paths within each section (HC Update Photos 11 and 12). This rectilinear spatial organization has characterized Holy Cross Cemetery since its inception. According to an article promoting the cemetery, in the 8 April 1887 edition of the *San Francisco Chronicle*, the landscape design was laid out by F. F. Mohan, the superintendent of Calvary Cemetery and later superintendent at Holy Cross, who intended the layout and plantings to be "simple." He stated that he intended to avoid "serpentine lines" and instead favored "straight lines and right angles." He even proposed that the hedges be "trimmed into conformity with this avoidance of curves."

Sections D, E, I, H, J, and K that line the Main Entrance Road were designated in the initial development as the "choice locations of the cemetery" (San Francisco Chronicle 1887). These sections contain the oldest and largest grave markers and the family mausoleum structures (HC Update Photos 13 to 17). Here the variety of the designs of the grave markers is more evident (due to their size) than in the outer sections. Also, the size of the individual plots in these "choice" sections is larger than in the outer sections, and as a result individual grave markers are spaced farther apart than in the outer sections.[4] Many of the individual plots in these core historic sections are outlined with stone or concrete walls or curbs that reinforce the edges of the internal paths and the rectilinear spatial organization (HC Update Photo 18).

The strict grid arrangement of the sections is broken by short segments of curved drives that are aligned diagonally across Sections H, K, U, and V. The grave markers along the outer edges of these sections are aligned parallel to the diagonal drive. Additionally, a double row of family mausoleums in Section E creates a diagonal pedestrian path that may have initially been begun

[4] An article in the 7 April 1887 edition of the *San Francisco Chronicle* listed the size of the plots: 40' x 40' in Section H and I, 32' x 32' in Sections D and E, 20' x 20' in Sections J and K, 7' x7' in Sections B and G, and 3-1/2' x 7' in Sections F and T. Section C was designated as the Children's Section and is distinguished from the other sections primarily by the closeness of the graves (due to the small size of the plots) and the grave makers with stone cherubs, angels, lambs, and other symbols that were typically used on graves of children in the late nineteenth and early twentieth centuries.

as a mirror to the diagonal drive in Section H. The curving drive in the upper (eastern) portion of the cemetery that leads to the Hillside Boulevard entrance is another exception to the overall grid. This drive replaced the portion of the original Main Entrance Road that was removed when the Holy Cross Mausoleum was added in 1921; the curvilinear alignment is a response to the topography—the road curves around the hill that surrounds the upper reservoir area.

Fifty-five thousand bodies from Calvary Cemetery, which were moved to Holy Cross in 1940 and 1941 (inscription on memorial marker), are reburied within a portion of Section G. A memorial marker and the expanse of lawn—unbroken by individual grave markers—identifies this mass burial (HC Update Photo 19).

Between the 1960s and early 1990s, the cemetery was expanded south to Lawndale Boulevard (PAS 1961, 1969, 1975, 1981, 1989, and 1993). The streets, spatial organization, grave markers, and vegetation within this area are non-contributing features but are generally compatible with the character of the historic district (HC Update Photo 20). An exception to this generalization was the addition of a looped road in 2003 that defined a new subsection ("Our Lady of Antipolis") within Section E; the small size of this subsection and its intrusion within the larger Section E is out of character with the scale of land division within the cemetery and with the rectilinear pattern that characterizes the layout of the cemetery. Fortunately, its location (along the cemetery's western edge) and the downward slope of the land limit the visibility of this new section within most of the historic district.

5. Topography

The site is located on a portion of the lower slope of the San Bruno Mountain ridge, and the land within Holy Cross slopes down dramatically from Hillside Boulevard toward Mission Road. Grading of the natural topography has created a fairly uniform downward slope along the east-to-west aligned drives and within individual sections of the cemetery. An exception to this generalization about the grading is found in the original northeastern corner of the cemetery (in Sections M and R) where the land has been graded to create low, gently rolling hills (HC Update Photos 21 and 22).

6. Buildings and Structures

The two major historic buildings are located on the axis formed by the Main Entrance Road—the Old Lodge/Office Building (1902) at its lower end but on the west side of Mission Road (HC Update Photo 23) and Holy Cross Mausoleum (1921) at its upper (eastern) terminus (HC Update Photo 24). Descriptions of these two buildings are provided on the 1993 Historic Resources Inventory form as "HC # 1" and "HC # 3."

As was the case historically, structures and buildings for utilitarian or support functions continue to be located along the margins or perimeter of the cemetery.

- Originally, the Southern Pacific Railroad line cut across the northwestern corner of property creating a triangular-shaped parcel ("the Water Lot" [Pope 1923]) where key components of the cemetery's original water system (including a pump house, two well houses, an above-ground reservoir), a carpenter's shop (with a well), and a monument shop (with a show room, office, stone yard, polishing house, and a garage) were located; refer to Figure B-2 for a site plan of this lot in 1923. Today, the pump house, the two well houses, the reservoir, and the carpenter's shop remain in place (HC Update Photos 25 and 26). In the 1994 BART report, the descriptions for these features, identified as "Baca's Engines and Machine Shop" (under "CL # 25"), were mistakenly included on the 1993 Cypress Lawn Memorial Park Historic Resources Inventory form.

- Grading at the eastern edge of the cemetery, just south of the entrance drive at Hillside Boulevard, created a large reservoir that was used to store water for the irrigation system. This reservoir (ca. 1910) along with a smaller circular reservoir (ca. 1910), a caretaker's house (ca. 1910), and several outbuildings (ca. 1910 to 1939) remain in place (HC Update Photo 27); descriptions of these features are provided on the 1993 Historic Resources Inventory form as "HC # 12."

- A shop area with a house (ca. 1900) for the onsite caretaker is located in an area that was originally the southeast corner of cemetery; the cemetery has expanded to the south all the way to Lawndale Boulevard since this area was established. A description of the caretaker's house is provided on the 1993 Historic Resources Inventory form as "HC # 11" and one for the shop area is provided as "HC # 21."

  The 1993 Historic Resources Inventory form identified three post-World War II buildings in this area: these include a quonset hut (ca. 1950s), a vehicle shelter (ca. 1960), and a large metal-clad building that contains offices and a work area (HC Update Photo 28). While these particular buildings were added after the period of significance, aerial photographs from 1937 and 1946 show other buildings in this area during the period of significance.

- Two small buildings for florists are located at 1539 Mission Road on the west side of Mission Road just south of the Old Lodge building; these buildings are not on Holy Cross property but are included within the boundaries of the Holy Cross Cemetery Historic District. The Native Son Florist building (1935) immediately to the south of the Old Lodge building is identified on the 1993 Historic Resources Inventory form as a contributing resource; while the Rose and Leona Flowers building (n.d.) is identified as non-contributing due to an addition and alterations to the original building (HC Update Photo 29). Descriptions of these two buildings are provided on the 1993 Historic Resources Inventory form as HC # 13 and HC # 22.

The buildings and structures—all of which are related to the operations of the cemetery—which have been added since the end of the period of significance include the following:

- A new Main Office Building (1956) (HC Update Photo 30; described under HC # 15 on the 1993 Historic Resources Inventory form) and a Rest Room building (1956) (HC Update Photo 31; described under HC # 20 on the 1993 Historic Resources Inventory form) on either side of the Main Entrance Road, near the Main Entrance Gate;

- The Receiving Chapel (1964) in one of the circular plots along the Main Entrance Road (HC Update Photo 8; described under HC # 14 on the 1993 Historic Resources Inventory form);

- Our Lady of Peace Chapel (ca. 1960s) in the lower (western) portion of Section D (HC Update Photo 5; described under HC # 17 on the 1993 Historic Resources Inventory form);

- St. Ann, St. Joseph, St. Theresa, St. Francis, and St Patrick—a group of five mausoleum structures added in the 1960s (PAS 1961 and 1969; USGS 1956 and 1968) in the lower (western) portion of Section D (HC Update Photo 5; described under HC # 18 on the 1993 Historic Resources Inventory form);

- The Garden Court Mausoleum (added between 1962 and 1968) in the northern corner of the cemetery (in Section W) (HC Update Photo 32; described under HC # 16 on the 1993 Historic Resources Inventory form);

- All Saints Mausoleum (1982) and its parking lot, in the southern corner of the cemetery, which front onto Mission Road (HC Update Photo 33; described under HC # 19 on the 1993 Historic Resources Inventory form); and

- Our Lady of Garden Courts (added during 2002 and 2003)—a row mausoleum structures which line both sides of a new road—in the lower (western) portion of Section C (HC Update Photos 34 and 35).

These non-historic buildings and structures have varying degrees of visibility and impact to the historic character of the cemetery. The two large mausoleums (the Garden Court complex and All Saints) were added at the margins of the cemetery which has limited their impact. The new Main Office and the group of mausoleum structures in Section D are highly visible along the Main Entrance Road, in Section D, and in the northern portion of Section E. The Receiving Chapel alters the view along the axis of the Main Entrance Road; this view now terminates with this building when it previously extended into the open cemetery (prior to 1921) and up to the Holy Cross Mausoleum (between 1921 and 1964). Refer to the 1993 Historic Resources Inventory form for descriptions of the Main Office (HC # 15), the Restroom Building (HC # 20) the Receiving Chapel (HC # 14),[5] the group of mausoleums and Our Lady of Peach Chapel in Section D (HC # 17 and HC# 18), the Garden Court Mausoleum (HC # 16), and All Saints Mausoleum (HC # 19).

A BART ventilation structure and an entrance road were added between 2000 and 2002 (Google Earth 2000 and 2002) along the former Southern Pacific Railroad right-of-way in the northwest corner of cemetery (HC Update Photos 36 and 37); these features are located along the east side of the cemetery's "Water Lot." Although not located on property owned by Holy Cross Cemetery, the BART structure and road are within the Holy Cross Cemetery Historic District

[5] This building was called the Internment Chapel on the 1993 Historic Resources Inventory form but is labeled as the Receiving Chapel on the current Holy Cross map.

boundaries. From inside the cemetery, views of the BART structure and its road are blocked by a steep hill and stand of trees that have historically separated the water lot (and the railroad right-of-way) from the main body of the cemetery.

7. Burial Monuments and Objects

A wide range of grave marker types—including tablets, flat markers, obelisks, box tombs, urns, benches, pyramids, crosses, Celtic crosses, and figurative sculpture—are found within Holy Cross. These memorial objects provide examples of the wide range of designs, materials, and symbolic imagery that were used for grave markers and mausoleum structures in the late nineteenth century and during the pre-World War II era in the twentieth century. The memorials in Holy Cross also reflect the wide range of scale for these types of features during this extended period. The largest of these memorial structures are the family mausoleums, many of which are sited in prominent locations along the Main Entrance Road. See HC Update Photos 11 to 17 for examples of these features. Descriptions of examples of the family mausoleums are provided on the 1993 Historic Resources Inventory under HC # 4 (McGuire Mausoleum, the only extant brick mausoleum in the Colma Cemeteries [Shoup et al. 1993]), HC # 5 (Kitterman Mausoleum), HC # 7 (Fair Mausoleum), HC # 8 (Phelan Mausoleum), HC # 10 (Dunphy-Burnett Mausoleum); one description of an example of the large and elaborate grave markers found throughout historic core sections is under HC # 6 (Governor John Downey Monument).

New grave markers—which are routinely added within the historic and non-historic sections of the cemetery—reflect current trends in memorial markers and structures; however, they are laid out within the linear arrangement that was established during the period of significance (HC Update Photo 38). More open land for new graves remains in the outer historic sections and in the non-historic sections so that the additions of new markers within the core historic sections of the cemetery along the Main Entrance Road (Sections D, E, H, I J, and K) is limited.

8. Vegetation Features

The primary vegetation features are the expansive lawn, scattered large trees, and the remnants of rows of trees. As noted in the 1993 Historic Resource Inventory form, there are species of cypress, pine, cedar, eucalyptus, palm, magnolia, olive, and oak—each of were commonly planted in northern California during the period of significance.

The 1887 *San Francisco Chronicle* article about the development of the cemetery noted that rows of trees were planted around the outer boundary, along the Main Entrance Road, and along the secondary roads. These trees reinforced the rectilinear layout of the cemetery. Additionally they limited views across the cemetery and created an enclosed or sheltered feeling within each individual section. Based on a review of aerial photographs, by the 1930s the original rows of trees remained only in the eastern portion of the cemetery, in the short section of the Main Entrance Road east of the Priests' Circle, and around Section C in the northwestern corner of the cemetery (PAS 1937 and 1946); the trees along the northern and western sides of Section C still exist (although some of the trees may have been replanted) (HC Update Photo 34). The removal of these original rows resulted in a more open and expansive feeling within the cemetery and allowed for broader views across the cemetery. Based on a review of aerial photographs, additional rows of trees and shrubs continued to be planted through the 1980s; examples of short remnants of these later rows can still be seen along the curvilinear entrance road that connects to the main Hillside Boulevard gate (planted in the 1920s after this road was added), the northern side of Section G2 (planted in the 1950s) (HC Update Photo 39), the edges of Section 3 (planted in the 1970s) (HC Update Photos 38 and 41), and the boundary next to Lakeside Boulevard (planted in the early 2000s).[6]

Trees (primarily Monterey cypress and eucalyptus) were planted during the period of significance in a broad band on the slope above (east) of the Southern Pacific Railroad line and the "Water Lot" to block views of these utilitarian features; this stand continues to exist and today blocks views of the BART ventilation structure, its access road, and the "Water Lot." A similar band of trees was planted in the 1980s along the western edge of Section F to block views of the shop yard (HC Update Photo 40).

Plant nurseries are located along the upper (eastern) portion of the cemetery in three different locations—east of Section R2, east of the Holy Cross Mausoleum, and the northern corner (HC Update Photos 42, 43, and 44). During the period of significance, there were fields south of the historic boundary of the cemetery. When the cemetery was gradually expanded into this area, these fields were lost. The plant nursery east the Holy Cross Mausoleum is visible in aerial photographs from 1975 on and the other two locations appear to have been developed in the 2000s.

9. Views and Vistas

Views within the cemetery are of the expansive lawn, trees, and monuments; see HC Update Photos 11, 12, 14, 21, 38, 41, and 45 for representative images of these views. Due to the size of the cemetery and how the trees are scattered throughout, the views within Holy Cross are largely self-contained, and the only views into adjacent properties are along the edges of the cemetery. For example, there are views into the adjacent historic Cypress Lawn East cemetery along the northern edge. The views along the eastern edge of the cemetery are of the undeveloped San Bruno Mountain ridge, and the views along the southern edge of the historic boundary are of the non-historic sections of Holy Cross. The commercial and multi-family housing developments along the west side of Mission Road are only visible from the lower (western) edges of the cemetery in portions of Sections E and F and from the lower portion of the Main Entrance Road (west of the Receiving Chapel). The broad bands of trees planted across the lower (western) edge of Sections C and F help to block views within the cemetery of most of the Mission Road development (HC Update Photos 34, 39, and 41).

More distant vistas are of the ridge and development to the west and of the largely undeveloped San Bruno Mountain to the east; see HC Update Photos 20, 21, 42, and 45 for representative images of these vistas.

[6] The dates when these trees were planted is based on a review of aerial photographs.

B. 2015 Contributing and Non-Contributing Features Update

Each of the contributing and non-contributing features listed as representative examples in the BART report remain in place.

However, the following changes have been noted:

- Five features at 1690 Mission Road were mistakenly identified (CL # 25/Baca's Engines and Machine Shop) as being within the Cypress Lawn Historic District in the BART report (Shoup et al. 1994: 25) and on the Historic Resources Inventory Form (Shoup et al. 1993). Two of these five features—the pump house and the aboveground reservoir—were identified as contributing features in the BART report; the contributory status of the other three features—the two well houses and a carpenter's shop—was not clearly stated in the BART report. However, all five of these features are and always have been a part of the Holy Cross Cemetery property and are located on what was known in 1923 as the "Water Lot" (Pope 1923). The land on which these features are located was correctly shown as being within the Holy Cross Cemetery Historic District on Figure 8 of the BART report; however, Figure 6 in the BART report incorrectly showed this area as being a part of the Cypress Lawn Historic District.

  The additional research undertaken as part of this update shows that all five features were a part of the Holy Cross Cemetery water system. The pump house, the reservoir, the carpenter's shop (with an interior well), and the well house north of the pump house were all shown on the 1923 map (see Figure B-2). The well house south of the pump house appears to have been a part of the site by 1945 (the end of the period of significance); it has a similar construction as the other well house, has architectural details that resemble the pump house, and a building with a similar footprint is shown on a 1937 aerial photograph.

  In summary, these five features are all contributing features to the Holy Cross Cemetery Historic District; this correction has been shown on Figure B-1 at the end of this appendix.

- As noted in the expanded description for this update, the cultural landscape features and characteristics that were a part of Holy Cross by 1945 also contribute to the significance of the historic district and retain integrity; these include its circulation features, the spatial organization, topographic modifications, vegetation features, buildings and structures, burial monuments and objects, constructed water features, and views and vistas.

- The BART ventilation structure and its access road were added between 2000 and 2002 and are non-contributing features; these structures are not located on property owned by Holy Cross Cemetery but are within the Holy Cross Cemetery Historic District boundaries;

- Mausoleums and memorial objects, a road, sidewalks and paving, and trees and other ornamental plantings associated with the Our Lady of Garden Courts were added between 2000 and 2003, and

- The road that delineates the Our Lady of Antipolis section of the cemetery (in the lower portion of Section E) was added in 2003.

These changes and additions have not substantially altered the characteristics and features that express the cemetery's significance under Criteria A, B, and C, and the Holy Cross Cemetery Historic District appears to retain its integrity.

New grave markers continue to be added to individual plots in the cemetery on a routine basis; these grave markers are non-contributing objects and most tend to be located in sections of the cemetery that were identified as "Areas of Post 1945 Development" (i.e., non-contributing) in the 1994 evaluation.

Figure B-1 uses a current Holy Cross base map to show the location of the historic district's boundaries, the locations of the contributing and non-contributing features listed in the BART report, and the locations of three major additions which have occurred in the western portion of the historic district since the 1994 evaluation. Representative photographs of the historic district are also provided at the end of this appendix.

C. 2015 Boundary Update

The boundary for the Holy Cross Cemetery Historic District remains the same as identified in the 1994 evaluation; Figure B-1 shows this boundary.

D. Summary for the 2015 Update

In summary, the Holy Cross Cemetery Historic District continues to be significant under National Register Criteria A, B, and C. Under Criterion A, Holy Cross is significant for its association with the conflict over cemeteries in San Francisco and the forced removal and transfer of graves to new cemeteries in Colma; the graves from the Calvary Cemetery were relocated to Holy Cross between 1937 to about 1947. Under Criterion B, the cemetery is significant for its association with the graves of numerous persons who were important to California history. Under Criterion C, it is significant as an example of the evolution of landscape design style for cemeteries during the late-nineteenth century and the first half of the twentieth century and includes landscape characteristics associated with both traditional rectilinear cemetery design and the rural cemetery style of design. Under Criterion C, it is also significant for its collection of funerary art and architecture that illustrate the evolution of cemetery design during the late-nineteenth century and the first half of the twentieth century. The property continues to meet Criteria Consideration D since it derives its primary significance from its association with historic events, the graves of persons of transcendent importance located in Holy Cross, and the cemetery's distinctive design features. The Holy Cross Cemetery Historic District has not been substantially altered since 1994 and thus appears to retain its integrity and to continue to be eligible for listing on the National Register.

The boundaries remain the same as shown in Figure 8 in Appendix I of the BART report; these boundaries are shown in Figure B-1 at the end of this appendix. Contributing features are those buildings, structures, objects, and cultural landscape characteristics that were part of the cemetery by 1945 (the end date for the period of significance) and non-contributing features are those that post-date 1945.

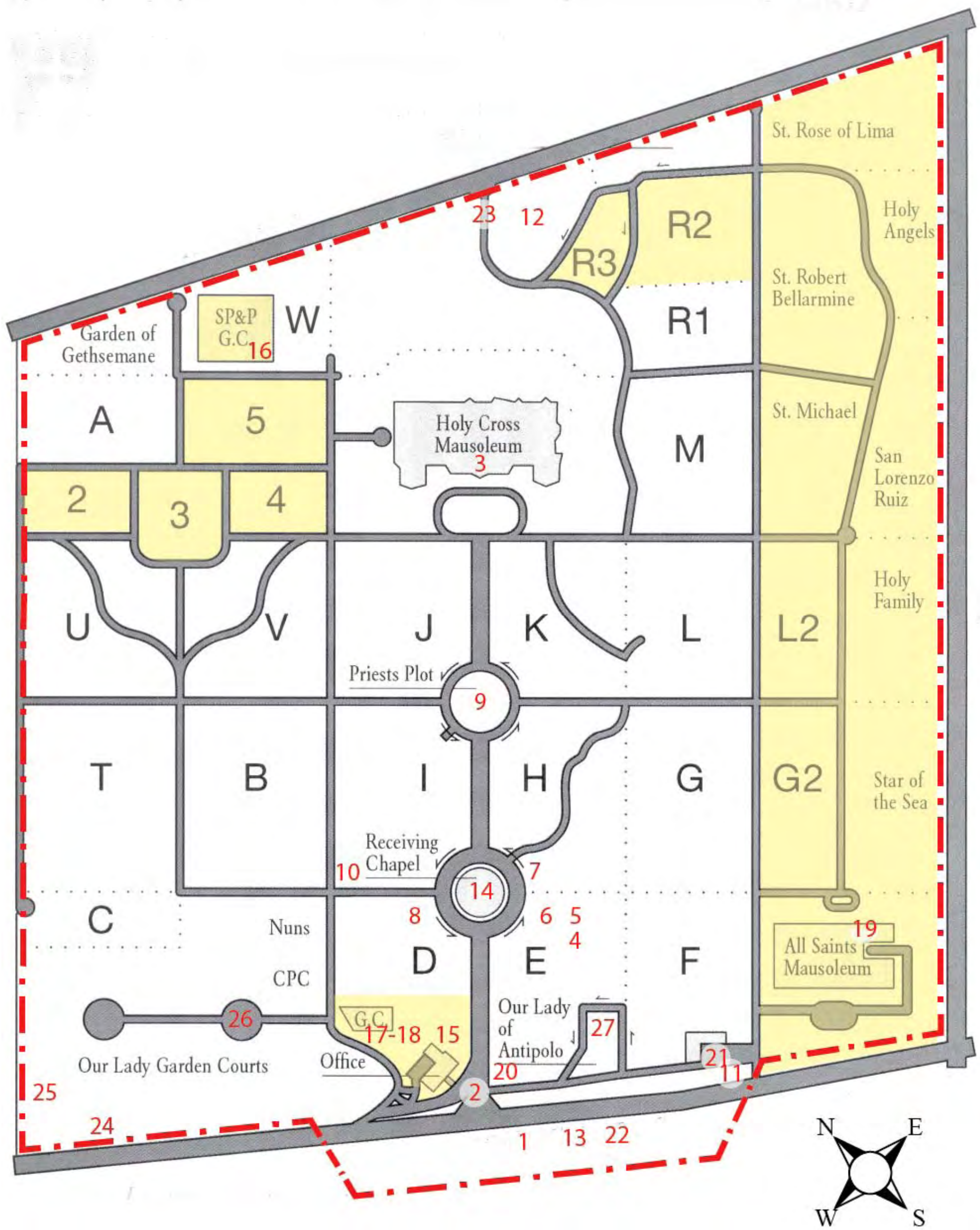


Figure B-1. Holy Cross Cemetery Historic District

Representative Examples of Contributing Features in BART Report:
1. Old Lodge/Office Building
2. Main Entrance Gate
3. Holy Cross Mausoleum
4. McGuire Mausoleum
5. Kitterman Mausoleum
6. Governor Downey Monument
7. Fair Family Mausoleum
8. Phelan Mausoleum
9. Priest's Circle
10. Dunphy-Burnett Mausoleum
11. Caretaker's House
12. Caretaker's House and Reservoirs
13. Native Son Florist

Representative Examples of Non-Contributing Features in BART Report:
14. Interment Chapel (Receiving Chapel)
15. Main Office Building
16. Garden Court Mausoleum
17. Our Lady of Peace Chapel
18. St. Ann, St. Joseph, St. Theresa, St. Francis, and St. Patrick Mausoleums
19. All Saints Mausoleum
20. Rest Rooms
21. Post-[World] War [II] Utility Buildings
22. Rose and Leona Flowers

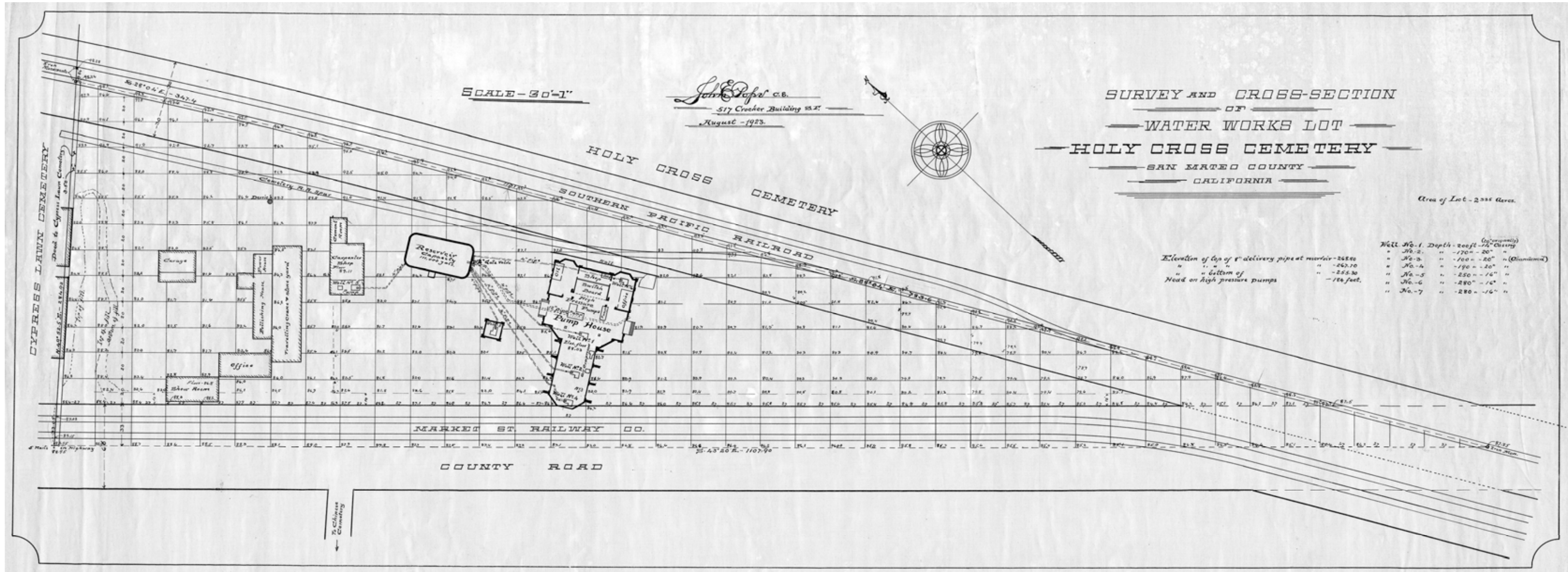
Major Contributing Features Not Shown in BART Report:
23. Hillside Boulevard Gate
24. Water Lot Features (Pump House, 2 Well Houses, Reservoir, and Caretaker's House)

Major Non-Contributing Features Added since BART Report:
25. BART Structure and Road
26. Our Lady of Garden Courts
27. Our Lady of Antipolis

Key from BART Report:

Historic District Boundaries

Area of Post-1945 Development



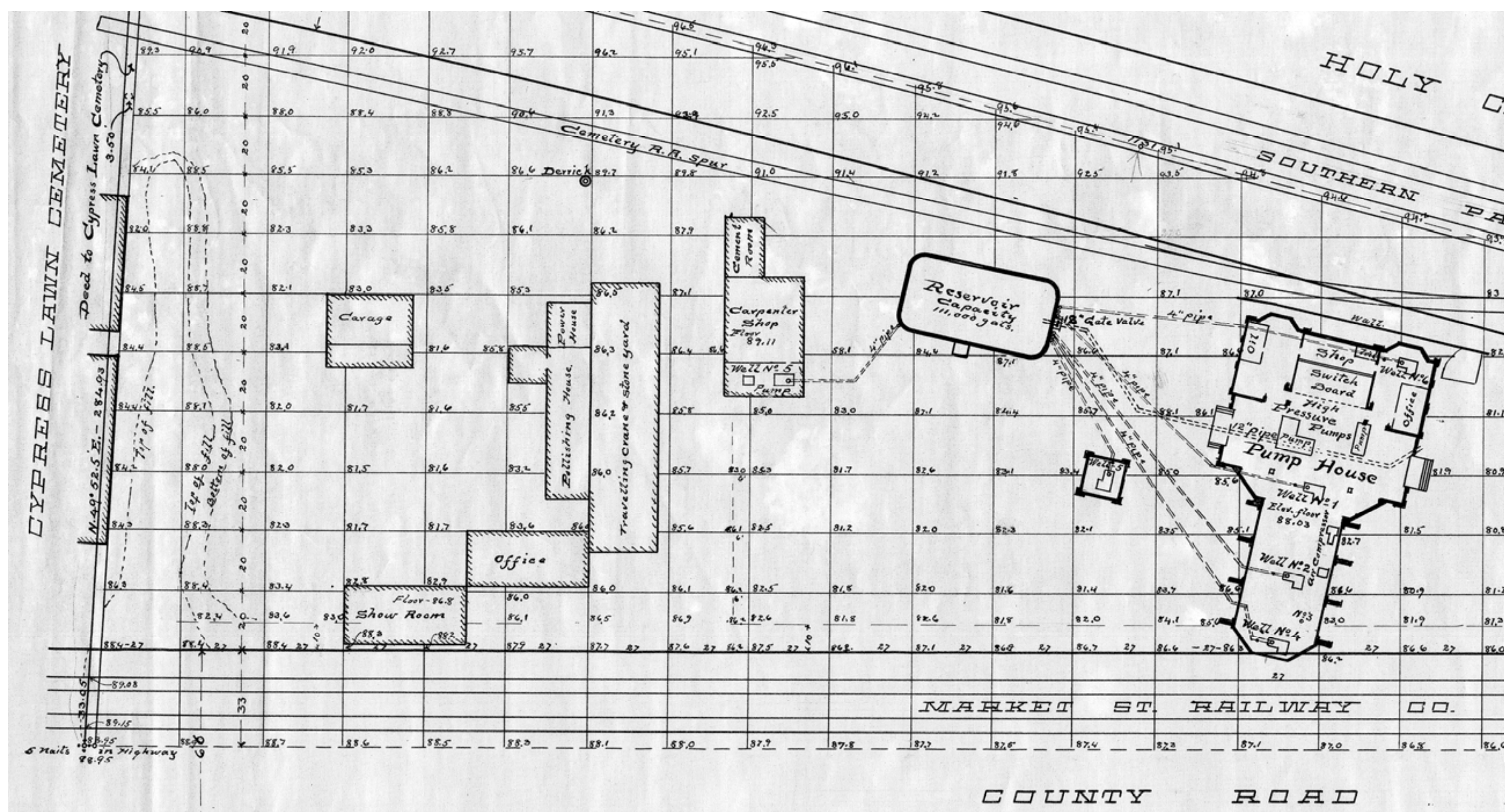


Figure B-2. *Survey and Cross Section of Water Works Lot, Holy Cross Cemetery, San Mateo County, California* (Pope 1923)

HC Update Photo 1. Open boundary between Holy Cross (right) and Cypress Lawn East (left).

HC Update Photo 2. Stone wall along Mission Road.

HC Update Photo 3. Boundary wall along Hillside Boulevard.

HC Update Photo 4. Main Entrance Gate at Mission Road.

HC Update Photo 5. Non-historic entrance structure at Mission Road and view to ca. 1960s mausoleum structures in Section D.

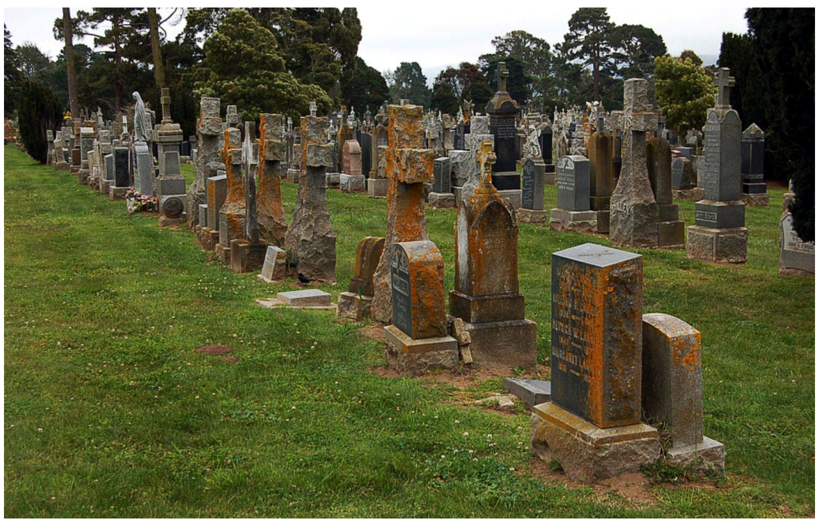
HC Update Photo 6. Non-historic entrance structure at Mission Road.

HC Update Photo 7. Hillside Boulevard entrance structure.

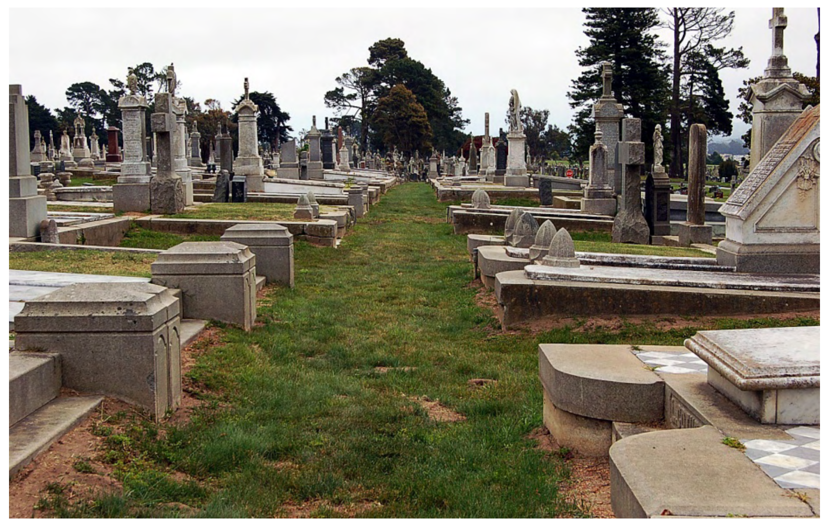
HC Update Photo 8. Main Entrance Road and Receiving Chapel in the lower circular plot.

HC Update Photo 9. Priests' Circle in the upper circular plot.

HC Update Photo 10. Family mausoleums lining the Main Entrance Road and Receiving Chapel in background.



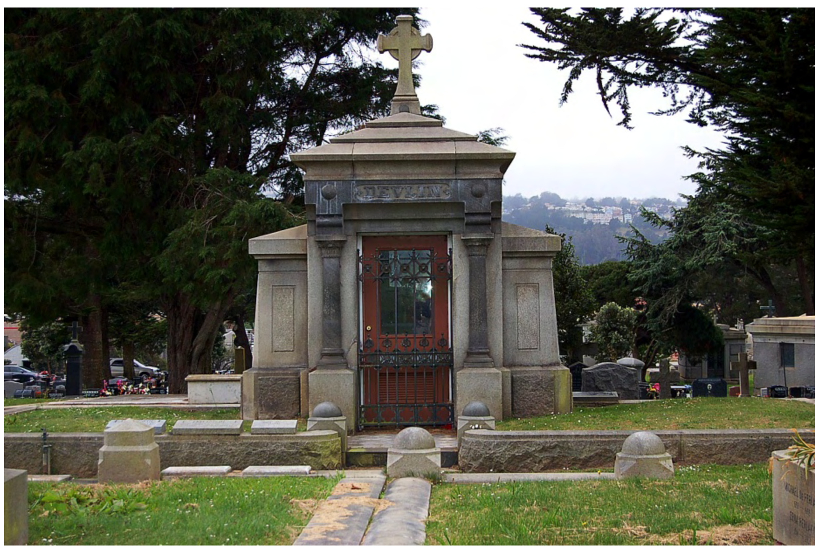
HC Update Photo 11. Example of linear arrangement of grave makers in Section J.



HC Update Photo 12. Example of linear arrangement of grave makers in Section J.

HC Update Photo 13. Fair Mausoleum in Section G.

HC Update Photo 14. Kitterman Mausoleum in Section G.



HC Update Photo 15. Devlin Mausoleum in Section G.

HC Update Photo 16. McGuire Mausoleum in Section E; this is the only extant brick mausoleum in Colma.

HC Update Photo 17. Downey Monument in Section E.

HC Update Photo 18. Example of stone curbs in Section G that outline the individual plots.

HC Update Photo 19. Calvary mass burial and monument in Section G

HC Update Photo 20. Non-historic sections of cemetery on the right side of road and view to San Bruno Mountain.

HC Update Photo 21. View of uniform downward slope in cemetery.

HC Update Photo 22. Example of gently rolling topography in Sections R1 and R2.

HC Update Photo 23. Old Lodge/Office Building.

HC Update Photo 24. Holy Cross Mausoleum.

HC Update Photo 25. Pump house on “Water Lot.”

HC Update Photo 26. Reservoir on “Water Lot.”

HC Update Photo 27. Upper reservoir area at Hillside Boulevard.

HC Update Photo 28. Caretaker’s house (left) and shop area.

HC Update Photo 29. Florist shops on Mission Road.

HC Update Photo 30. Main Office Building.

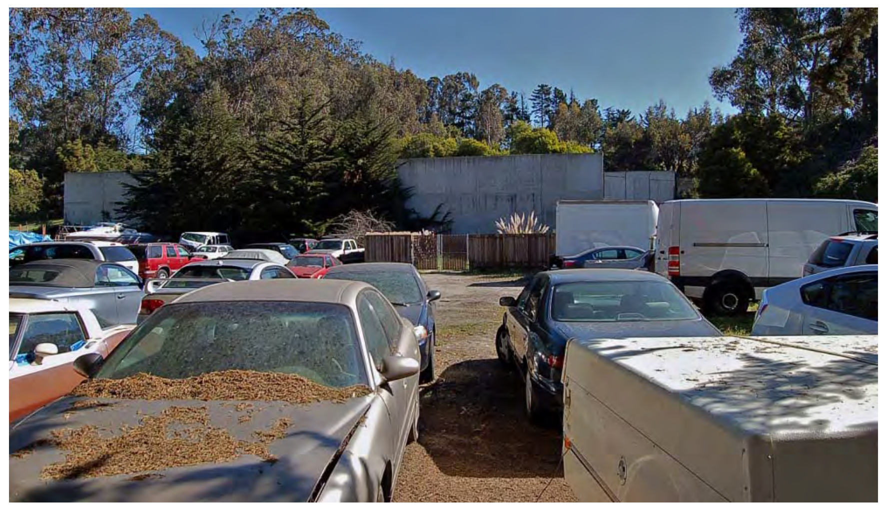
HC Update Photo 31. Rest Room Building.

HC Update Photo 32. Garden Court Mausoleum.

HC Update Photo 33. All Saints Mausoleum.

HC Update Photo 34. View across Section C (the children's and the nuns' sections) to Our Lady of Garden Courts and band of trees that block views of the "Water Lot," BART structure, and Mission Road.

HC Update Photo 35. Our Lady of Garden Courts.

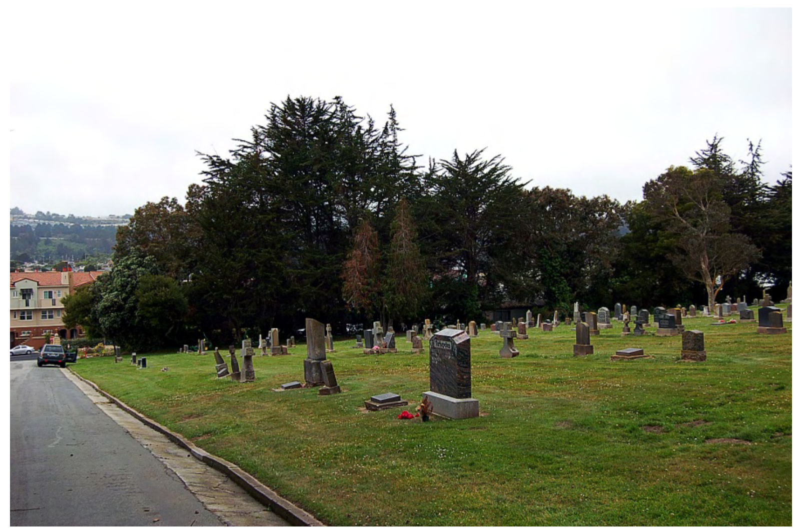


HC Update Photo 36. BART ventilation structure; view from Mission Road at north end of "Water Lot."

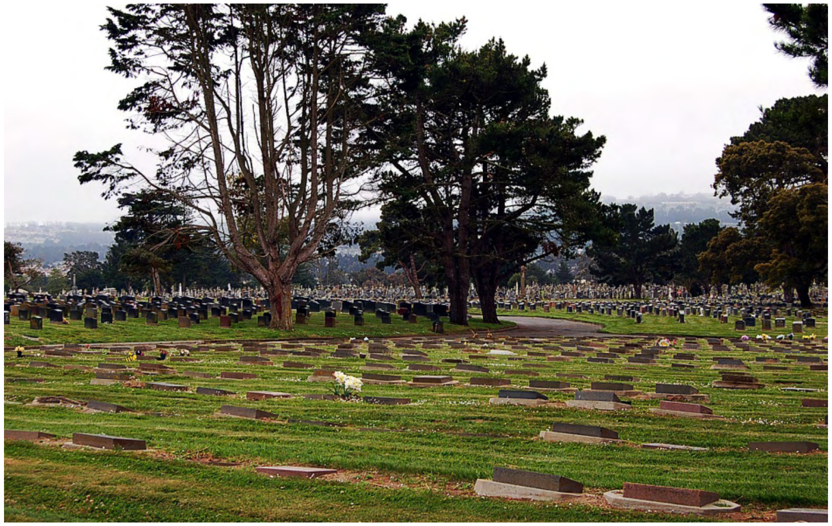
HC Update Photo 37. Access Road to the BART structure and the south end of the "Water Lot."

HC Update Photo 38. Examples of non-historic markers in Section 2 laid out in the same linear arrangement that has historically characterized the cemetery. Also remnants of rows of trees (planted in the 1970s) in Section 3.

HC Update Photo 39. Remnant of row of Monterey cypress trees (planted in the 1950s) in Section G2, historic boundary of cemetery (right), and view to Mission Road.



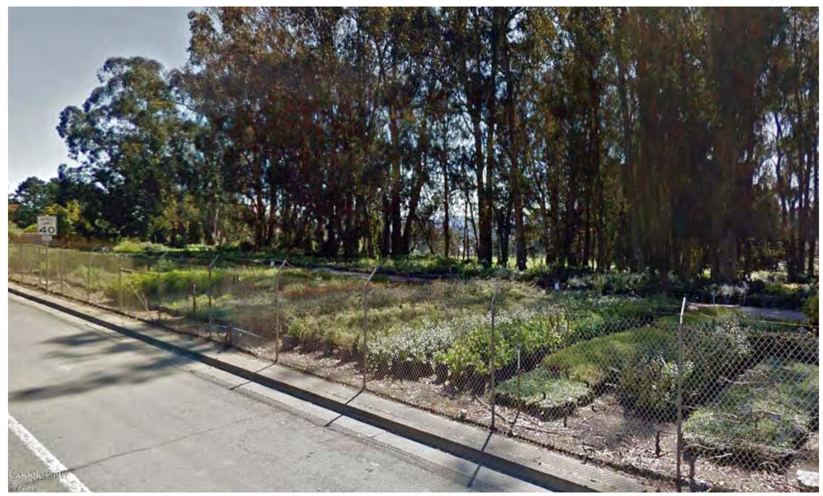
HC Update Photo 40. Band of trees along edge of Section F (planted in the 1980s) blocks views of shop area and Mission Road.



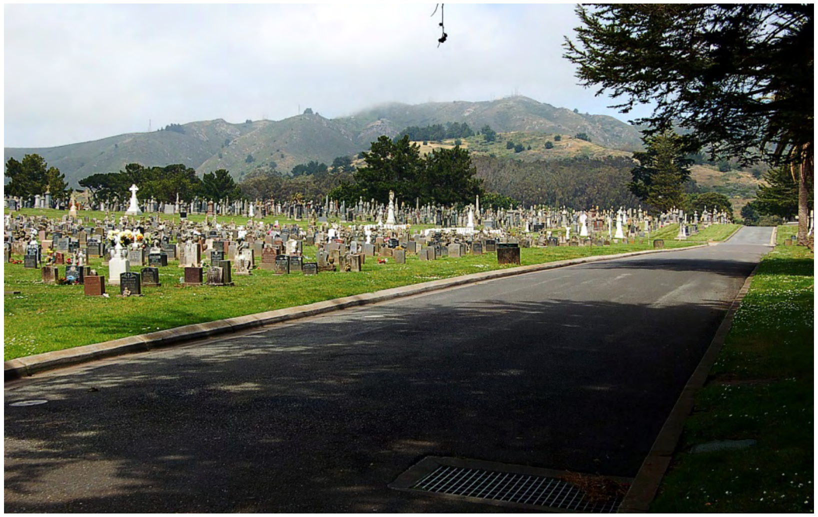
HC Update Photo 41. Remnant of row of trees (planted in 1970s) along Section 3.

HC Update Photo 42. Nursery area above Section R2 and view to San Bruno Mountain.

HC Update Photo 43. Nursery area above the Holy Cross Mausoleum and view of topography in cemetery.



HC Update Photo 44. Nursery area in northern corner of cemetery and band of eucalyptus trees that block the view from within the cemetery of this area and Hillside Boulevard.



HC Update Photo 45. Typical view within the cemetery and vista of San Bruno Mountain.

APPENDIX C:

CYPRESS LAWN MEMORIAL PARK HISTORIC DISTRICT EVALUATION UPDATE

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APPENDIX C: CYPRESS LAWN MEMORIAL PARK HISTORIC DISTRICT UPDATE

I. Cypress Lawn Evaluation from 1994 BART Report

A. 1994 Description

A Historic Resources Evaluation Report of Seven Colma Cemeteries, Colma, California (BART Report) was prepared by Laurence H. Shoup, Mark Brack, Nancy Fee, and Bruno Gilberti in 1994 for cemeteries that were within the Area of Potential Effects (APE) for the BART-San Francisco Airport Extension Project; a copy of the evaluation report with the Historic Resources Inventory forms for Holy Cross Cemetery and Cypress Lawn Memorial Park is provided in Appendix F.

Cypress Lawn Memorial Park was evaluated for its eligibility to the National Register of Historic Places as part of this effort. Appendix II in the BART report provided a Historic Resources Inventory form (prepared in 1993) with a description and representative photographs of the cemetery. Page 1 of the Historic Resources Inventory form for Cypress Lawn Memorial Park provided the following description:

> *Cypress Lawn Memorial Park is a 147-acre cemetery with a picturesque arrangement of winding streets and uncrowded burials that distinguish it from the other historic cemeteries evaluated for this study. It is the only cemetery to extend over both sides of El Camino Real, which runs in a valley between the two sloping sides of the park.*
>
> *The half of the cemetery to the east of El Camino Real was developed first, and its topography has been manipulated to achieve greater diversity in elevation. Access to this half is on an axis that runs between a picturesque collection of ponds. One large pond is to the south and several highly irregular ponds (designed in the 1920s) are to the north of the axis. The axis processed through the monumental entrance gate and then branches to provide access to the Nobel Chapel or the "Lakeside Columbarium." Behind (or to the east of) these community buildings are scattered burials on verdant mown lawns. This half of the park features the full range of late-nineteenth and twentieth century cemetery monuments. Numerous family mausolea (there are a total of 87 in the cemetery) dot the park with designs representing Classical, Renaissance, Egyptian, Gothic, Romanesque, and Art Deco styles. Many of these buildings are very large and represent substantial investments in workmanship and money and are the designs of prominent artists, architects, and sculptors. Gravemarkers include an almost limitless range of forms and motifs, including tablets, flush markers, lambs and cherubs (for children), posts, columns, urns, benches, sarcophagi, pyramids, angels, rustic boulders and carved tree-stumps, obelisks, tablets [sic], crosses, and Celtic . The oldest section of the cemetery is near the "old" columbarium. Nineteenth and early twentieth-century markers more commonly represent the deceased's place of origin and details concerning the life of the male head of the family often supersede those for other family members. After approximately 1910, granite markers surpass marble in popularity.*

> *The west side of the park is laid out along the same picturesque lines but is smoother and more regular than the eastern half, with fewer trees and fewer dramatic monuments. Flush and slant markers are more common in this side, yet some impressive gravemarkers and family mausolea are also found here. This half of the cemetery also features early twentieth-century art-glass ceilings. One publication likens the experience of the glass to "walking under and* [sic] *umbrella of color (Sevanevik and Burgett). Other examples of stained glass, including works by Tiffany, Lamb, and Connick, ornament individual family mausolea.*
>
> *The grounds feature a fine collection of trees and shrubs. Evergreens are especially well-represented including deodar, pine, Monterey pine, Monterey cypress, cedar, juniper, Norfolk Island pine, fir, redwood, and yews. Other trees include acacia, palm, liquid amber, oak, and pepper. Holly bushes and box hedges are also represented* (Shoup et al. 1993: 1).

B. 1994 Evaluation

The 1994 BART report concluded that the Cypress Lawn Memorial Park Historic District appeared to qualify for listing on the National Register of Historic Places under Criteria A, B, and C at the state level. The period of significance was 1892-1945, a period encompassed the start of the development of the cemetery and extended to end of 1945; no reason was provide for the end date but it appears to have been chosen because it was 50 years prior to the survey date for the BART project. The BART report provided the following evaluation:

> *This cemetery appears to qualify for the National Register as a state-level district. For a number of reasons, it is the most important of all the cemeteries evaluated for this study. First, it contains the finest collection of funerary art and architecture found in Northern California. Second, even though it does not present a completely unified image, it is the fullest realization of the picturesque landscaping principles of the rural cemetery movement to be found in any of the Colma cemeteries. It therefore is one unified entity – a district. Third, it reflects the evolutions of American cemetery design from 1892 through the World War II era (its period of significance). Finally, no cemetery in Northern California (and perhaps the entire state) contains the remains of so many people who played outstanding roles in the economic, political, intellectual, and artistic history of the state. This cemetery therefor appears to qualify for the National Register under criteria b and c, association with important people (such as historian Huber Howe Bancroft, authors Gertrude Atherton and Lincoln Steffens, architect John McLaren, bankers William C. Ralston, William H. Crocker and Lloyd Tevis, newspaperman William Randolph Hearst, philanthropist Phebe Apperson Hearst, ship owner William Matson, mine owner James C. Flood sugar magnate Rudolph Spreckels, Governor and Senator Hiram W. Johnson, and pioneer Thomas O. Larkin) and architectural and design values.*

> *Cypress Lawn also appears to qualify under criterion a, association with significant events, specifically the long conflict over the transfer of Laurel Hill Cemetery out of San Francisco to Cypress Lawn. This was an important event and the close association of Cypress Lawn with this event is clear and unmistakable. In sum, Cypress Lawn Memorial park qualifies under three of the National Register criteria, is an excellent example of the rural cemetery theme, has excellent integrity of location, setting, design, materials, workmanship, feeling, and association, and meet the special criterial consideration [D] for the National Register* (Shoup et al. 1994: 27-28).[1]

The California State Historic Preservation Officer concurred with the findings of the BART Report that Cypress Lawn Memorial Park was a National Register-eligible Historic District (September 22, 1994 letter, Re BART SF Airport Extension, Cherilyn Widell, SHPO, to Stewart Taylor, Regional Administrator, Federal Transit Administration; on file at the Colma Planning Department); a copy of this letter is included in Appendix D.

C. 1994 Integrity Analysis

The BART report stated that the district retained all seven aspects of integrity but provided no detailed analysis (Shoup et al. 1994: 28).

D. 1994 Boundary

The BART report did not explicitly state the boundary for the Cypress Lawn Memorial Park Historic District but did show one on Figures 6 and 7 in Appendix I.

Based on these figures, the boundary for the Cypress Lawn East portion of the Historic District follows the property lines along El Camino Real, between Cypress Lawn and the Hills of Eternity, Hillside Boulevard, and between Cypress Lawn and Holy Cross Cemetery. The boundary for the Cypress Lawn West portion of the Historic District follows the property lines along El Camino Real, the south side (between the cemetery and the properties along Arlington Drive), the west side next to Junipera Serra Boulevard, and the north side (between the cemetery and the properties along Collins Avenue). Although not explicitly stated, the boundary would exclude the public roads including Mission Road/El Camino Real which separates Cypress Lawn East and West and State Highway 82 which separates a triangular parcel of land from the main portion of the Cypress Lawn West.

E. 1994 Contributing and Non-Contributing Features

The evaluators appear to have recorded the buildings and major structures in each of the cemeteries in the BART report but only recorded representative examples of grave markers and what they deemed to be the "exceptional landscape features" for each of the cemeteries. They explained their rationale for this methodology as follows:

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[1] Criteria Consideration D in National Register Bulletin 15 states that "a cemetery is eligible if it derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events" (NPS 2002: 34).

Due to the fact that hundreds of thousands of monuments exist in these cemeteries, it is impossible to record them all and produce a comprehensive list of contributing elements at this time. Thus only a sample of significant gravemarkers, as well as all buildings and exceptional landscape features, were recorded. In general, all buildings, gravemarkers, and landscape features dated prior to 1946 are considered to be resources which contribute to each respective district . . . The contributing features listed below are representative examples of the resources in each cemetery and illustrate the reasons why each cemetery district qualifies for the National Register (Shoup et al. 1994: 23).

The 1994 list of representative features identified for the Cypress Lawn Memorial Park Historic District—which listed only buildings and major structures but no landscape features—included the following:

Contributing Features:

1. Lakeside Columbarium – 1927
2. Noble Chapel and Crematory – 1892-1893
3. Original Columbarium – 1893-1895
4. Cemetery Office Building – 1918, 1934
5. The Catacombs – 1915, 1919-1921, 1924
6. Mission Road Gate – 1892
7. Hillside Boulevard Gate – c. 1900
8. Charles DeYoung Memorial – c. 1881
9. Rogers Tomb – 1929
10. Daniel Murphy Mausoleum – c. 1920
11. Thorne Family Monument – c. 1931
12. Charles Crocker Family Mausoleum –1889-1898
13. Hearst Family Mausoleum – 1896
14. Anderson Monument – c. 1906
15. Valentine Monument – c. 1896
16. Hiram W. Johnson Mausoleum – 1949
17. Tevis Monument – c. 1912
18. Nager Mausoleum – 1912
19. Niebaum Mausoleum – 1908
20. Row of Mausoleums – 1905-1907
21. Claus Spreckels Mausoleum – c. 1910
22. Trolley Shelter – c. 1903
23. Vehicle Barn – c. 1915
24. Clubhouse – c. 1915
25. Baca's Engines and Machine Shop – c. 1910[2]

[2] These two structures were incorrectly listed as part of Cypress Lawn when they are part of the Holy Cross Cemetery Historic District; see the 2015 Holy Cross Evaluation Update in Appendix B for additional information.

Non-Contributing Features:
26. Corporate Yard
27. Laurel Hill Memorial – 1940-1955 (Shoup et al. 1994: 24-25)

Figures 6 and 7 in Appendix I of the BART report showed the location of these 27 features and highlighted the areas within the cemetery that the authors identified as non-contributing.

II. 2015 Cypress Lawn Update

t has been 22 years since the field survey for the BART report was conducted and a field review of the current existing conditions within the Cypress Lawn Memorial Park was undertaken to determine if the district still retained integrity. Architectural historian Ward Hill conducted a field review (26 January, 15 April 15, 3 November, and 17 November 2015) of the overall property that focused on the architectural resources, and landscape historian Denise Bradley conducted a similar field review (15 April, 28 April, 22 May, and 3 November 2015) that focused on the cultural landscape. As part of this update, the status of the contributing features that were specifically listed in the BART report (pages 24 and 25) were reviewed. Additions to the cemetery that have occurred since 1993 (the date of the field survey for the BART report and evaluation) were noted and analyzed for their impact on integrity. Finally, although the 1994 evaluation identified the landscape design of the cemetery as one of the areas of significance and generically identified "landscape features dated prior to 1946" (Shoup et al. 1994: 23) as contributing resources, the BART report only provided a cursory description of the cultural landscape features and mainly described the buildings and major structures. As part of this update, a more detailed and systematic description of the cultural landscape was prepared to meet current documentation standards, to aid in the analysis of integrity and to provide a baseline for evaluating the potential for adverse effects to the historic district from the proposed Veterans Village project. This update followed the guidance in *National Register Bulletin 18: How to Evaluate and Nominate Historic Designed Landscapes* (NPS 1987) and *National Register Bulletin 41: Guidelines for Evaluating and Registering Cemeteries and Burial Places* (NPS 1992), which provide guidance for designed landscapes and cemeteries, respectively; the 1994 BART report did not reference the evaluators' use of these bulletins. In addition to the references cited in the 1994 BART report, additional historical maps (USGS maps 1896-2015; Pope 1923) and historical aerials (PAS 1937-1993; Google Earth 1993-2015) were reviewed, and this information is incorporated into the updated description.

Figure C-1 (located at the end of the appendix) uses a current Cypress Lawn map as a base to show the corrected historic district boundaries, the locations of the features listed in the BART report, and the locations of the key changes and additions since the 1994 BART report's evaluation t. Representative photographs of the historic district are also provided at the end of this appendix.

A. 2015 Description Update

1. Location and Boundaries

Cypress Lawn Memorial Park, at 1370 El Camino Real in Colma, California, extends over both sides of El Camino Real. The portion east of the road is generally referred to as Cypress Lawn East and occupies approximately 62 acres[3] that is situated between El Camino Real (to the west), the Hills of Eternity Memorial Park (to the north), Hillside Boulevard (to the east), and the Holy Cross Cemetery (to the south).[4] The shared boundary between Cypress Lawn East and Holy Cross is open and is not defined by any type of structure (CL Update Photo 1). A concrete wall defines the boundary between the cemetery and the Hills of Eternity (CL Update Photo 2). A wall defines the length of the boundary along Hillside Boulevard; this wall is similar in design and materials to the one along the Hills of Eternity boundary except at the south end where it is constructed of concrete blocks (CL Update Photo 3).

The portion of the cemetery west of El Camino Real is generally referred to as Cypress Lawn West and occupies approximately 100 acres. Cypress Lawn East, whose development began in 1892, was laid out first, and the land for Cypress Lawn West was purchased "just after the turn of the [twentieth] century" (Shoup et al. 1994: 14). The boundaries for Cypress Lawn West are El Camino Real (to the east), the residential development along Arlington Drive (to the south), Junipera Serra Boulevard (to the west), and the commercial development along Collins Avenue (to the north). The boundaries along the north and south sides are marked by a chain-link fence; a hedge and a row of columnar yews are planted in front of the fence along some stretches of these two boundaries; however neither the fence or the vegetation totally block the views of the buildings located adjacent to these two sides of the cemetery (CL Update Photo 4). A band of eucalyptus trees stretches along the boundary next to Junipera Serra Boulevard and blocks views of this road (CL Update Photo 5).

2. Land Uses

Land uses within both Cypress Lawn East and West continue to be those directly related to burial and cremation and those associated with the operation of the Cypress Lawn Memorial Park including its administrative and maintenance functions.

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[3] Measurements throughout this section are approximate and were taken from Google Earth.

[4] The following cardinal directions are used in describing the features in the Cypress Lawn East: north is referenced in relationship to Hills of Eternity Memorial Park, east to Hillside Boulevard, south to Holy Cross Cemetery; and west to El Camino Real. Similarly, the following cardinal directions are used for Cypress Lawn West: north is referenced in relationship to Collins Avenue, east to El Camino Real, south to Arlington Drive, and west to Juniper Serra Boulevard.

3. Entrances

The main entrance into Cypress Lawn East was historically via El Camino Real, and this remains the case today. The Main Entrance Gate (1892)[5]—a massive granite structure with pedestrian portals flanking the central vehicular entrance portal—spans Cypress Avenue (the entrance road) approximately 800’ east of its intersection with El Camino Real. The gate is located at the base of the rolling hills that form the main body of the cemetery (CL Update Photos 6 and 7). From the 1890s through 1948, an electric trolley line (the “40 line”) ran along the El Camino Real alignment (Shoup et al. 1994: 18-19), and the Trolley Shelter (ca. 1903) for this line remains at the northwest corner of Cypress Lawn East (CL Update Photo 8). See CL # 6 and CL # 22 in the 1993 Historic Resources Inventory form for descriptions of these two structures.

The Hillside Boulevard Gate—a pair of round stone towers designed to resemble turrets—frames the east end of Cypress Avenue (CL Update Photo 9). This structure was added sometime between 1899 and 1915 (USGS 1899 and 1915) after Hillside Boulevard was laid out and Cypress Avenue was extended eastward. See CL # 7 in the 1993 Historic Resources Inventory form for a detailed description of this structure.

The portion of Cypress Avenue that leads into Cypress Lawn West lacks an entrance structure but is on axis with the alignment of the road and the Main Entrance Gate in Cypress Lawn East. This road provides the only entrance into Cypress Lawn West.

4. Road System and Spatial Organization within the Cemetery

As noted in the previous section, Cypress Lawn Memorial Park consists of two separate components—Cypress Lawn East and West—located on opposite sides of El Camino Real. The main entrance into each component of the cemetery is from El Camino Real, with the entrance roads on opposite sides of the street aligned on a common axis. The historic buildings for each component are clustered within the fairly level ground adjacent to El Camino Real. The sloping hillside of the cemetery proper provides a picturesque setting behind (above) each building cluster, and in Cypress Lawn East, a lake and pond system, located between the main buildings and El Camino Real, provides the foreground setting for this visual composition. These entrance features on either side of El Camino Real provide the public face for the cemetery and create a transition zone between the profane everyday world and the more sacred space of the cemetery landscape. The road alignment, grading, vegetation, buildings, and monuments all contribute to the idealized naturalistic or rural landscape setting that has been carefully created within the cemetery. The foundation for this design is the road system, as described below.

In Cypress Lawn East, Cypress Avenue, the entrance road, extends up through the center of the cemetery—from El Camino Real to Hillside Boulevard—in a curvilinear alignment. Secondary drives branch off Cypress Avenue in a series of loops to create four, irregularly-shaped sections

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[5] This structure is identified as the “Mission Road Gate” in the 1994 BART report and 1993 Historic Resources Inventory form; however, the road is known as “El Camino Real” at this point and the cemetery’s address is 1370 El Camino Real.

Construction dates throughout this update are those provided in the 1993 Historic Resources Inventory form unless otherwise noted.

along each side of this central axis. A band of land that wraps around the northern, eastern, and southern outer edges. These sections are identified alphabetically (Sections B, C, D, etc.). The secondary drives are named for trees (Myrtle, Willow, Acacia, Linden, and Magnolia); the exception to this convention are the two drives around Sections D and H, which are known as Jona Avenue and Graceland Avenue, respectively. Cypress Avenue is wide enough for two lanes of traffic (approximately 30' wide), and the secondary drives are generally only one-lane wide (either 15' or 20' wide). All of the streets are paved with asphalt and lack curbs which contributes to rural landscape setting being created within the cemetery. The organization within each section is created by the alignment of the grave markers that identify individual burial plots. These grave markers are aligned in rows that create a series of linear, grass paths within each section; an exception to this general arrangement is the alignment of grave markers in Section D which create a series of concentric circular paths. The large family mausoleum structures are sited in prominent locations—along Cypress Avenue, at the edge of a section, or in small individual plots created by the curving alignment of the roads; the mausoleum often sits on a raised mound that adds to its prominence within the immediate setting. Refer to CL Update Photos 10 to 17 for representative images of the roads and sections.

The road system, grading, vegetation, and monuments are laid out in similar manner in Cypress Lawn West but with some differences. Cypress Avenue makes a broad curve up and around a hill that sits behind (west) of the Cemetery Office Building. At this point, a secondary drive (Oak Avenue) branches off and continues along the southern side of the cemetery; Cypress Avenue continues up through the central portion of the cemetery where it terminates near the western boundary; and another drive (Maple Avenue) branches off and continues up along the northern side. A series of cross drives divide the land into three rows of irregularly-shaped sections (for a total of 10 sections) and a band of land that wraps around the southern, western, and northern outer edges. These sections are referred to as "gardens" and are named after different plants (i.e., Cedar Garden, Rose Garden, Holly Garden, etc.). Cypress Avenue is approximately 30' wide and the secondary drives are 20' wide; all are paved with asphalt; and some have concrete curbs. The roads have a curvilinear alignment but one that feels less pronounced than in Cypress Lawn East. This perception is due mainly to the grading—the sides of the drives are not noticeably banked, as is the case in Cypress Lawn East where the grading accentuates the curves. The grave markers are aligned linearly and divide the sections into a series of linear, grass paths, similar to those in Cypress Lawn East. Cypress Lawn West has only a handful of family mausoleums located in the oldest portion in the northeast quadrant; based on a review of USGS maps, the northeast quadrant was the only portion of Cypress Lawn West to have been formally laid out during the first two decades of the twentieth century (USGS 1899, 1915, and 1939). Refer to CL Update Photos 18 to 21 for representative images of the roads and sections.

5. *Topography*

As noted in the preceding sections, Cypress Lawn East and West are on opposite side of a valley at the base of the San Bruno Mountains. Cypress Lawn East is located the lower slope of the ridge, and the land within this portion of the cemetery slopes down dramatically from Hillside Boulevard toward El Camino Real. The land in Cypress Lawn West slopes down from Junipera Serra Boulevard toward El Camino Real.

Key topographic modifications within Cypress Lawn East include the grading that created the gently rolling topography within each section of the cemetery, banking the sides of secondary drives to accentuate the feeling of their curvilinear alignment, and the addition of fill to create low mounds on top of which individual family mausoleums are placed (CL Update Photos 10, 11, 15, and 16).

Cut and fill at the east end of Cypress Lawn West has created two relatively level terraces (for buildings) which are separated by a broad sloping lawn. The Cemetery Office Building and its parking lot are located on the lower terrace, adjacent to El Camino Real, and the Catacombs and the post-World War II mausoleum complex are located on the upper terrace. The topographic modifications within rest of Cypress Lawn West are less dramatic, and the grading within each section generally has a uniform downward slope to the east (toward El Camino Real) (CL Update Photos 19 and 26).

6. Buildings and Structures

With the exception of the Original Columbarium (1893-1895) which sits at upper edge of Section B (CL Update Photo 22), the main buildings in Cypress Lawn East are clustered in a visually prominent and picturesque location at the west end of the cemetery where they are easily accessible from El Camino Real (and historically from the rail and trolley lines). They sit in a level area on either side of the Main Entrance Gate with the lake and pond complex providing the foreground setting and the gently rolling hill of the cemetery and the slopes of the San Bruno Mountain providing the background.

- The Lakeside Columbarium (1927) and Newell Chapel (visible on a 1937 aerial photograph)[6] are to the south of the Main Entrance Gate and are accessed via a road that branches off Cypress Avenue, runs in front of the buildings, and continues to the shop yard at the southwestern corner of the Cypress Lawn East property (CL Update Photos 23 and 24). The 1993 Historic Resources Inventory provides a description of the Lakeside Columbarium as CL # 1; the Newell Chapel appears to have been overlooked in the 1993 inventory and was not described or identified as a contributing feature.

- The Noble Chapel and Crematory (1892-1893) are to the north of the Main Entrance Gate and are accessed via a road that branches off Cypress Avenue, runs in front of the chapel, and then continues up the hill to connect to the road between Sections B and D (this road is labeled as “Myrtle Drive” on Google Earth) (CL Update Photo 25); the 1993 Historic Resources Inventory provides a description of the Lakeside Columbarium as CL # 2.

Historically, there were only two buildings in Cypress Lawn West, and they were sited in a similar way as buildings in Cypress Lawn East—at the front of cemetery where they are easily accessible to transportation and in a way that both limits the intrusion of buildings into the main body of the burial grounds and uses this landscape to frame the buildings. The Cemetery Office Building (1918, 1934) sits just north of Cypress Avenue at the base of a broadly sloped lawn (CL Update Photo 26). The Catacombs (1915, 1919-1921, 1924) sits at the top of the sloped lawn

[6] The Newell Chapel appears to have been overlooked in the BART report and was not identified as a contributing feature.

above the Cemetery Office Building (CL Update Photo 27). Descriptions of these two buildings are provided on the 1993 Historic Resources Inventory form as CL # 4 and CL # 5, respectively.

A Corporate Yard for maintenance functions is located in the southwestern corner of Cypress Lawn East (CL Update Photo 28) and was historically somewhat isolated from the rest of the cemetery by the Southern Pacific Railroad right-of-way, which extends across the west end of Cypress Lawn East. The 1993 Historic Resources Inventory form identified the buildings in this location as non-contributing resources, presumably due to their apparent age. However, a corporate yard in this location was a part of spatial organization during the period of significance. A building was shown in this location on the 1915 San Mateo USGS map and buildings were present in a 1937 aerial photograph that was reviewed for this update (PAS 1937).[7] Three small buildings—a vehicle barn (ca. 1915), a clubhouse (ca. 1915), and a building whose use is unidentified—directly across the road on the west side of Mission Road are also a component of this maintenance area (CL Update Photos 29 and 30). These buildings are described under CL # 23, CL # 24, and CL # 26 on the 1993 Historic Resources Inventory form.

The addition of buildings and major structures after 1945 (the end of the period of significance) has been limited to Cypress Lawn West.[8] These additions have been concentrated within two areas—in the east end (around the office building and Catacombs area) and along the north and south edges of the cemetery.

- Two large mausoleum buildings were added between 1946 and 1955 to the area south and west of the Catacombs. Then between 2000 and 2002, the area in front of this mausoleum complex and extending down part of the sloped lawn was graded to create a series of terraces (for burial plots) surrounded by low retaining walls and connected by paved paths (CL Update Photos 26 and 31 to 33).

- The Cypress Haven mausoleum was added to the northeast corner between 1989 and 1993; the existing historic road system provides access to this building so no new roads or parking lots were needed (CL Update Photo 34).

- The Heritage Court mausoleum complex was added along the northern edge between 1993 and 2002 (CL Update Photo 35). The parcel that this complex is located on is outside of historic district boundaries shown on Figure 7 in the BART report; however a portion of the new entrance road into the complex is within the district boundaries.

- The Cemetery Office Building (1918, 1934) was remodeled and expanded substantially in 2002 (CL Update Photo 26). As part of this remodeling and expansion, the small

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[7] The “Baca’s Engines and Machine Shop” structures on the adjacent Holy Cross Cemetery “Water Lot were incorrectly identified as being part of Cypress Lawn when, in fact, these are part of the Holy Cross Cemetery Historic District.

[8] Other than the Corporate Yard Buildings A, B, and C—which the 1993 Historic Resources Inventory Form identified as non-historic—no major buildings or structures have been added to Cypress Lawn East since the end of the period of significance in 1945.

flower shop (identified as a contributing feature in the 1993 Historic Resources Inventory form) located to the north of the building was removed.[9]

The additions adjacent to the Catacombs have created a wall of buildings that extends across the top of the sloped lawn behind the Cemetery Office and blocks the views of the cemetery that once provided the backdrop to the two original buildings (the Cemetery Office and the Catacombs). However, the addition of the Heritage Court and Cypress Haven mausoleum complexes at the north and south sides of the cemetery have had little visual impact to the setting and other landscape characteristics within Cypress Lawn West.

7. Burial Monuments and Objects

A wide range of grave marker types—including tablets, flat markers, obelisks, box tombs, urns, benches, pyramids, crosses, Celtic crosses, and figurative sculpture—are found within Cypress Lawn. These memorial objects provide examples of the wide range of designs, materials, and symbolic imagery that were used for grave markers in the late nineteenth century and during the pre-World War II era in the twentieth century. The memorials in Cypress Lawn also reflect the wide range of scales for these types of features during this extended period. The largest of these memorial structures are the 87 family mausoleums,[10] most of which are located in Cypress Lawn East, in a range of revival (Greek, Romanesque, Egyptian, and Gothic) and early twentieth century (Art Deco and Art Moderne) styles. They are sited in prominent locations along Cypress Avenue, or if not along this road, then at the edge a section, often on a slight rise. Cypress Lawn West has only a handful of family mausoleums, and they are located in the northeast quadrant. See CL Update Photos 36 to 39 for examples of these features. Descriptions of examples of the large and elaborate grave markers found throughout Cypress Lawn East and in the northeast portion of Cypress Lawn West are provided as CL # 9, CL # 14, CL # 15, and CL # 16; descriptions of examples of the family mausoleums are provided as CL # 8, CL # 10, CL # 11, CL # 12, CL # 13, CL # 18, CL # 19, CL # 20, and CL # 21..

New grave markers—which are routinely added to the cemetery—reflect current trends and preferences in memorial markers and structures. These new markers are added more often to Cypress Lawn West—because there are more open plots available there—and so have a limited visual impact on the internal core sections at Cypress Lawn East (Sections B, C, D, E, H, I, H, and K). Additionally, the new grave markers are laid out within the existing linear arrangement and are similar in size to the majority of the existing markers in Cypress Lawn West and so have a limited impact on the visual qualities of the landscape (CL Update Photo 40).

The 35,000 bodies from Laurel Hill Cemetery were moved to Cypress Lawn beginning in 1940, and reburied in the three-and-a-half-acre Laurel Hill Garden section of Cypress Lawn West. A large monument, located in the central portion of this section on a slight rise, identifies this mass burial. This monument is prominently located on Cypress Avenue (the main entrance road) immediately above (west) of the Catacombs (CL Update Photo 41). A description of this monument is provided as CL # 27 on the 1993 Historic Resources Inventory form.

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[9] The dates for the additions of these buildings and structures are based on a review of aerial photographs from the Pacific Aerial Survey collection and Google Earth.

[10] The 1993 Historic Resources Inventory form and 1994 BART report state that there are 87 family mausoleums.

8. Vegetation Features

The primary vegetation features in Cypress Lawn are the lawn, the large trees, and large specimens of shrubs. Grass fills the areas between individual monuments within the individual sections, and each section of lawn is maintained through regular mowing and irrigation to create an expansive green groundcover throughout the cemetery.

The trees and shrubs—many approaching the size of small trees—are planted in informal arrangements within the sections, sometimes as single specimens and sometimes in small groups. As noted in the 1993 Historic Resource Inventory form, there are species of cypress, pine, fir, cedar, redwood, eucalyptus, palm, magnolia, olive, oak, pepper, and acacia—each of which were commonly planted in northern California during the period of significance and reflect popular tastes in landscaping from that extended era. There are remnants of the rows of trees that were used to buffer views along the edges of the cemetery. During the period of significance, this was a more prominent vegetation feature. Trees stretched along the north side of Cypress Lawn East, next to the Hills of Eternity cemetery, from El Camino Real up past Section D; over the years most of this row was removed so that today, this band only remains at the lower end next to the pond complex. Similarly, in the 1930s and 1940s, a band of trees defined the lower portions of the boundaries on the north and south sides of Cypress Lawn West; today, only a small section of this boundary planting remains at the lower end of the north side (wrapping around Mausoleum Avenue and extending up to the recent Heritage Court complex). Until the post-World War II era, when the housing along Arlington Avenue was added, the land to the north and south of Cypress Lawn West was open and there was no need for a landscape buffer for the largely undeveloped upper sections of the cemetery. The band of eucalyptus along the western boundary (next to Junipera Serra Boulevard) has been in place at least since the 1930s (PAS 1937). As noted in the 1993 Historic Resource Inventory form, there are species of cypress, pine, fir, cedar, redwood, eucalyptus, palm, magnolia, olive, oak, pepper, and acacia.

The shrubs—many approaching the size of small trees—are also planted in informal arrangements within the sections, again as single specimens or in small groups. Most of the large shrubs are in Cypress Lawn East; there are fewer shrubs planted within the sections of Cypress Lawn West, giving it a more open planting scheme. There is a wide range of shrub species; some of the most common varieties are juniper, holly, boxwood, and yew. These shrubs were commonly planted in northern California during the period of significance. Refer to CL Update Photos 4, 10, 11, 14, and 17 to 19 for representative views of the vegetation features.

9. Water Features

The entrance road into Cypress Lawn East is flanked by a small lake to the south and group of interconnected ponds to the north. The two-acre lake is roughly oval in shape and is approximately 550’ long by 200’ at its widest (CL Update Photo 42). Based on a review of historical USGS maps, it appears to have been added between 1899 and 1915. A metal rail fence which is mounted onto a concrete foundation surrounds the rim of the lake; this fence was added sometime after the photograph of the lake in the 1993 Historic Resource Inventory form was taken.

The pond complex to the north of the entrance road includes five irregularly-shaped, concrete-lined ponds set within a gently sloping lawn. The ponds are connected by narrow, concrete-lined channels and have ornamental trees, shrubs, and flowering plants around their edges (CL Update Photos 43 to 45). A brick-mosaic sidewalk (held in place by a stone retaining wall) provides a public sidewalk along El Camino Real; this sidewalk connects to a similar sidewalk, which provides a connection to the Trolley Shelter, along the north edge of the pond complex and via a staircase to a sidewalk that runs between two of the ponds in the center of the complex. This sidewalk system ends about half way up the slope between the ponds and the road that runs in front of the Nobel Chapel; the sidewalk ends at what was historically the alignment for the Southern Pacific Railroad right-of-way, which ran north-to-south through this front portion of Cypress Lawn East. Based on a review of aerial photographs, this pond and sidewalk complex were in place by 1945 (the end of the period of significance) (PAS 1937 and 1946).

10. Views and Vistas

Views within the cemetery are dominated by the monuments and the vegetation (the lawn and the trees and other large plantings). Due to the layout of the roads, the grading, and the arrangement of the plantings, views within the cemetery are largely self-contained. The only views into adjacent properties are along the edges of the cemetery. For example, in Cypress Lawn East, there are views into the adjacent historic cemeteries to the north (Hills of Eternity) and south (Holy Cross). In Cypress Lawn West, there are views of the non-historic residential and commercial development along the northern and southern edges.

The views along the eastern edge Cypress Lawn East are of the undeveloped San Bruno Mountain ridge. The views along its western edge are of Cypress Lawn West (on the hillside on the opposite side of El Camino Real), with more distant vistas of the ridge and development to the west. The views along the eastern edge of Cypress Lawn West are primarily of Cypress Lawn East (on the hillside on the opposite side of El Camino Real), with more distant vistas of the San Bruno Mountain.

In Cypress Lawn East, the most prominent visual intrusions are the views of the Serramonte Boulevard commercial development that is visible along portions of the northern edge of the cemetery. In Cypress Lawn West, the residential development along Arlington Drive, visible from the south side of the cemetery and the commercial development along Collins Avenue, visible from the north side, are the primary visual intrusions.

Refer to CL Update Photos 2, 4, 5, 6, 10, and 19 for representative images of the views and vistas.

B. 2015 Contributing and Non-Contributing Features Update

Each of the contributing features listed as representative examples in the BART report remain in place.

In summary, the following changes have been noted for the contributing and non-contributing features that were identified in the 1994 BART report for the Cypress Lawn Historic District:

- Newell Chapel (a major building in Cypress Lawn East) was inadvertently not identified in the 1994 BART report and is in fact a contributing feature.

- Five features at 1690 Mission Road were mistakenly identified (CL # 25/Baca's Engines and Machine Shop) as being within the Cypress Lawn Historic District in the BART report (Shoup et al. 1994: 25) and on the Historic Resources Inventory Form (Shoup et al. 1993). Two of these five features—the pump house and the aboveground reservoir—were identified as contributing features in the BART report; the contributory status of the other three features—the two well houses and a carpenter's shop—was not clearly stated in the BART report. However, all five of these features are and always have been a part of the Holy Cross Cemetery property and are located on what was known in 1923 as the "Water Lot" (Pope 1923). The land on which these features are located was correctly shown as being within the Holy Cross Cemetery Historic District on Figure 8 of the BART report; however, Figure 6 in the BART report incorrectly showed this area as being a part of the Cypress Lawn Historic District.

  The additional research undertaken as part of this update shows that all five features were a part of the Holy Cross Cemetery water system. The pump house, the reservoir, the carpenter's shop (with an interior well), and the well house north of the pump house were all shown on the 1923 map (see Figure B-2). The well house south of the pump house appears to have been a part of the site by 1945 (the end of the period of significance); it has a similar construction as the other well house, has architectural details that resemble the pump house, and a building with a similar footprint is shown on a 1937 aerial photograph.

  In summary, these five features are all contributing features to the Holy Cross Cemetery Historic District; this correction has been noted in the update to the Holy Cross Cemetery Historic District in Appendix B, and the boundaries of the Cypress Lawn Memorial Park Historic District have been corrected on Figure C-1 at the end of this appendix.

- As noted in the expanded description for this update, the cultural landscape features and characteristics that were a part of Cypress Lawn by 1945 also contribute to the significance of the historic district and retain integrity; these include its circulation features, the spatial organization, topographic modifications, vegetation features, buildings and structures, burial structures and objects, constructed water features, and views and vistas.

- The post-World War II mausoleum complex (constructed between 1946 and 1955 [PAS 1946 and 1955]) next to the Catacombs and the Cypress Haven mausoleum (constructed between 1989 and 1993) in Cypress Lawn West are non-contributing buildings that were not identified in the 1994 evaluation.

The only notable changes and additions to the Cypress Lawn Historic District since the 1994 evaluation have occurred in Cypress Lawn West:

- The Cemetery Office Building (1918, 1934) was remodeled and substantially expanded in 2002, and the small flower shop located at the north end of this building was removed. Due to these alterations, the Cemetery Office Building no longer retains its integrity and should be reclassified as a non-contributing building.

- The Heritage Court mausoleum complex in Cypress Lawn West was added to the north of the Historic District between 1993 and 2002. The parcel that this complex is located on is outside of the historic district boundaries shown on Figure 7 in the BART report; however a portion of the new entrance road into the complex is within the district boundaries.

- Between 2000 and 2002, the area in front of the post-World War II mausoleum complex in Cypress Lawn West and extending down part of the sloped lawn was graded to create a series of terraces (for burial plots) surrounded by low retaining walls and connected by paved paths

These changes and additions have not substantially altered the characteristics and features that express the cemetery's significance under Criteria A, B, and C, and the Cypress Lawn Memorial Park Historic District appears to retain its integrity.

New grave markers continue to be added to individual plots in the cemetery on a routine basis; these grave markers are non-contributing objects and most tend to located in sections of Cypress Lawn West; they do not substantially alter the characteristics and features that express the cemetery's significance or integrity under Criteria A, B, and C.

Figure C-1 uses a current Cypress Lawn map as a base to show the corrected historic district boundaries, the locations of the features listed in the BART report, and the locations of the key changes and additions since the 1994 BART report's evaluation (as noted in the list above). Representative photographs of the historic district are also provided at the end of this appendix.

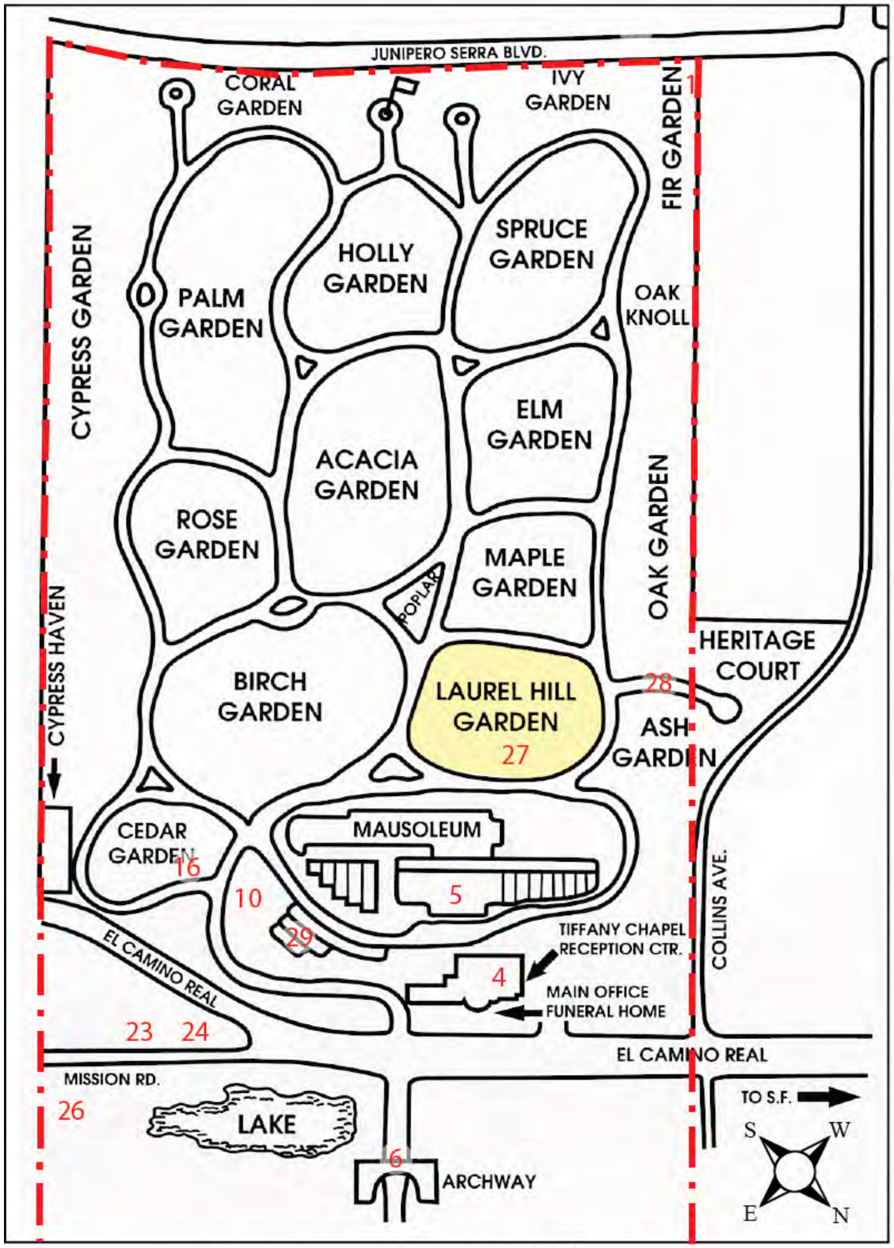
C. 2015 Boundary Update

In general, the boundary for the Cypress Lawn Memorial Park Historic District remains the same as identified in the 1994 evaluation with the following exception. The small jog shown in the Cypress Lawn boundary on Figure 6 of the BART report which identified the land and two structures at 1690 Mission Road as being a part of the Cypress Lawn Historic District is incorrect; this land and the two structures—a pump house and an aboveground reservoir—are part of the Holy Cross Cemetery History District. Figure C-1 shows the corrected boundary.

D. Summary for the 2015 Update

In summary, the Cypress Lawn Memorial Park Historic District continues to be significant under National Register Criteria A, B, and C. Under Criterion A, Cypress Lawn is significant for its association with the conflict over cemeteries in San Francisco and the forced removal and transfer of graves to new cemeteries in Colma; the graves from the Laurel Hill Cemetery were relocated to Cypress Lawn between 1937 and about 1947. Under Criterion B, the cemetery is significant for its association with the graves of numerous persons who were important to California history. Under Criterion C, it is significant as an example of the evolution of landscape design style for cemeteries during the late-nineteenth century and the first half of the twentieth century and includes examples of the landscape characteristics associated with the rural cemetery, lawn-park, and memorial park styles of design. Under Criterion C, it is also significant for its collection of funerary art and architecture that illustrate the evolution of cemetery design during the late-nineteenth century and first half of the twentieth century. The property continues to meet Criteria Consideration D since it derives its primary significance from its association with historic events, the graves of persons of transcendent importance located in Holy Cross, and the cemetery's distinctive design features. The Cypress Lawn Memorial Park Historic District has not been substantially altered since 1994 and thus appears to retain its integrity and to continue to be eligible for listing on the National Register.

With the exception of the correction for the placement of the Baca's Engines and Machine Shop features (CL # 25) in the Holy Cross Cemetery Historic District, the boundaries remains the same as shown in Figures 6 and 7 in Appendix I of the BART report; the corrected boundaries are shown in Figure C-1 at the end of this appendix. Contributing features are those buildings, structures, objects, and cultural landscape characteristics that were part of the cemetery by 1945 (the end date for the period of significance) and non-contributing features are those that post-date 1945.



Cypress Lawn West

Representative Examples of Contributing Features in BART Report:

1. Lakeside Columbarium
2. Noble Chapel and Crematory
3. Original Columbarium
4. Cemetery Office Building
5. The Catacombs
6. Main Entrance Gate
7. Hillside Boulevard Gate
8. Charles DeYoung Memorial
9. Rogers Tomb
10. Daniel Murphy Mausoleum
11. Thorne Family Monument
12. Charles Crocker Family Mausoleum
13. Hearst Family Mausoleum
14. Anderson Monument
15. Valentine Monument
16. Hiram W. Johnson Mausoleum
17. Tevis Monument
18. Nager Mausoleum
19. Niebaum Mausoleum
20. Row of Mausoleums
21. Claus Spreckels Mausoleum
22. Trolley Shelter
23. Vehicle Barn
24. Clubhouse
25. Baca's Engines and Machine Shop (should be shown in Holy Cross Cemetery)

Representative Examples of Non-Contributing Features in BART Report:

26. Corporate Yard
27. Laurel Hill Memorial

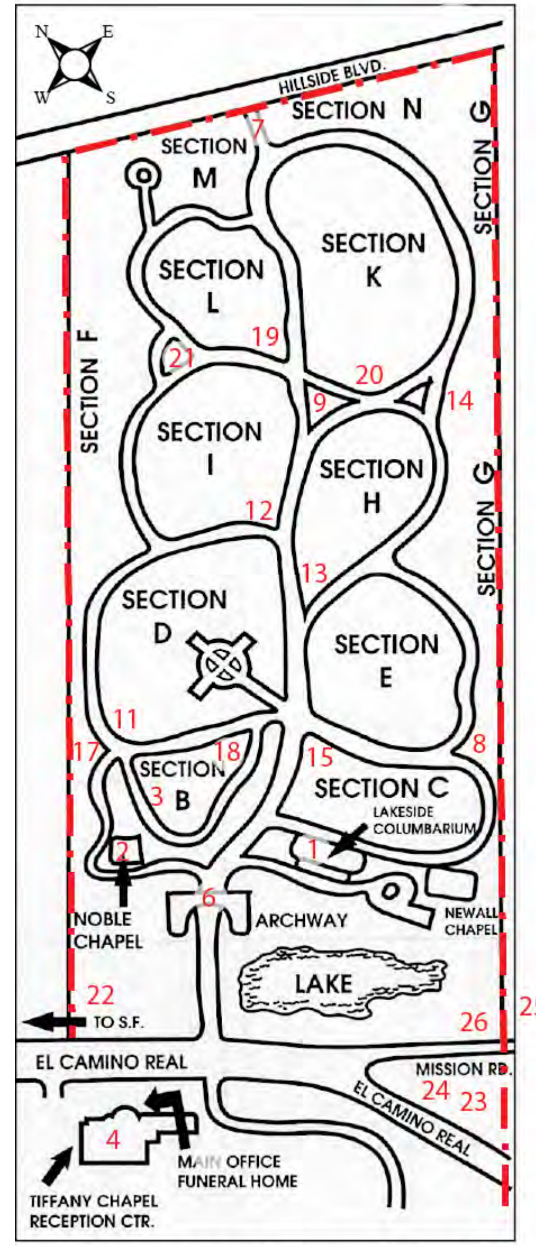
Major Non-Contributing Features Added since BART Report:

28. Heritage Court and access road
29. Terraced burial plots

Key from BART Report:

Historic District Boundaries

Area of Post-1945 Development



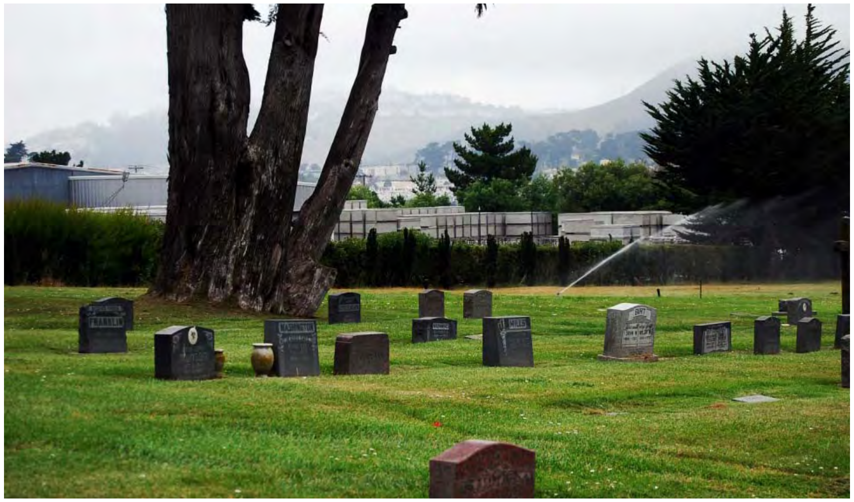
Cypress Lawn East

Figure C-1. Cypress Lawn Memorial Park Historic District

CL Update Photo 1. Open boundary between Cypress Lawn East and Holy Cross Cemetery.

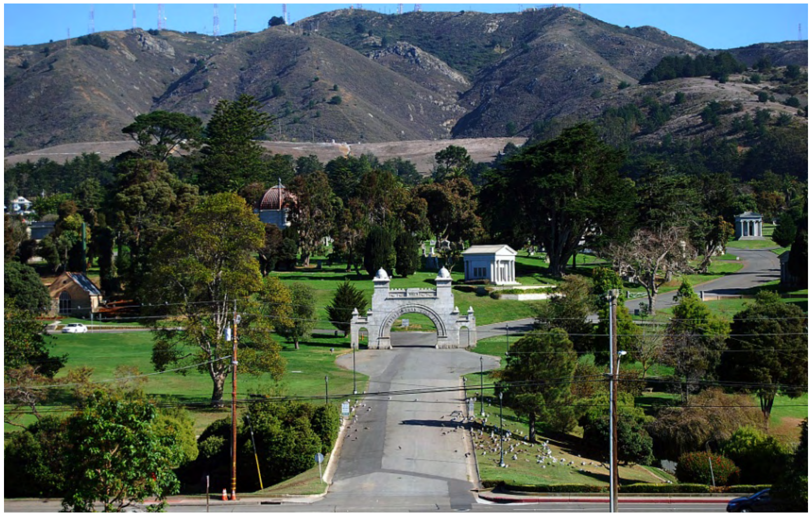
CL Update Photo 2. Boundary wall between Cypress Lawn East and Hills of Eternity.

CL Update Photo 3. New section of concrete block wall along the Hillside Boulevard boundary.



CL Update Photo 4. Example of the chain-link fence and vegetation found along the boundary next to the developments along Arlington Drive and Collins Avenue.

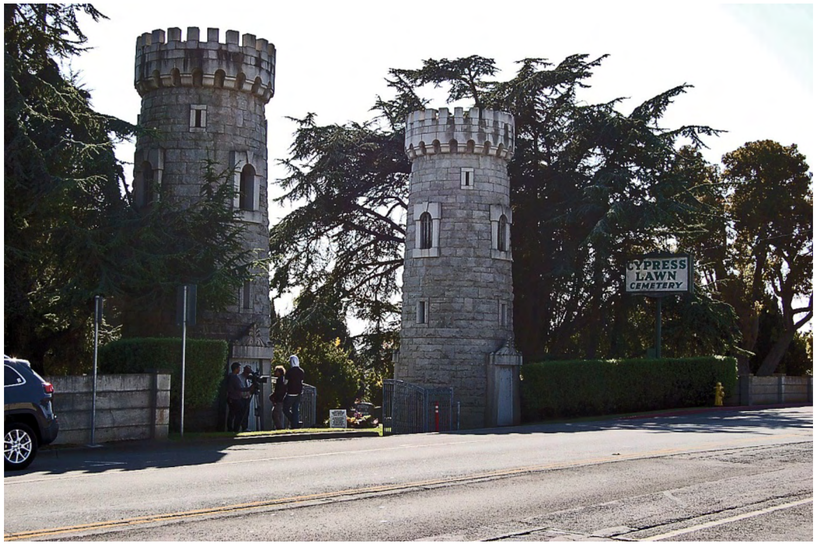
CL Update Photo 5. Eucalyptus trees along the Junipers Serra Boulevard boundary.



CL Update Photo 6. Entrance to Cypress Lawn East, overview of the cemetery, and setting provided by San Bruno Mountain.

CL Update Photo 7. Main Entrance Gate.

CL Update Photo 8. Trolley Shelter.

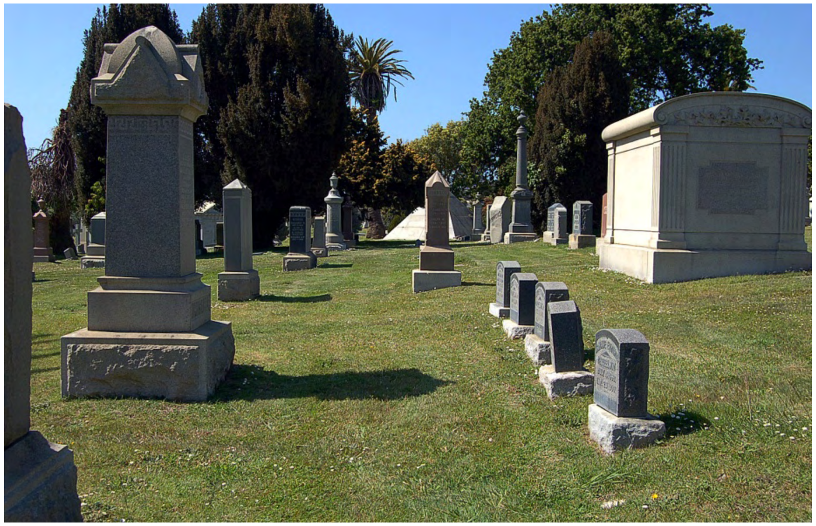


CL Update Photo 9. Hillside Boulevard Gate.

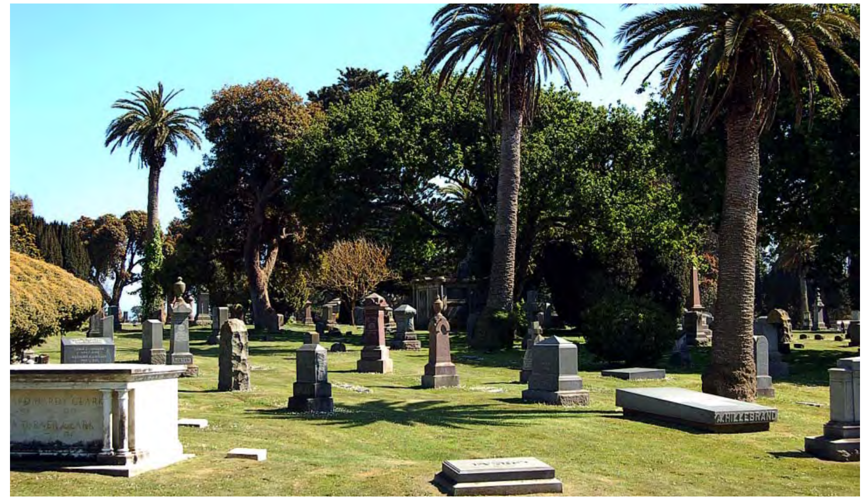
CL Update Photo 10. Cypress Avenue, the main road that forms axis through Cypress Lawn East. Views toward Cypress Lawn West.

CL Update Photo 11. Graceland Avenue, one of the narrow secondary roads in Cypress Lawn East.

CL Update Photo 12. Jona Avenue, one of the narrow secondary roads in Cypress Lawn East.

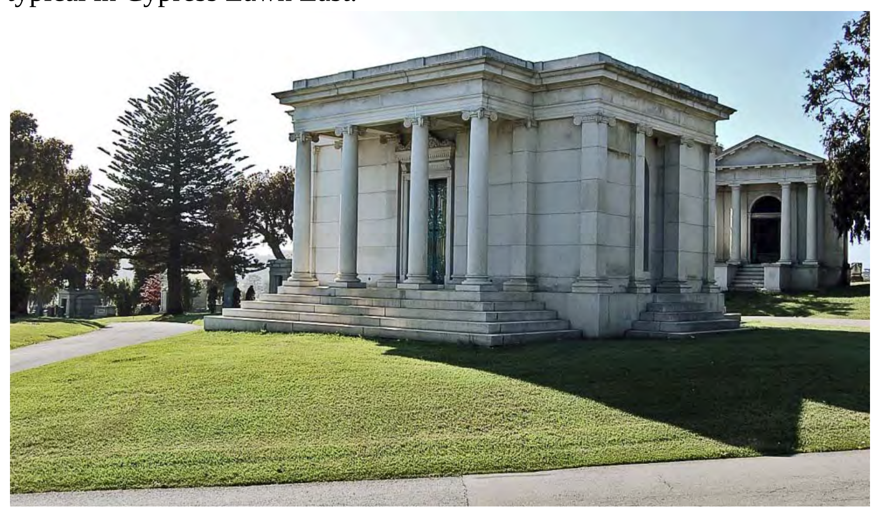


CL Update Photo 13. Section E showing the linear arrangement and the range of styles of grave markers that is typical in Cypress Lawn East.



CL Update Photo 14. Section E showing the linear arrangement and the range of styles of grave markers and the mature vegetation that is typical in Cypress Lawn East.

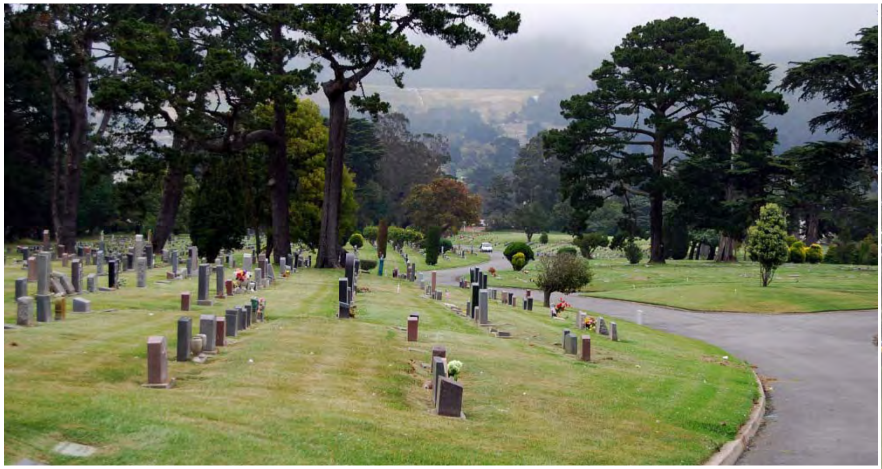
CL Update Photo 15. Nager Mausoleum set on a low mound at the edge of Section B as an example of the siting that contributes to the prominence of family mausoleums in Cypress Lawn East.



CL Update Photo 16. Spreckles Mausoleum set on a low mound within its own plot as an example of the siting that contributes to the prominence of family mausoleums in Cypress Lawn East.

CL Update Photo 17. Cypress Avenue showing slope and curvilinear alignment of Cypress Avenue, the siting of family mausoleums along the edge of sections, and role that mature vegetation plays in the setting and containing views in Cypress Lawn East.

CL Update Photo 18. View up Cypress Avenue as an example of the slope and curvilinear alignment of the roads and the linear alignment of grave markers that are typical in Cypress Lawn West. Views toward eucalyptus boundary at Junipera Serra Boulevard.



CL Update Photo 19. View down Maple Avenue as an example of the slope and curvilinear alignment of the roads and the linear alignment of grave markers that are typical in Cypress Lawn West. Views toward Cypress Lawn East and San Bruno Mountain.

CL Update Photo 20. Daniel Murphy Mausoleum, as an example of one of the few family mausoleums in the eastern corner of Cypress Lawn West.

CL Update Photo 21. Buck Mausoluem, set on a low mound within its own plot, as an example of one of the few family mausoleums in the northeast portion of Cypress Lawn West.

CL Update Photo 22. Original Columbarium.

CL Update Photo 23. Lakeside Columbarium.

CL Update Photo 24. Newall Chapel.

CL Update Photo 25. Noble Chapel and Crematory.

CL Update Photo 26. Cemetery Office Building, broad sloping lawn that is a characteristic topographic feature, and the Catacombs and Mausoleum complex at the top of this bank in Cypress Lawn West.

CL Update Photo 27. The Catacombs.

CL Update Photo 28. Corporate Yard in the southern corner of Cypress Lawn East.

CL Update Photo 29. Vehicle Barn on Mission Road.

CL Update Photo 30. Clubhouse and additional building on Mission Road.

CL Update Photo 31. Mausoleum complex in Cypress Lawn West.

CL Update Photo 32. Terraced plots in front of the mausoleum complex in Cypress Lawn West.

CL Update Photo 33. Portion of the terraced plots that have been added to the sloped lawn area south of the Mausoleum Avenue.

CL Update Photo 34. Cypress Haven Mausoleum in Cypress Lawn West.

CL Update Photo 35. Heritage Court Mausoleum in Cypress Lawn West, located outside of the historic district boundaries.

CL Update Photo 36. DeYoung Monument, in Section G, as an example of the large monuments found in Cypress Lawn East.

CL Update Photo 37. Anderson Monument, in Section G, as an example of the figurative sculptures found in Cypress Lawn East.

CL Update Photo 38. Kyros Monument, in Section B, as an example of the elaborate carving on tablet monuments in Cypress Lawn East.

CL Update Photo 39. Graves Monument, in Section B, as an example of the range of memorial features found in Cypress Lawn East.

CL Update Photo 40. Examples of non-historic markers, in the Coral Garden Section of Cypress Lawn West, laid out in the same linear arrangement that has historically characterized the cemetery.

CL Update Photo 41. Laurel Hill Memorial in the Laurel Hill Garden Section of Cypress Lawn West.

CL Update Photo 42. Large lake at the entrance to Cypress Lawn East.

CL Update Photo 43. Series of interconnected ponds at the entrance to Cypress Lawn East.

CL Update Photo 44. Brick paths around the ponds connect to the Trolley Shelter and the public sidewalk along El Camino Real.

CL Update Photo 45. Public sidewalk (same brick paving) along El Camino Real and stone retaining wall.

APPENDIX D:

SHPO CONCURRENCE LETTER FOR EVALUATIONS IN 1994 BART REPORT

STATE OF CALIFORNIA — THE RESOURCES AGENCY

PETE WILSON, Governor

OFFICE OF HISTORIC PRESERVATION

DEPARTMENT OF PARKS AND RECREATION

P.O. BOX 942896

SACRAMENTO 94296-0001

(916) 653-6624

FAX: (916) 653-9824

September 22, 1994

REPLY TO: UMTA900828A

Stewart F. Taylor, Regional Administrator
U.S. Department of Transportation, Region IX
Federal Transit Administration
211 Main Street, Room 1160
SAN FRANCISCO CA 94105

Project: BART - San Francisco Airport Extension

Dear Mr. Taylor:

Bay Area Rapid Transit has forwarded on your behalf the following documents, "Archaeological Resources Technical Report" and "Archaeological Survey Report". In addition, original photographs illustrating the details of the historic resources evaluation have been provided in order to facilitate the review of the seven cemeteries. My staff has reviewed and provides the following comments on the documentation you submitted in support of the cited project.

The archeological report indicates that one site was previously recorded within the Area of Potential Effect (APE) of the undertaking. No other archeological properties were identified during the inventory. Surface remains of CA-SMa-299 could not be identified. An augering program was initiated, but no subsurface remains were identified. The contractor then recommends backhoe testing be undertaken prior to the commencement of the project to ensure identification and evaluation of this site.

The recommendations in the report suggest the identification effort is not adequate. The list of auger holes and the accompanying USGS map with the auger holes marked on it gives little indication of the distance between the auger holes or a justification for the locations chosen. The descriptions of the locations of the auger holes is lacking in many cases. The map lacks sufficient detail. It would be much better if one or two maps were prepared that delineate the limits of the recorded site and the auger holes placed within and in the vicinity of the recorded site. A second map could be prepared delineating, in greater detail, the auger hole locations south of the recorded site.

I would like to have copies of the documentation of your efforts under 36 CFR 800.4(a)(1)(iii) to seek information and comments from Indian tribes.

You have considered the eligibility of seven cemeteries within the Area of Potential Effect (APE) for the undertaking. You have determined that five cemeteries make up four cemetery districts. These are the (1) Italian Cemetery, (2) the Home of Peace and the Hills of Eternity Memorial Park, (3) The Cypress Lawn Memorial Cemetery, and (4) the Holy Cross Cemetery. The statement of significance on which the determination is based is on pages twenty eight through thirty of *"A Historic Resources Evaluation Report of Seven Colma Cemeteries, Colma, California"*.

In your background you have provided a context that documents that history of the removal of the cemeteries from San Francisco and the development of the cemeteries in Colma. You state that this was a significant event in San Francisco's history and that it was a rare event in modern United States history. You have also stated that state and legal laws were the basis for a long legal and political battle over the fate of the cemeteries in San Francisco. However, this context statement is not used in the significance of the cemeteries and the determination of eligibility under criterion A.

You have determined that the Italian Cemetery is eligible as a district for the National Register of Historic Places (NRHP) under criterion C. I concur with your determination that the Italian Cemetery is eligible for the NRHP under criterion C. It appears this cemetery could also be eligible under criterion A. Was this still the only Italian Cemetery in the United States when it was established?

You have determined the Home of Peace Cemetery and the Hills of Eternity Memorial Park are eligible for the NRHP as a district under criteria B and C. I concur with your determination that the Home of Peace Cemetery and the Hills of Eternity Memorial Park are eligible for the NRHP as a district under criteria B and C. Please consider eligibility of this property under criterion A for the previously mentioned significance and because the Home of Peace is the largest and oldest Jewish Cemetery in the west.

You have determined the Cypress Lawn Memorial Park is eligible for the NRHP as a district under criteria B and C. I concur with your determination that the Cypress Lawn Memorial Park is eligible for the NRHP as a district under criteria B and C. Could this cemetery be considered under criterion A because it was the first non-religious cemetery at Colma or because of its association with the removal of cemeteries from San Francisco?

You have determined the Holy Cross Cemetery is eligible for the NRHP as a district under criteria B and C. I concur with your determination that the Holy Cross Cemetery is eligible for the

NRHP as a district under criteria B and C. Could this cemetery be considered under criterion A because because of its association with the removal of cemeteries from San Francisco?

You consider the eligibility of the Eternal Home Cemetery and the Salem Memorial Park, stating they do not appear to qualify for the NRHP. However, it is not clear whether you considered the eligibility of these properties under criterion A for the association with the removal of cemeteries from San Francisco. Please provide an assessment of all of the cemeteries as it relates to this context. Is it possible there could be a larger district of cemeteries related to this event?

Your reports indicate that the BART alignment will parallel the Southern Pacific railroad tracks. Are the Southern Pacific railroad tracks a historic property?

Your consideration of historic properties in the project planning process is appreciated. If you have any questions regarding our review of this undertaking, please call Gary Reinoehl of our staff at (916) 653-5099.

Sincerely,

Cherilyn Widell
State Historic Preservation Officer

cc: Joan A. Kugler, AICP, Planning Manager, BART District

APPENDIX E:

COLMA VETERANS VILLAGE PROJECT PLANS

PROJECT DESCRIPTION

The Veterans Village is a 66 unit affordable housing community in Colma. The 2.2 acre site is situated between Cypress Lawn and Holy Cross cemeteries along Mission Road and includes a new two/three story residential building and the preservation of the historic pump building for use by residents. Two large residential courtyards, a garden area and a dog park for the wider community are also planned as part of the development. 71 parking spaces are provided through two parking areas, one adjacent to Cypress Lawn Cemetery and another along the BART access road behind the garden areas.

The massing of the new residential building steps down to a spacious one story social hall adjacent to the pump building, where an entry trellis guides residents and visitors into an entry courtyard and the main lobby of the building. The pump building will be preserved and enhanced as a workshop space and bicycle storage area for use by residents, with new storefront glazing to reinforce the visual relationship between the residential building, the social courtyard, the exposed concrete volume of the pump building and the gardens beyond.

The building also steps down to two stories as it meets the parking area that borders Cypress Lawn Cemetery and the maintenance buildings along it's eastern edge. Landscaping will screen views to and from the adjacent cemetery, as well as to the BART ventilation structure to the north of the site.

PROJECT DIRECTORY

DEVELOPER
Mercy Housing
1360 Mission Street #300
San Francisco, CA 94103
Tel: 415.355.7116
Contact: Michael Kaplan
Email: mkaplan@mercyhousing.org

ARCHITECT
Van Meter Williams Pollack
333 Bryant Street, Suite #300
San Francisco, CA 94107
Tel: 415.974.5352
Contact: Rick Williams, Principal
Ben Chuaqui, Project Architect
Laura Shagalov, Job Captain
Email: laura@vmwp.com

LANDSCAPE ARCHITECT
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Orinda, CA 94563
Tel: 925.254.5422
Contact: Bruce Jett
Email: brucej@landsarch.com

CIVIL ENGINEER
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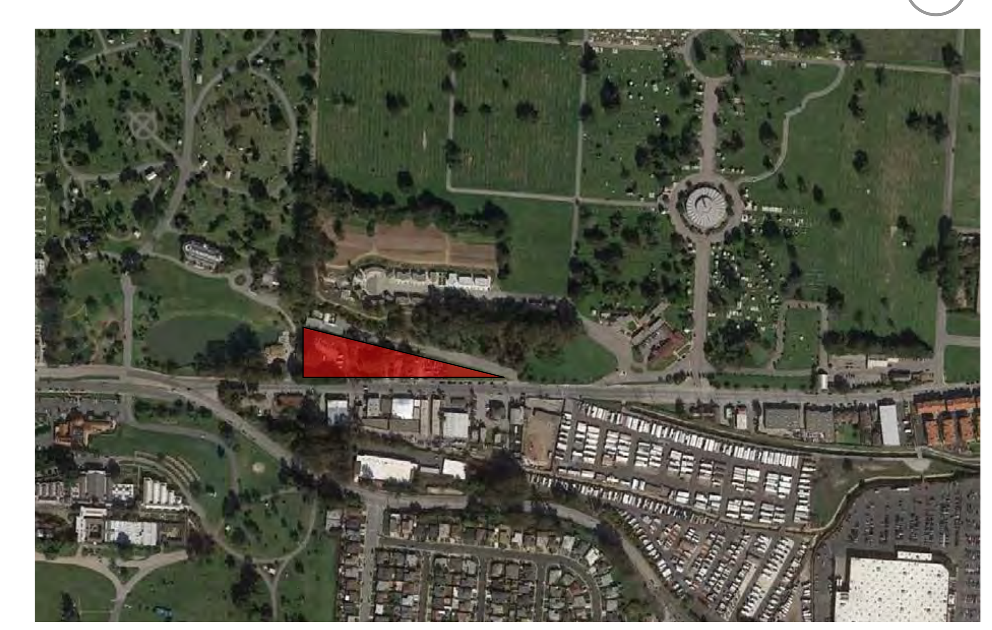
Hercules, CA 94547
Tel: 510.724.3388
Contact: Chris Wood
Email: chris@lukassociates.com

SHEET INDEX

A0.0	COVER SHEET
A0.1	VIEW FROM VEHICLE ENTRY
A0.2	VIEW FROM MISSION ROAD
A0.3	VIEW OF ENTRY
A0.4	VIEW OF COURTYARD
A1.0	SITE SURVEY
A2.0	EXISTING SITE CONDITIONS
A3.0	EXISTING PUMP BUILDING
A4.0	SITE PLAN & PROJECT DATA
A4.1	GROUND FLOOR PLAN
A4.2	SECOND FLOOR PLAN
A4.3	THIRD FLOOR PLAN
A5.1	EXTERIOR ELEVATIONS
L1.1	CONCEPTUAL LANDSCAPE PLAN

VICINITY MAP



COLMA VETERANS VILLAGE | A-0.0 HISTORICAL REVIEW

COLMA, CA | 12/21/15 | MERCY HOUSING | #1502

VAN METER WILLIAMS POLLACK LLP

COLMA VETERANS VILLAGE | A-0.1 VIEW FROM VEHICLE ENTRY

COLMA, CA | 10/9/15 | MERCY HOUSING | #1502

VAN METER WILLIAMS POLLACK LLP

COLMA VETERANS VILLAGE | A-0.2 VIEW FROM MISSION ROAD

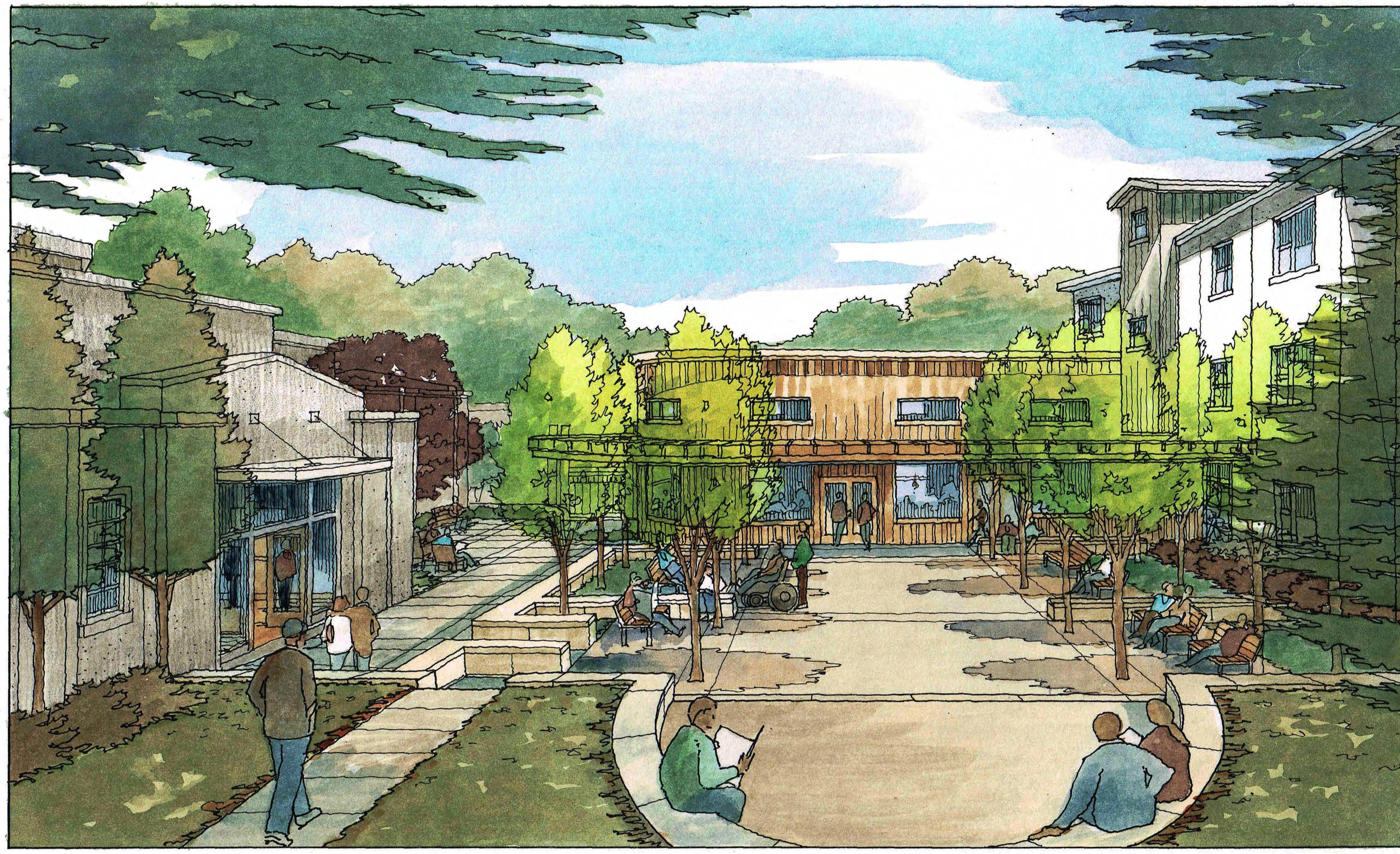
COLMA, CA | 10/9/15 | MERCY HOUSING | #1502

VAN METER WILLIAMS POLLACK LLP

COLMA VETERANS VILLAGE | A-0.3 VIEW OF ENTRY

COLMA, CA | 10/9/15 | MERCY HOUSING | #1502

VAN METER WILLIAMS POLLACK LLP



COLMA VETERANS VILLAGE | A-0.4 VIEW OF COURTYARD

COLMA, CA | 10/9/15 | MERCY HOUSING | #1502

VAN METER WILLIAMS POLLACK LLP

CLIENT
MERCY HOUSING CALIFORNIA
1360 MISSION STREET, SUITE 300
SAN FRANCISCO, CA 94103
ATTN: SHEELA JIVAN
BASIS OF BEARINGS
THE BEARING N42°16'47"W OF THE NORTHEASTERLY LINE OF MISSION ROAD, AS SHOWN ON THAT CERTAIN RECORD OF SURVEY, FILED FOR RECORD ON MAY 18, 2001 IN BOOK 22 OF L.L.S. MAPS AT PAGES 9-12, RECORDS OF SAN MATEO COUNTY, WAS TAKEN AS THE BASIS OF BEARINGS FOR THIS SURVEY.
BENCH MARK
NATIONAL GEODETIC SERVEY VERTICAL BENCHMARK HT0483:
FOUND DISC IN TOP OF THE NORTH CONCRETE GUARDRAIL AT THE JUNCTION OF EASTMOOR AVENUE AND SULLIVAN AVENUE AT DALY CITY.
ELEVATION = 233.63 FEET, BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
SURVEY NOTES
1. DISTANCES, DIMENSIONS AND ELEVATIONS ARE IN FEET AND DECIMALS THEREOF.
2. DATE OF FIELD SURVEY WAS NOVEMBER AND DECEMBER 2014.
3. RECORD BOUNDARY AND EXISTING EASEMENTS AS SHOWN ON THIS SURVEY WAS TAKEN FROM INFORMATION AS PROVIDED IN THE PRELIMINARY REPORT ISSUED BY OLD REPUBLIC TITLE COMPANY, ORDER NO. 0227015059-DP AND DATED AUGUST 15, 2014.
4. RECORD OWNER OF SITE IS "THE ROMAN CATHOLIC ARCHBISHOP OF SAN FRANCISCO, A CORPORATION SOLE".
5. TOTAL SITE AREA IS 2.224 ACRES, MORE OR LESS.
SURVEYOR'S STATEMENT
THIS TOPOGRAPHIC SURVEY WAS PREPARED BY ME OR UNDER MY DIRECTION, AT THE REQUEST OF SHEELA JIVAN OF MERCY HOUSING CALIFORNIA, ON NOVEMBER 6, 2014.
JOHN KOROYAN, P.L.S. NO. 8883
DEC. 19, 2014
DATE
LICENSED LAND SURVEYOR
JOHN KOROYAN
No. 8883
STATE OF CALIFORNIA
LEGEND
GRAPHIC SCALE
(IN FEET)
HOLY CROSS CEMETERY
SAN FRANCISCO AND SAN JOSE RAIL ROAD COMPANY
MISSION ROAD
60' WIDE
(PUBLIC ROAD)
TOPOGRAPHIC SURVEY
1500 MISSION ROAD, COLMA, CA 94014
COLMA
SAN MATEO COUNTY
CALIFORNIA
BKF
ENGINEERS / SURVEYORS / PLANNERS
1650 TECHNOLOGY DRIVE
SUITE 650
SAN JOSE, CA 95110
408-467-9100
408-467-9199 (FAX)
Date: 12-19-2014
Scale: 1" = 20'
Design: JVK
Drawn: MDB
Approved: JVK
Job No: 20146156
Drawing Number:
146156
2 OF 2

4 A-2.0 VIEW TO BART STRUCTURE

3 A-2.0 VIEW OF PUMP BUILDING

2 A-2.0 VIEW FROM MISSION ROAD

1 A-2.0 VIEW OF MISSION ROAD

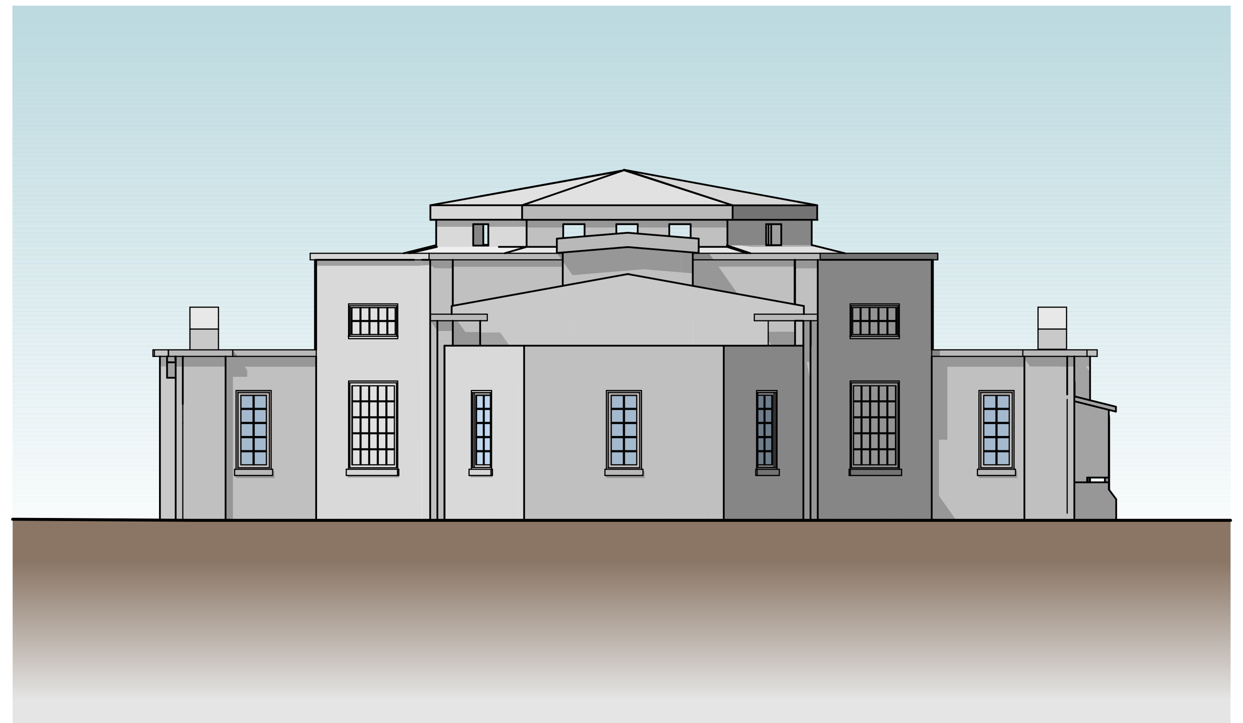
5 A-2.0 VIEW TO MISSION ROAD

6 A-2.0 VIEW FROM BART ACCESS ROAD

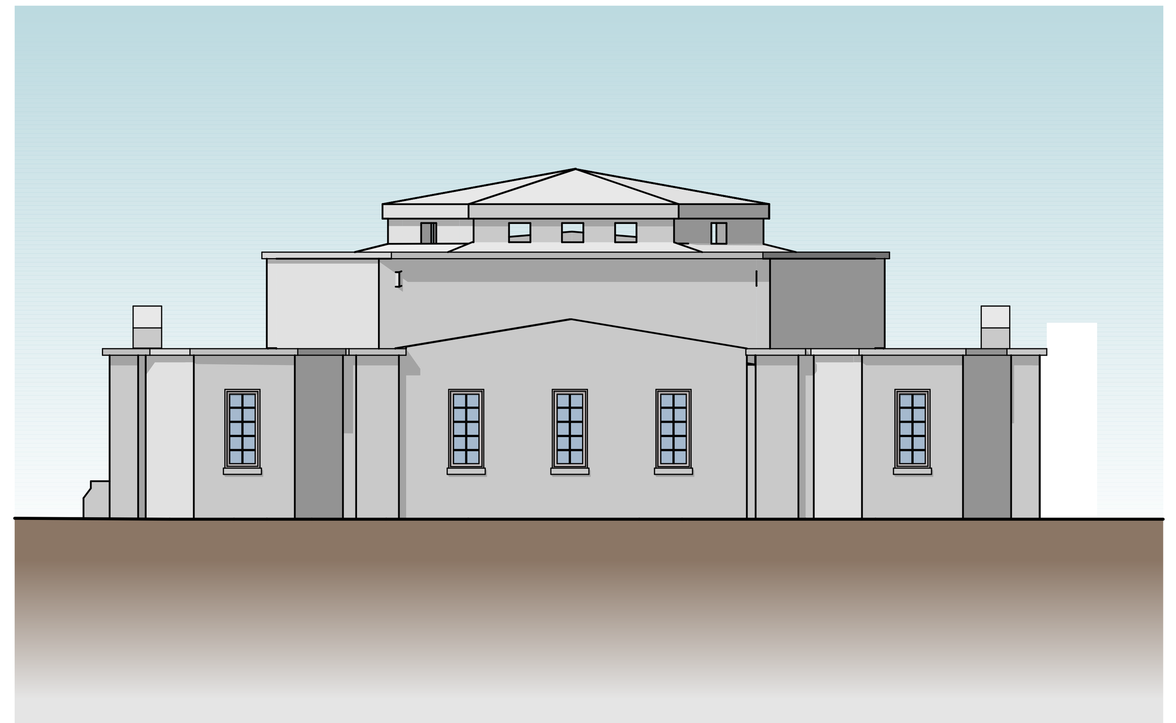
COLMA VETERANS VILLAGE | A-2.0 EXISTING SITE CONDITIONS

COLMA, CA | 10/9/15 | MERCY HOUSING | #1502

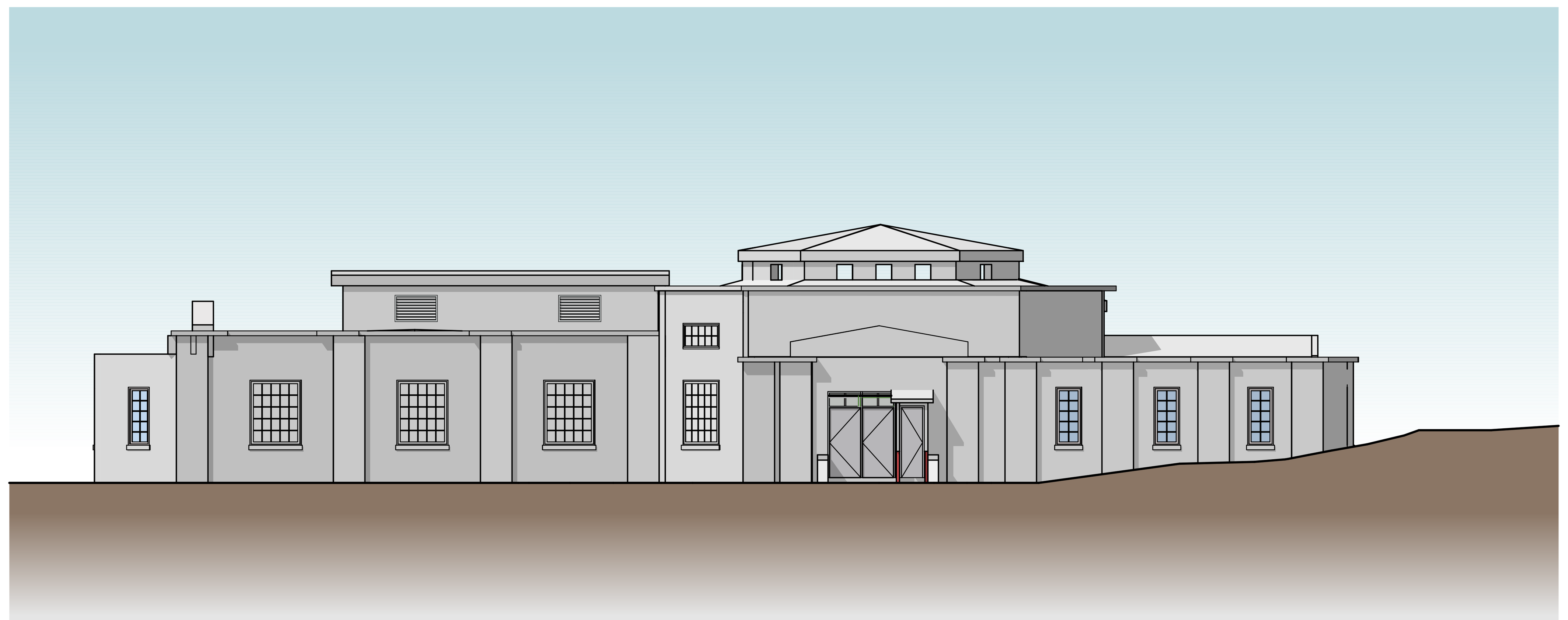
VAN METER WILLIAMS POLLACK LLP



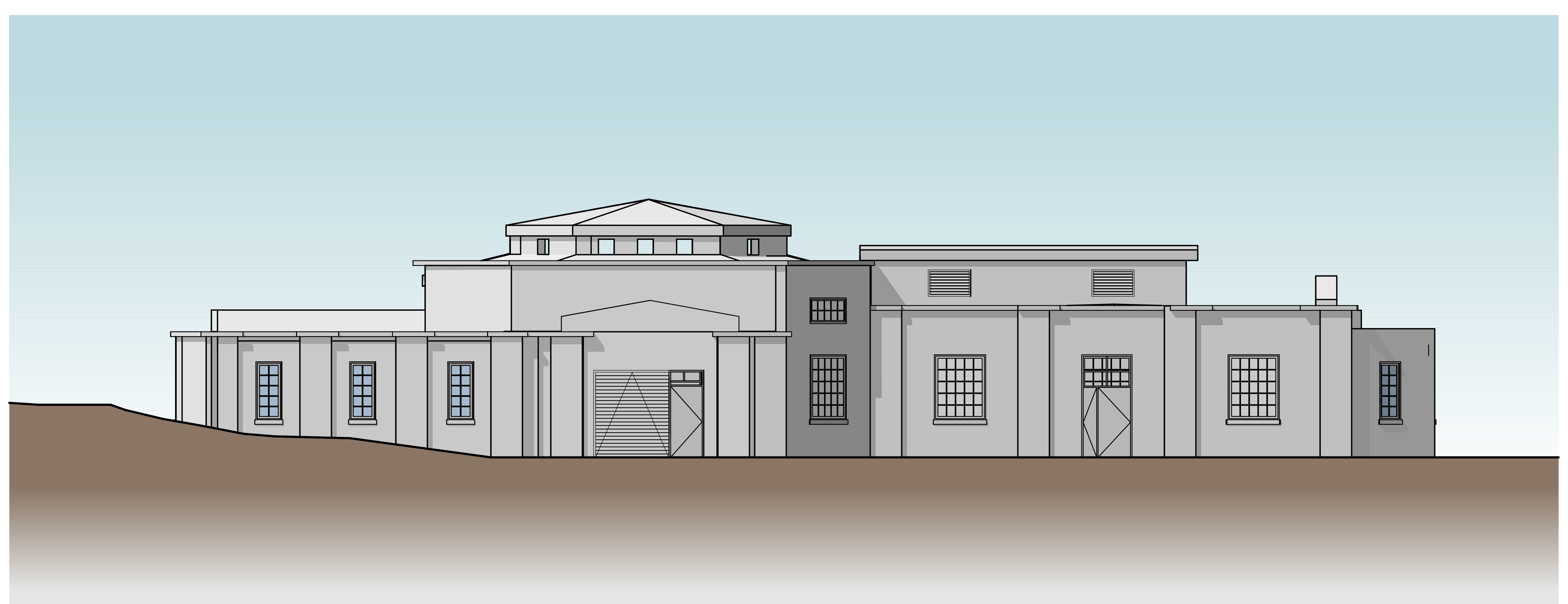
2 A-3.0 **EXISTING WEST ELEVATION**
MISSION ROAD
SCALE: 3/32" = 1'-0"



3 A-3.0 **EXISTING EAST ELEVATION**
SCALE: 3/32" = 1'-0"



4 A-3.0 **EXISTING SOUTH ELEVATION**
SCALE: 3/32" = 1'-0"



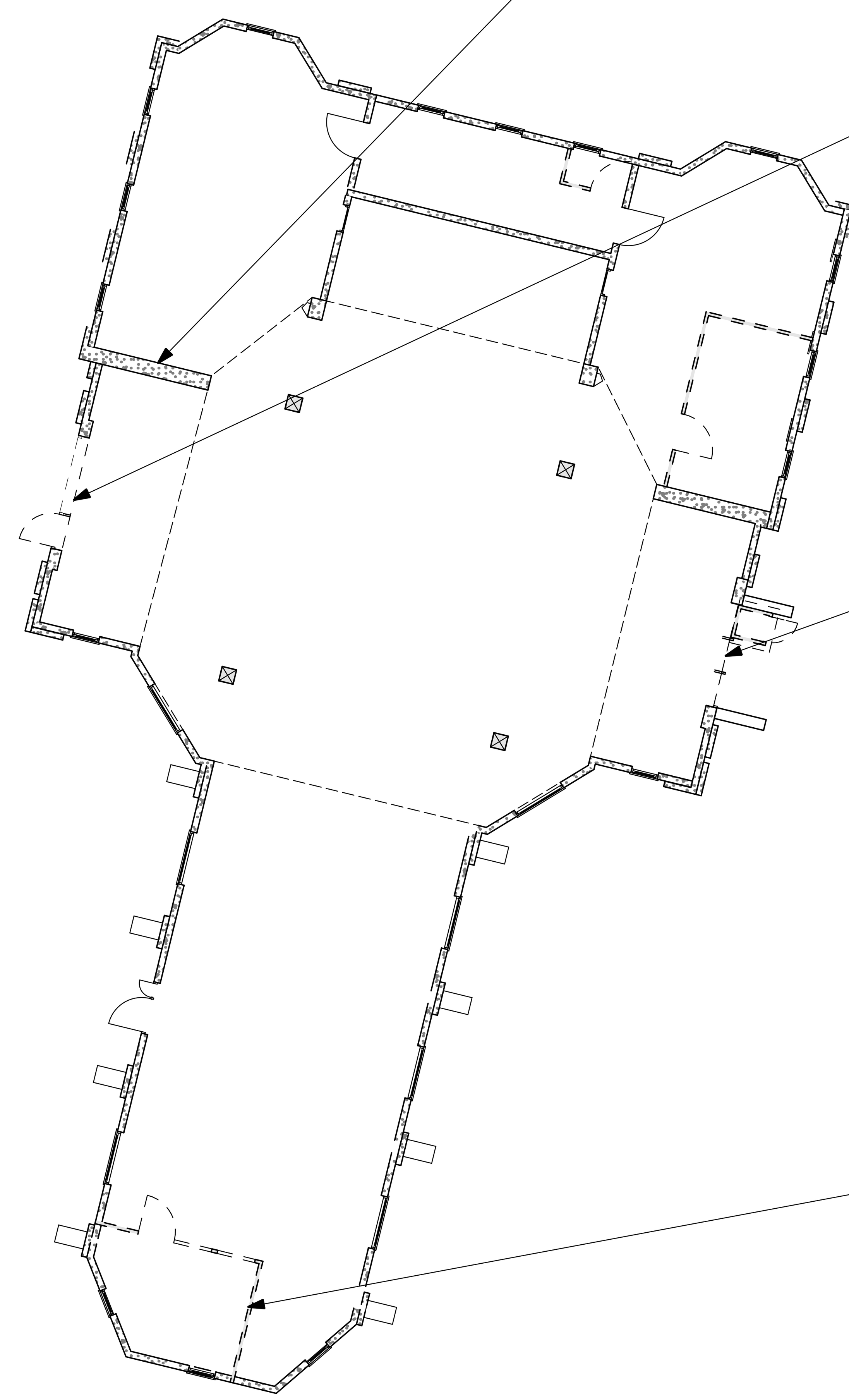
5 A-3.0 **EXISTING NORTH ELEVATION**
SCALE: 3/32" = 1'-0"

0 5.33' 10.67' 21.33'

GENERAL NOTES
1. WINDOWS TO BE REPLACED AS DEEMED NECESSARY BASED ON EXISTING CONDITION

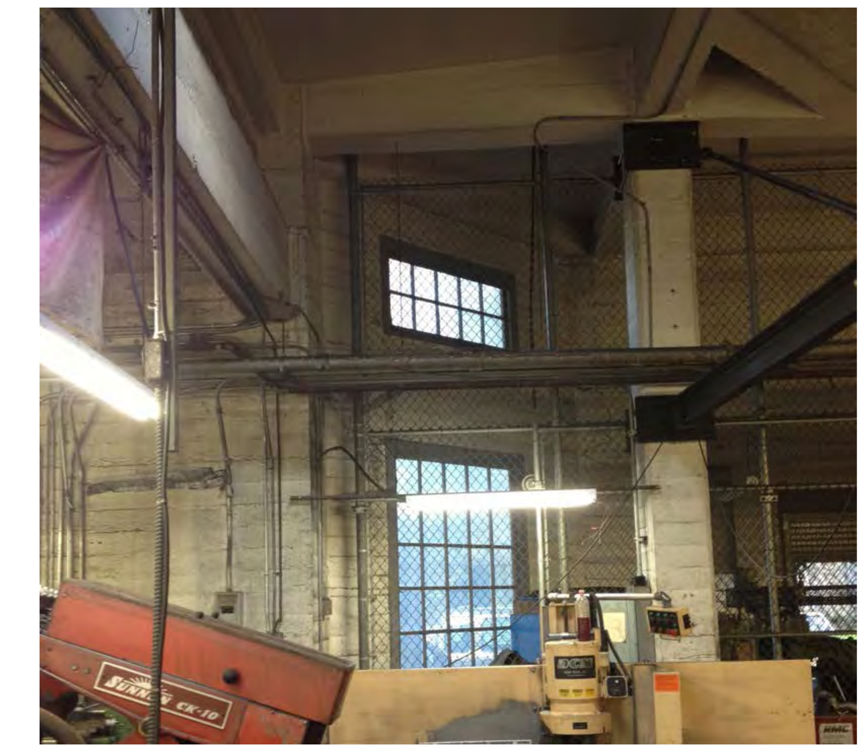
2. VOLUNTARY STRUCTURAL IMPROVEMENTS TO BE BASED ON SEISMIC ANALYSIS.

3. CONCRETE FLOOR TO BE RESURFACED TO MEET ACCESSIBILITY REQUIREMENTS



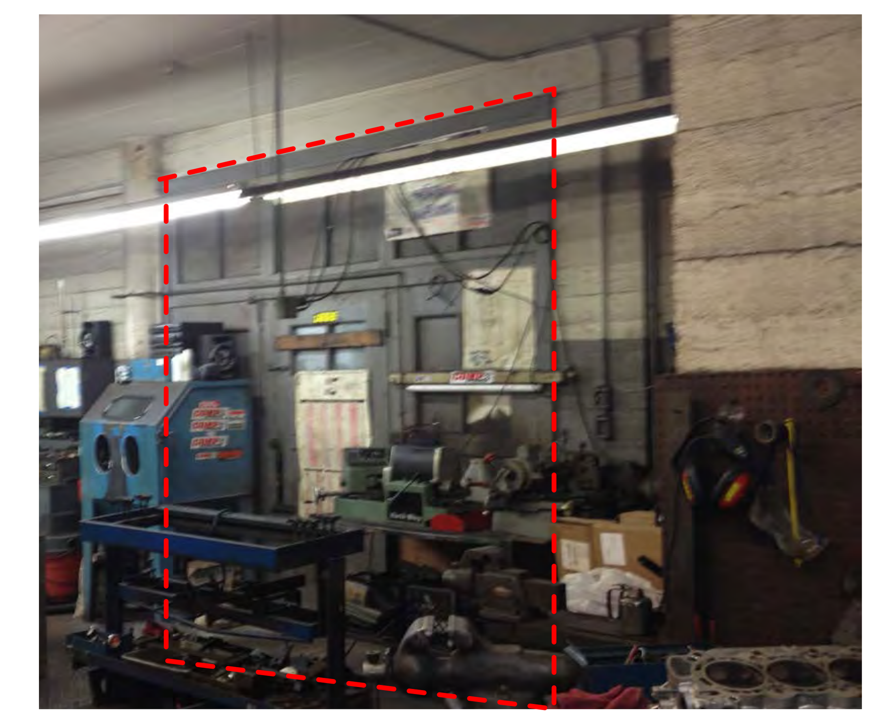
1 A-3.0 **DEMOLITION PLAN**
SCALE: 3/32" = 1'-0"

EXISTING CONCRETE STRUCTURE INCLUDING WALLS, COLUMNS, AND BEAMS TO REMAIN

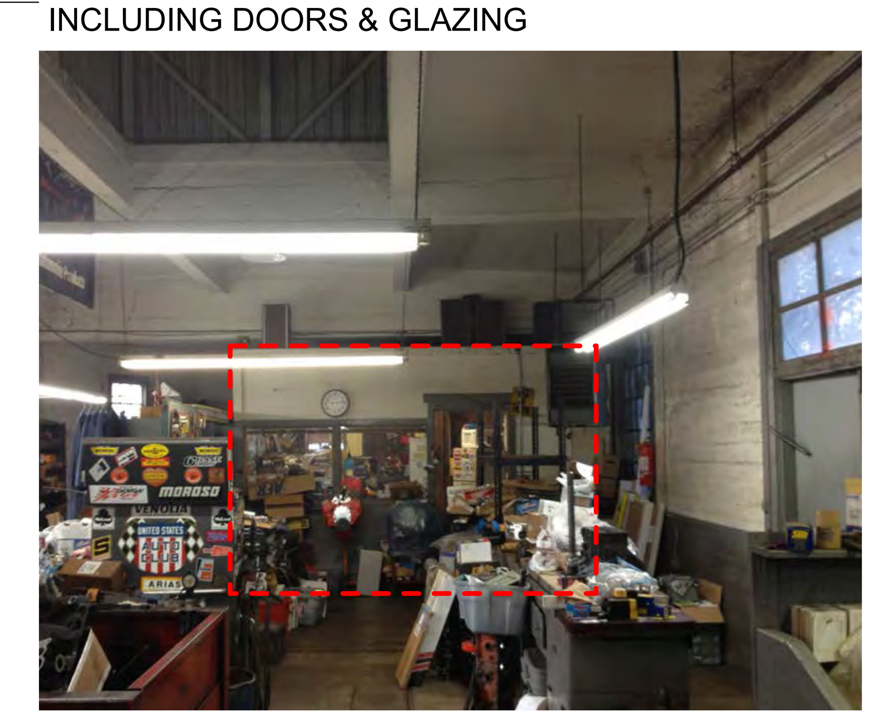


REMOVE EXISTING ROLL UP DOOR AND SWING DOOR

REMOVE EXISTING DOORS AND STORAGE SHED



REMOVE ALL WOOD FRAMED WALLS, INCLUDING DOORS & GLAZING



COLMA VETERANS VILLAGE | A-3.0 EXISTING PUMP BUILDING

COLMA, CA | 12/21/15 | MERCY HOUSING | #1502

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	NUMBER OF UNITS			SQUARE FOOTAGE				
	BUILDING A			BUILDING A				PUMP BUILDING
	STUDIOS	1 BEDROOMS	2 BEDROOMS	RESIDENTIAL GROSS	COMMON	CIRCULATION/ UTILITY*	TOTAL BLDG. A	COMMON
	0.0%	98.5%	1.5%					
3RD FLOOR		21	1	13,928	453	4,186	18,567	
2ND FLOOR		24		15,071	0	4,630	19,701	
GROUND FLOOR		20		12,401	3,830	4,563	20,794	5,106
SUBTOTAL	0	65	1					
TOTALS		**66**		**41,400**	**4,283**	**13,379**	**59,062**	**5,106**

	PARKING	RATIO
SURROUNDING NEW BUILDING (A)	36	0.55
INCLUDING ACCESS FROM BART ROW	71	1.08

LEGEND

- RESIDENTIAL
- CIRCULATION/MAINTENANCE
- COMMON AREAS

1
A-4.0

SITE PLAN

SCALE: 1" = 30'

0 15' 30' 60'

COLMA VETERANS VILLAGE | A-4.0 SITE PLAN & PROJECT DATA

COLMA, CA | 10/9/15 | MERCY HOUSING | #1502

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1
A-4.1
GROUND FLOOR PLAN

SCALE: 3/32" = 1'-0"

COLMA VETERANS VILLAGE | A-4.1 GROUND FLOOR PLAN

COLMA, CA | 10/9/15 | MERCY HOUSING | #1502

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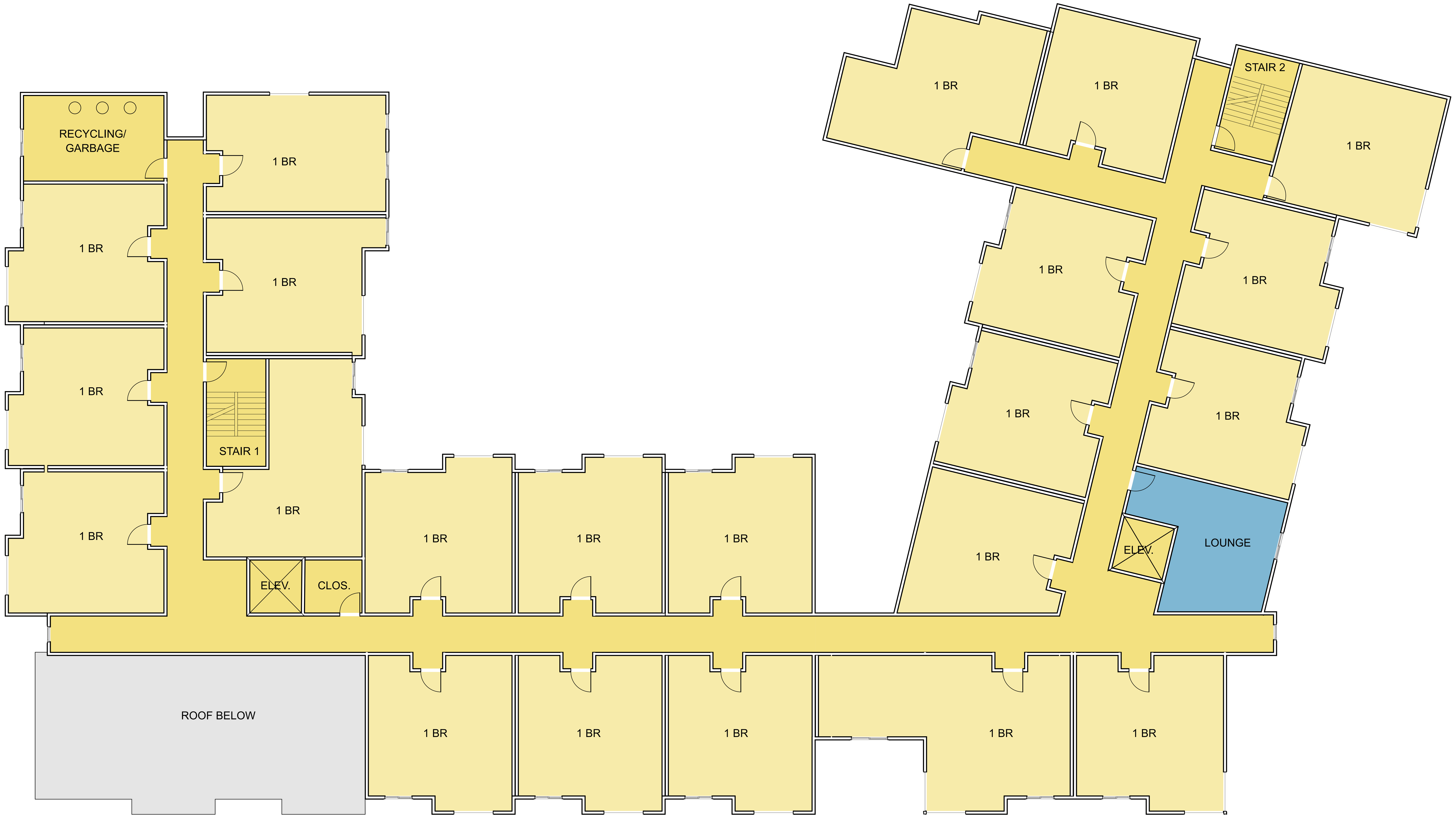
SECOND FLOOR PLAN

SCALE: 3/32" = 1'-0"

LEGEND

- RESIDENTIAL
- CIRCULATION/MAINTENANCE
- COMMON AREAS



1 A-4.3 **THIRD FLOOR PLAN**

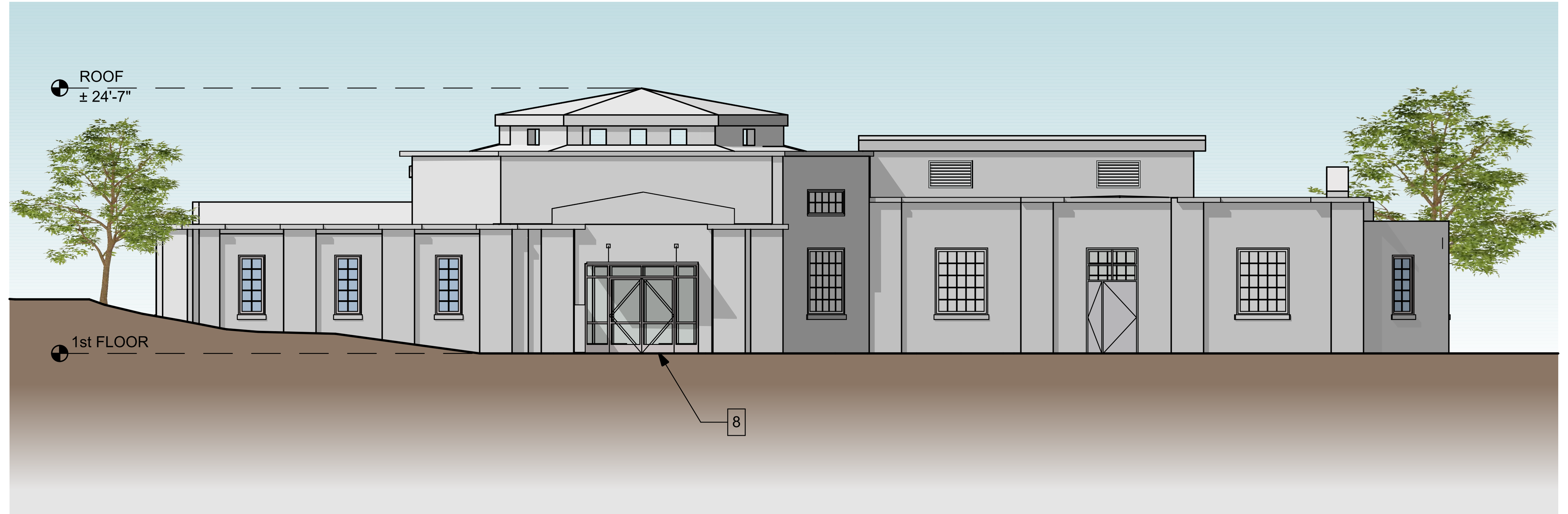
SCALE: 3/32" = 1'-0"

0 5.33' 10.67' 21.33'

COLMA VETERANS VILLAGE | A-4.3 THIRD FLOOR PLAN

COLMA, CA | 10/9/15 | MERCY HOUSING | #1502

VAN METER WILLIAMS POLLACK LLP



4
A-5.1
PROPOSED NORTH ELEVATION
SOUTH ELEVATION SIMILAR
SCALE: 3/32" = 1'-0"

MATERIALS & SYSTEMS

1	CEMENT PLASTER
2	HORIZONTAL CEMENT BOARD SIDING
3a	FIBER CEMENT BOARD & BATTEN SIDING, BATTENS EVENLY SPACED
3b	FIBER CEMENT BOARD & BATTEN SIDING, BATTENS RANDOMLY SPACED
4	FIBER CEMENT PANEL
5	STANDING SEAM METAL SIDING
6	STANDING SEAM METAL ROOF
7	FIBERGLASS COMPOSITION SHINGLE ROOF
8	ALUMINUM STOREFRONT SYSTEM
9	WOOD TRELLIS
10	NOT USED
11	EXPOSED CONCRETE BASE
12	COVERED ENTRY STRUCTURE W/ STEEL POST
13	CONCRETE SEAT WALLS

3
A-5.1
WEST ELEVATION
SCALE: 3/32" = 1'-0"

2
A-5.1
SOUTH ELEVATION
SCALE: 3/32" = 1'-0"

1
A-5.1
NORTH ELEVATION
SCALE: 3/32" = 1'-0"

0 5.33' 10.67' 21.33

COLMA VETERANS VILLAGE | A-5.1 EXTERIOR ELEVATIONS

COLMA, CA | 12/21/15 | MERCY HOUSING | #1502

VAN METER WILLIAMS POLLACK LLP

TREES & LARGE SHRUBS

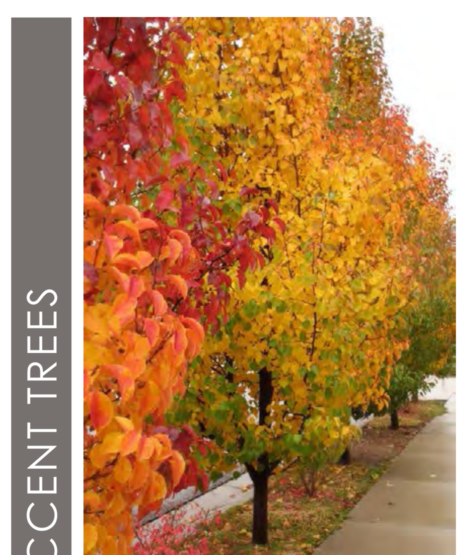
STREET TREES


Lophostemon confertus
Brisbane Box


Tristania laurina
Water Gum


Ginkgo biloba
Maidenhair Tree

ACCENT TREES


Pyrus calleryana
Ornamental Pear


Cornus ssp.
Flowering Dogwood


Acer rubrum
Scarlet Maple

SHRUBS, GRASSES & VINES

MEDIUM SHRUBS

Ceanothus spp., Wild lilac
Rhamnus californica "Mound San Bruno", Coffeeberry
Ribes sanguineum, Pink Flowering Currant

SMALL SHRUBS & GROUNDCOVERS

Acacia cognata "Cousing Itt", Little River Wattle
Anigozanthos spp., Kangaroo Paws
Arctostaphylos edmunsii, Carpet Manzanita
Cistanthe grandiflora, Rock Purslane
Cistus pulverulentus, Rockrose
Dietes iridioides, Fortnight Lily
Grevillea 'Coastal Gem', Coastal Gem Grevillea
Leucodendron spp., Conebush
Limonium perezii, Statice
Rosa spp., Groundcover Rose

GRASSES

Carex tumulcola, Berkeley Sedge
Juncus patens, Gray Rush
Libertia perigrinans, Libertia
Lomandra longifolia, Mat Rush
Muhlenbergia rigens, Deer Grass
Sesleria autumnalis, Autumn Moor Grass

VINES

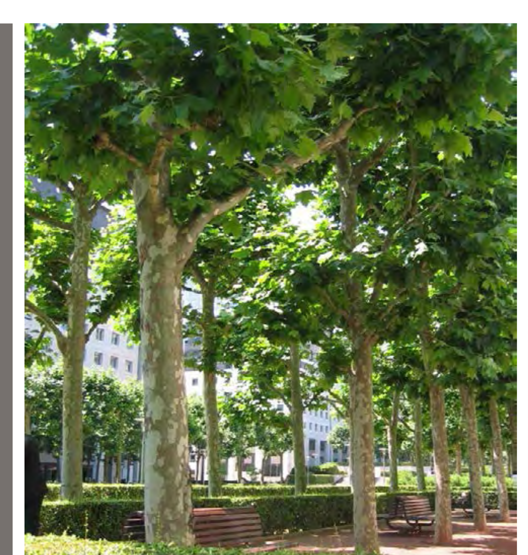
Hardenbergia violacea, Purple Lilac Vine
Clytostoma callistegioides, Trumpet Vine

SCREEN TREES


Cupressus macrocarpa
Monterey Cypress


Melaleuca quinquenervia
Paperbark Tree

LANDSCAPE TREES

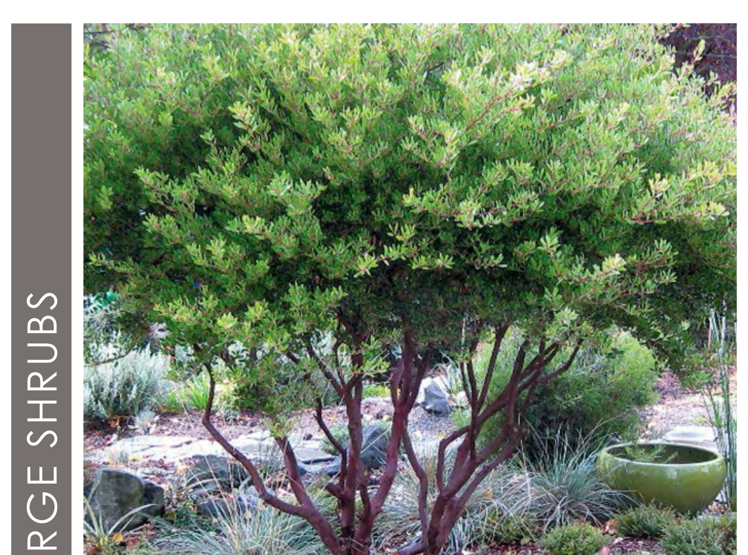

Platanus x acerifolia
London Plane Tree


Ulmus parvifolia "ES"
Chinese Elm


Arbutus 'Marina'
Strawberry Tree


Quercus agrifolia
Coast Live Oak

LARGE SHRUBS


Arctostaphylos "Howard McMinn"
Manzanita


Cotinus coggygria
Smokebush


Myrica californica
Pacific Wax Myrtle

COLMA VETERANS VILLAGE | L-1.1 LANDSCAPE CONCEPT PLAN

COLMA, CA | 10/12/15 | MERCY HOUSING | #1502

BRUCE JETT ASSOCIATES
LANDSCAPE ARCHITECTS

VAN METER WILLIAMS POLLACK LLP

APPENDIX F:

COMMUNITY LETTERS

COLMA HISTORICAL ASSOCIATION 1993

October 30, 2015

Michael Kaplan
Mercy Housing
1360 Mission Street, Ste 300
San Francisco, CA 94103

RE: Colma Veterans Village

Dear Michael,

This is to confirm that the Colma Historical Association has been consulting with Mercy Housing regarding the plans for developing the Colma Veterans Village. We are pleased with Mercy Housing's response to our input and requests. At this point, we do not have any issues relating to the historic aspects of the plan Mercy Housing has presented. We are pleased with the design and the views that are in the plans. We support the plan to preserve the pump building and demolish the other buildings on the property.

Thank you for your respectful listening and consideration of our requests.

Best regards,

Maureen O'Connor
President

Colma Historical Association
1500 Hillside Boulevard • Colma, CA 94014 • 650-757-1676 • Fax: 650-757-1616
Email: colmahist@sbcglobal.net • www.colmahistory.org

Cypress Lawn
Celebrating Life!

Kenneth E. Varner
President and Chief Executive Officer

November 17, 2015

Michael Kaplan
Mercy Housing California
1360 Mission, Suite 300
San Francisco, CA 94103

RE: Colma Veterans Village

Dear Michael,

Thank you again for meeting with me at Cypress Lawn to discuss Mercy Housing's Colma Veterans Village. I am very supportive of the plan to build affordable veterans housing on the Holy Cross Cemetery site adjacent to Cypress Lawn, and the site plan and renderings for the proposed project look nice. The location of the project is behind our base yard at the corner of our property, which is away from the main areas of the cemetery. In our discussions, I mentioned a landscape buffer on the northern property line between Cypress Lawn and Holy Cross, and I am glad to see this feature is in the landscaping plans. This landscaping will help screen the building from view and prevent any negative visual impacts to visitors at Cypress Lawn. It will also help to screen the existing BART ventilation structure, which is currently visible. Because of this, I do not foresee any negative impacts to historic Cypress Lawn Cemetery due to the construction of this project.

I appreciate you reaching out to us and your willingness to heed our suggestions. I look forward to working with you in the future.

Sincerely,

Kenneth E. Varner
President & Chief Executive Officer

APPENDIX G:

1994 BART REPORT

The body of the 1994 Historic Resources Evaluation Report for the BART-San Francisco Airport Extension Project, Appendix I (with key maps), and the portion of Appendix II with the Historic Resources Inventory forms for Holy Cross Cemetery and Cypress Lawn Memorial Park are attached in Appendix G.

S-17191

BART-San Francisco Airport Extension Project
Draft Environmental Impact Report/
Supplemental Environmental Impact Statement

A HISTORIC RESOURCES EVALUATION REPORT OF SEVEN COLMA CEMETERIES, COLMA, CALIFORNIA

By
Laurence H. Shoup and Mark Brack

with
Nancy Fee and Bruno Giberti

Prepared for:
BART/SamTrans
Ogden Environmental and Energy Services

Prepared by:
Archaeological/Historical Consultants
609 Aileen St.
Oakland, CA 94609

June 1994

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1. SUMMARY OF FINDINGS

This Historic Resources Evaluation Report (HRER) focuses on the evaluation of seven cemeteries located in the town of Colma, California, along the Area of Potential Effect (APE) for the BART-San Francisco Airport Extension Project. Library research and historic architectural fieldwork were conducted during the summer and fall of 1993. All seven of the cemeteries located within part of the APE date to the years 1886-1901 and key sections of each were therefore recorded as part of this work. Five of the seven appear to qualify for the National Register of Historic Places as four districts. These are the Italian, Home of Peace/Hills of Eternity, Cypress Lawn, and Holy Cross Cemetery Districts.

2. PROJECT DESCRIPTION

The BART-San Francisco International Airport Extension Project runs south from the Colma Station (under construction as this is written in October 1993) to San Francisco International Airport (Figures 1 and 2). The project will serve the cities of Colma, South San Francisco, San Bruno and Millbrae as well as the airport itself. The APE for this project therefore includes portions of the above named cities along an old Southern Pacific right-of-way in the northern sector and mainly along this right-of-way and existing streets in the southern sector. This study is one of a number of technical studies which collectively assess the environmental impacts of alternative alignments and design options for this facility.

The present study is a Historic Resources Evaluation Report focusing on seven historic cemeteries through which the planned BART-San Francisco Airport Extension Project passes. This kind of a technical document is used to record and evaluate potentially important historic resources of this type. Such studies are required by the Advisory Council on Historic Preservation regulations (36 CFR 800) for implementing Section 106 of the National Historic Preservation Act. These regulations require federal agencies to consider the potential effects of proposed projects on historic properties. Section 106 studies provide the information and analysis needed to satisfy these legal requirements.

The cemeteries covered in this study are located in the Town of Colma. In this sector of the project, there is only one horizontal alignment alternative and two basic design options--retained cut and subway. The retained cut will consist of a sunken trough averaging about 20 feet deep running along the right-of-way. A two to three foot tall retaining wall and a fence will stand on the sides of this trough. Shrubs will be planted along the wall/fence for aesthetic effect. Therefore, a person standing across Mission Road/El Camino Real from the right-of-way would not be able to see the trains which will run inside the retained cut. Under the subway option, the train would run completely underground, with no visual surface manifestations except during construction, when cut-and-cover construction techniques would be employed. Of these two options, the worst case scenario for this segment of the project alignment, from the point of view of cultural resources, is the retained cut option. This design option has the potential to substantially impact the seven historic cemeteries lying along the BART right-of-way. Neither this option nor the subway option would, however, impact cultural resources (buildings and additional cemeteries) west of the very wide Mission Road/El Camino Real. The APE for this report is, therefore, drawn along the center line of Mission Road/El Camino Real in the Colma section of the project area where the right-of-way lies east of Mission Road/El Camino Real (Figure 3).

3. RESEARCH METHODS

The methods of study for this project consist of both archival research and historical architectural field survey. Historical research focused on developing the contextual framework needed to understand the Colma Cemetery Complex as a whole, as well as uncovering details about the development of the seven cemeteries which lie within the project APE. Research was undertaken at the following locations:

- California State Library and California State Railroad Museum Library, Sacramento.
- Bancroft, Environmental Design and Map Libraries, University of California, Berkeley.
- San Mateo County Historical Association Library, San Mateo.
- San Mateo County Government Center (Recorders and Assessors Offices), Redwood City.
- Public Library, Historical Society and Museum, South San Francisco.
- Daly City Historical Society, Daly City.

Key historic inventory lists were inspected, including the National Register of Historic Places; California Inventory of Historic Resources; Historic Resources Inventory, Town of Colma; and the Historic Resources Inventory of South San Francisco.

In addition, discussion about cemetery history and other aspects of the project was conducted with:

Christopher Castagnola and Ida Luchessi - Italian Cemetery
Christine O. Stinson - Holy Cross Cemetery

Charlie Gerrans - Salem Memorial Park
James Gregoire - Native Son Florist
James E. McKeown, James Wong, and Michael Sevanevik - Cypress Lawn Memorial Park
Judith A. Edmonson and Jose Reyez - Home of Peace Cemetery
Naomi Tilsen - Hills of Eternity Memorial Park
Hans Kreutzberg - State Historic Preservation Office
Meyer Kaplan - Eternal Home Cemetery
Kathleen Kay - History Room, South San Francisco Public Library
Marian Holmes - San Mateo County Historical Association

Historic architectural methods consisted of using a combination of aerial photography (a July 1946 photograph was used), archival research and field survey to identify and locate all historic (over 50 years old) habitable or utilitarian structures within each cemetery. These were recorded, then photographed and evaluated for their potential contribution to their respective districts. In addition, for each cemetery a representative sample of mausoleums and gravemarkers was also selected in order to give an impression of the range and quality of the cemetery art to be found there. Each feature selected was also photographed, described and recorded. Each was also given approximate or exact dates based on archival research, stylistic analysis, use of material, construction techniques or visual character. Due to the fact that there are hundreds of thousands of burials in these seven cemeteries, it is impossible to photograph and record in depth all the significant and interesting cemetery art and architecture which exists in these seven cemeteries. We are confident, however, that the large number of monuments which we recorded and included in this report, will clearly indicate the wealth of cultural resources present in these cemeteries and indicate why we believe five of these cemeteries appear to qualify for the National Register of Historic Places as four districts.

The data for the historical overview and inventory forms was researched by Mark L. Brack, Laurence H. Shoup, Nancy Fee and Bruno Giberti from July to November 1993.

Laurence H. Shoup wrote the historical overview during September, October, and November 1993. He holds a Ph.D. in United States History and has 13 years experience in California history and cultural resources management. Mark L. Brack was in charge of the architectural descriptions and evaluations of these cemeteries. He is a Ph.D. candidate in Architectural History at the University of California, Berkeley. He conducted research for the architectural evaluations between July and November of 1993 and supervised the team of architectural historians who completed the work during September, October and November. Other members of this team were Bruno Giberti, a Ph.D. candidate in Architectural History at the University of California Berkeley, and Nancy Fee, Ph.D. candidate in Art History at Columbia University.

4. HISTORIC OVERVIEW

4.1 INTRODUCTION: THE RISE OF SAN FRANCISCO

The story of the Colma cemeteries begins with two of the most pivotal events of California history, which occurred within a few weeks of each other in January-February 1848. The discovery of gold by James W. Marshall in the mill race of Sutter's sawmill on the South Fork of the American River in the Sierra Nevada foothills and the signing of the Treaty of Guadalupe Hidalgo, which ceded California to the United States, would have a dramatic effect throughout the state and nation. The discovery of gold especially over the next few years, attracted great numbers of people to California. The takeover of California by the United States resulted in a rapid installation of an entirely new socio-economic, technological, and cultural system in the state. For the Colma cemetery complex, the most important aspect of this swift population expansion and change was the creation of the "mushroom city" of San Francisco. On the eve of the Gold Rush, San Francisco was a modest village with a population only in the hundreds. During the next decade, San Francisco exploded under the impact of the massive influx of miners, gold and the commercial opportunities thereby presented. Maritime and other industries (including iron foundries) also began to be developed during this era, and a variety of industry existed by the 1860s.

Today, there are many large and powerful cities in the western United States. We tend to forget that in the 19th and early 20th centuries there was only one such urban area -- San Francisco. That dominance can be illustrated from a number of perspectives. One is in population -- sheer numbers of people. In 19th-century California, a mostly rural society, San Francisco was the megalopolis (see Table 1).

In 1880 San Francisco was (by population) the ninth ranked city in the United States, the only one of the nation's top fifty cities located in the western one-third of the country. As a population center, San Francisco remained the dominant city in the west until after 1910. San Francisco was not only a mammoth city for its time, it was a city with a very heterogeneous population, a "modern Babel." The elite, made-up of merchants, silver kings, railroad barons, financiers and real estate tycoons, were mainly white, American-born and Protestant. The working class, however, was mainly "ethnic" in the sense of having been born abroad or U.S.-born of foreign-born parents. Irish and Germans were by far the most important groups, with English and Canadians, Italians and others also important in 1900 (Issel and Cherny, 1986:56).

Another way to indicate San Francisco's central role as the 19th century metropolis of the West is in economic and social terms. In 1880, for example, San Francisco handled 99 percent of all

TABLE 1
San Francisco and Rival Cities Populations, 1852-1910

Year	California Population	San Francisco Population	%	Second Largest California City	%
1852	224,000	35,000	15.6%	Sacramento 7,000 (1850)	
1860	380,000	57,000	15.0%	Sacramento 14,000	3.7%
1870	560,000	149,000	26.6%	Sacramento 16,000	2.9%
1880	865,000	234,000	27.1%	Oakland 35,000	4.0%
1890	1,213,000	299,000	24.6%	Los Angeles 102,000	6.9%
1900	1,485,000	343,000	23.1%	Los Angeles 102,000	6.9%
1910	2,378,000	417,000	17.5%	Los Angeles 319,000	13.4%

(*Computed from data in Hansen, 1980 and Commonwealth Club of California, 1946.)

merchandise imported into the three Pacific states, 83 percent of all exports and produced 60 percent of all goods manufactured in this region (Cherny and Issel, 1981:20). The City remained the West's primary manufacturing center in the early years of the 20th century. San Francisco's "tributary region" in 1880 included, according to the U.S. Census Office, "the trade of the Pacific Coast as far north as Alaska and south to Panama and... all the country touched by the many railroads centering here" (quoted in Cherny and Issel, 1981:24). These rail lines, together with its well developed harbor and shipping lines, made the City the focal point of western transportation, both interior and coastal, extending across the Pacific to China and Japan. San Francisco was also the financial center of the west, the corporate and bank headquarters and location of the U.S. Mint and Pacific Stock Exchange. It was from this money center that the investment funds and levers of control emanated to the important mines, farms, lumber mills and industrial works throughout the West.

Socially, the City was the headquarters of the rich and powerful, a local upper class with its own taste for luxury, status, and ostentatious living. San Francisco was the only 19th century western city with its own Social Register. In short, economically and socially San Francisco was in a class by itself during the 19th and early 20th centuries.

By contrast, the project corridor and the land later to be developed as cemeteries were inhabited by only a relative handful of people during this entire era. Even the whole of San Mateo County had a population of only 3,214 in 1860, growing to only 10,087 in 1890 (Hornbeck, 1983:94).

Since it lies at the northern tip of a peninsula, surrounded on three sides by a great bay and the vast Pacific Ocean, San Francisco's only land transportation route was to the south, through the project area. Initially, transportation developments were simply a continuation of an older pattern, with the gradual improvement of the Mission Road/El Camino Real route, which dated back to the 18th century, so that it could carry more (and faster) traffic. This traffic included stagecoaches and wagons as well as people on foot or horseback.

The improvement of roads, including the late 1850s construction of the San Bruno toll road along the Bay between San Francisco and San Bruno as a rival to the older route though the project area, was only the beginning. Gold Rush transportation, consisting of mule trains and ferry boats, dispatch riders and stagecoaches, could not satisfy the needs of a rapidly growing and industrializing state. For this, a real transportation revolution, one which would put the vast power of the new industrial technology at the disposal of California's people and developmental needs, was required. This revolution involved connecting the state with the rest of the United States through a railroad network, eventually established by the Central Pacific-Southern Pacific political economic interest group, the "Big Four" and their allies. This group, more than any other, became the dominant one in the state politically, economically, and geographically.

During the 19th century, the Central Pacific-Southern Pacific organization helped mold the state more than any single entity. During this era, population growth and settlement were greatly influenced, positively and negatively, by the railroad and its vast power.

The initial development of a railroad line through the project area along approximately the same route which is now proposed for the BART-San Francisco Airport Extension Project was not, however, a Southern Pacific Railroad effort. Called the San Francisco and San Jose Railroad, it was organized in 1860 by a group of San Francisco capitalists (the Central Pacific-Southern Pacific group was originally Sacramento based). This San Francisco-based organization was able to successfully get the county governments of San Francisco, Santa Clara and San Mateo to contribute a total of $600,000 (they could only raise less than half this amount in private subscription) (Dillon, 1984:178-179). Although the Central Pacific-Southern Pacific Railroad was later built with federal land grants and subsidies, the San Francisco and San Jose Railroad had only county government help.

Construction work on the line began in May 1861 out of five work camps. Three of these were in one relatively difficult section in the vicinity of the cemeteries, which traversed the western and southern slopes of San Bruno Mountain. Pick and shovel construction continued for over two years, but by the fall of 1863, the line was into Santa Clara County and the necessary rails, locomotive and cars had been imported from the East (Dillon, 1984:180-181). Regular train service linking San Francisco (SF) and San Jose (SJ) began in January 1864 (Hynding, 1982:63). A year and a half later, the pioneer railroad (the second completed in California) saw the first heavy locomotive built in the west. This was the California, completed in mid-1865 by the Union Iron Works of San Francisco. Operating on the SF and SJ line, this locomotive soon equaled the west-of-the-Rockies speed record of 67 miles an hour (Dillon, 1984:188-190). The SF and SJ was, within a few years, absorbed by the growing giant that was the Southern Pacific Railroad and the "Big Four" (Stanford, Huntington, Crocker and Hopkins), who were so powerful in late 19th century California. The result was that the railroad line through the project area, the central transportation asset of the region, became part of a regional and national transportation complex.

The role of San Francisco as the transportation, industrial, commercial, demographic and financial center of the west during the second half of the 19th century was the key background factor required for a large necropolis (cemetery complex) to be developed. Due to the fact that San Francisco was for its time a giant city located on a peninsula with limited land area, meant that as San Francisco expanded, areas set aside for cemeteries during earlier years would become candidates for other uses. By 1880, a shortage of land was already felt by some in the City. In that year, the desire to remove the old cemeteries was already manifesting itself. The cry "remove the cemeteries" was apparently first raised by the owners of residential property near these cemeteries, although real estate developers may have also been involved. Most mid 19th century cemeteries, including most of San Francisco's, lacked perpetual-care arrangements and did not have adequate upkeep. The cemeteries gradually deteriorated and became havens for some of the disruptive and lawless elements of 19th century San Francisco society (Procter, 1958:2). In any case, the acreage involved was substantial and therefore very desirable, and political pressure in the form of laws and regulations by the Board of Supervisors increased. Cemeteries began closing. As early as 1892, a report stated that:

A few years ago, the supervisors passed a law closing the Jewish Cemetery on Eighteenth Street, also the Old Mission Cemetery on Dolores Street. They undoubtedly will in the near future close the cemeteries lying west of the city, and people will be obliged to seek burial ground in San Mateo County...(The Resources of California, 1892:13).

Thus, by the 1880s it was already "in the air" that a new place would have to be found to bury San Francisco's dead.

4.2 THE LAST GREAT NECESSITY

The fact that a place for corpses from San Francisco had to be found at all was the result of basic facts about human beings and American society. Human beings are unique among Earth's creatures in their awareness of the inevitable end to all individual life and in the creation of various rituals to accompany the disposal of the dead. These rituals both reflect and help shape social values and are important in the study of culture. Cemeteries can therefore be seen as collective representations of deeply held beliefs. Anthropologists, archaeologists, architects, historians and other social scientists have made elaborate studies of burial practices, cremations, grave markers and cemeteries. As one philosopher on the topic remarked:

Of all monuments, tombs are those that present perhaps the broadest subject for the study of the archaeologist, historian, artist, even philosopher. Civilizations at every step of the ladder have manifested the nature of their beliefs in another life by the way in which they have treated the dead (Jackson and Vergara, 1989:3).

Burial, the primary practice of treating corpses in the United States, has resulted in the development of approximately 150,000 cemeteries in this country (Jackson and Vergara, 189:4). There is great diversity among these cemeteries, both in size and type, but in general terms, at least four categories can be isolated. In order to adequately understand the seven Colma cemeteries under study in this report, these categories and their evolution over time need to be understood.

4.2.1 Traditional Early American Cemeteries

Early burial places in America were initially in unorganized isolated places or on the family farm. The grave was simply marked by the local people with whatever was available and in accordance with the skills they possessed. Later, churchyard burial grounds were established. This was in line with European tradition, in which people were buried under or near the church and therefore closer to heaven (Sloane, 1991:17). Such graveyards were generally small and ornamentation of the graves was minimal. A few bushes and trees were usually the only plantings. Grave markers were carved on local stones shaped in the form of a small stele. Death heads, skulls and crossbones, and similar imagery gradually gave way over time to softer iconography such as the willow, urns and soul effigies (winged representation of a soul ascending to heaven). Racial segregation was the norm in such cemeteries, and the poor were buried in publicly-owned potter's fields (Sloane, 1991:21-25).

This early history resulted in the development of the most common type of cemetery. This type, found nationwide, is dominated by stone records, such as individual headstones, small family monuments and statues. In this type of cemetery utility is of primary concern. Graves are close together, and often arranged in rows, the development of the surrounding natural landscape is minimal, the roads tend to be straight and rectangular in shape, and community buildings and monuments are few in number. Such cemeteries are owned and operated by ethnic or religious groups, public authorities or private associations. This type of cemetery is more traditional and working class.

4.2.2 The Rural Cemetery Movement and its Evolution

In the 1830s, a new and different type of cemetery developed in Massachusetts. The initial form of this style was called the rural cemetery, which later developed into the lawn-park, and most recently into the memorial park type of cemetery. While each of these three forms is distinctive, it is clear that they all have a common origin and are related to each other. While the rural and lawn-park type of cemeteries were principally by and for the rich, the memorial park, while coming out of this tradition, represents a kind of burial place more accessible to the mass of Americans. These cemetery forms had their origins in the fact that as cities grew and became increasingly crowded, the graveyards which had long served the community began to be seen as problems. At the same time, economic development meant that the land occupied by graveyards was valuable, and the prosperity of the higher classes of society meant that new land for burial grounds could be purchased elsewhere. An additional factor was the fear of disease and the role that corpses could play in spreading it (Sloane, 1991: 34-38). Finally, by the 1830s the industrial revolution was advanced enough in some places (such as urban Massachusetts) to crystallize a reaction against the commercialism, rapid pace, corruption, squalor, heterogeneity, overcrowding and machine-like life of the industrial city.

Upper class leaders decided that cemeteries were best removed from the city and located in rural or suburban pastoral settings. The privatizing tendencies of capitalist development were already well under way by the 1830s, and the role of church and state were declining as "laissez faire" and private control became dominant. This put the family and prominent male family members in charge of the landscape of the dead. These men believed in private initiative and they were acutely aware of their higher class positions and roles in the community. They saw themselves as leaders and wanted to lead their community into a new world of stability, homogeneity, common values, and beauty, the opposite of the reality of early industrialization in the cities of the eastern United States. Their love of the natural world was reflective of the romanticism of the time and was also a reaction against the crowded built environment of urban areas. Therefore, the cemeteries they created were located in the countryside, and were based on a naturalistic design with preservation of the natural landscape (wilderness, hills, streams, lakes, valleys) with winding access roads following existing terrain. They did not want reminders of the geometry of the city. The stress was on this natural beauty and the picturesque, with the new monuments honoring the dead developed as works of art. The field of landscape architecture had its beginning in the United States by combining the elements inherent in the rural cemetery, such as horticulture, gardening, and monuments to the departed. They rejected the view of the graveyard as a gloomy, lonely and depressing place. The "perpetual care" funding concept became part of the overall picture by providing the money to combine the rural cemetery ideal and its landscape design concepts with management by full-time paid professional staff. Perpetual care funds became an endowment for each cemetery's upkeep developed through a surcharge on every burial. In this way, the class structure of the living was replicated in the land of the dead, with cemetery neighborhoods increasingly along the lines of wealth, power, status, and prestige. For the poor, a simple, even unmarked grave had to do. For the common citizen, an ordinary grave or a place in a public mausoleum was adequate. For the rich, an ornate private mausoleum, a kind of a penthouse or mansion for the wealthy dead, was necessary.

Mount Auburn Cemetery, founded in 1831 near Boston, was the prototype of the rural cemetery of the United States. It set the tone for the establishment of similar cemeteries all over the nation and combined the functions of a public park, arboretum, garden and historical museum. In an era without large public spaces near cities, it encouraged the desire for such facilities even while it served to satisfy some of that desire.

The rural cemetery movement began to evolve as soon as the first such cemeteries were developed. The third type of cemetery--the lawn-park---then came into being and became dominant during the late 19th century. This type of cemetery was created by the entrepreneur who wanted a streamlined landscape, open and park-like, less cluttered (no lot fences between individual plots), and with less vegetation. Scientific planning, regularity and formality as well as naturalism were the watchwords. The unity and beauty of the whole meant that lot holders had to follow the overall plan laid down by the landscape architect, supervisor, and entrepreneur. At the same time, business decisions became much more a part of cemetery development and this growing commercialism stressed both aesthetics, the beauty and artistic nature of the park-cemetery, and profits (Sloane, 1991). The increased wealth of the later industrial period financed a wave of family mausoleums, often with stained glass windows. Community mausoleums for collective burials were added later after criticisms were made of the elitism inherent in expensive family mausoleums. Finally the columbarium, holding remains of the cremated, was also added during this era, and represented an even more radical rejection of the traditional cemetery. Cremation was rare in the United States. As late as 1920, only one percent of this nation's dead was being cremated. The number of early columbaria present in some of the Colma cemeteries indicates that a more advanced attitude existed on this issue here in the Bay Area of California.

The lawn-park cemetery reflected new trends in mid and late 19th century American society. The rise of science and technology and the professionalization of elite sectors of the work force increased the secularization of society which had been ongoing for many decades. This, in turn, seriously impacted people's sentimental vision of an afterlife in heaven and provoked a much greater fear of death. At the same time, the hospital and improved sanitation and medical care increasingly distanced people from death. The family, then, tended to give way to the undertaker, the funeral home, and the cemetery superintendent and staff in the care of the dead. The distancing of many upper class and professional level Americans from death meant that the favored cemetery style was less dramatic and more park like to avoid reminders of death (Sloane, 1991).

The most recent modification of the rural cemetery theme has been the memorial park, first established at Forest Lawn in Los Angeles early in the 20th century. Here the tendencies inherent in the rural cemetery idea are taken towards their logical extreme. Three aspects of the memorial park are central and make it distinctive. First, strict hierarchical control from the top by professional managers was implemented in order to control the cemetery landscape and assure its appearance and efficiency. Individual monuments had to be flush to the ground and free of knick knacks both to assure uniformity and ease in mowing the lawn, which is the main natural feature. Second, the banishment of an emphasis on death, its interdiction in order to preserve the happiness of the living, was a main theme. Public monuments of statuary stressing joyfully religious themes (for example, Baby Jesus, Virgin Mary), the patriotic community (George Washington, the Republic), and the common artistic heritage (such as copies of Michelangelo's works) were used to evoke the values which the owners of the park wanted to stress. This made this type of cemetery as much a kind of an outdoor museum as a memorial park, and visitors were encouraged to have an educational and enjoyable visit as an adjunct to the sales effort. No notes of sadness, melancholy, or reminders of death were allowed. Even the evergreen trees planted reflected this; trees whose leaves fall during winter were avoided since they might remind people of death. Finally, as a memorial park, nature was mainly a passive backdrop to artistic memorials which stressed the community of the dead instead of the individual or family. People are buried together with those with whom they had some cultural or religious affinity in life (Sloane, 1991).

4.2.3 Conclusion

Cemeteries tell us about our culture both present and past. While much diversity exists, making generalizations difficult, it can be said that cemeteries have been characterized by a trend towards authority and control by those in charge of the dead and by a loss of tradition. The rural cemetery idea has had wide, although not overwhelming, influence. Some ethnic groups have, in particular, resisted. As cemetery expert Matthew P. Brazill complained in 1912:

> Some of the people bring their own customs and prejudices from their native country and it seems morally impossible to get them to conform to improved American ideas of cemetery management (Quoted in Jackson and Vergara, 1989:48)

Despite this resistance, there has been an overall decline in the place of the cemetery in everyday life. Mortality has decreased as a key organizing principle in the United States. Youthfulness is what is celebrated in cheerful American culture. Within this value system, burial places have become necessary nuisances, not central institutions. This is especially clear when contrasted to Mexico, where death is still a common theme in popular culture, or to 19th century America, where the grave was a place to visit frequently for solace and to rekindle powerful memories.

4.3 COLMA AND THE ESTABLISHMENT OF THE SEVEN PROJECT AREA CEMETERIES, 1886-1901

4.3.1 The Place

Colma and its vicinity, located at the northern tip of San Mateo County just south of the San Francisco border, is located on the western flank of San Bruno Mountain, part of the South Coast Ranges. Agricultural production is limited by the dry climate and the lack of level terrain. The mild climate is favorable to human occupation, since it rarely freezes or reaches above 90 degrees (F). A characteristic trait of this area is the summer fog, created by the combination of cool ocean currents, sea breezes and the intense heating of the inland portion of the state. The resulting fog funnels through gaps in the mountains into the area along the Bay, creating breezy conditions and keeping temperatures cool. The Colma area has limited natural resources; its chief value has been its location, as a transportation corridor and accessible rural area close to but outside of the City and County of San Francisco. Always a lightly populated area, it offered what San Francisco needed--rural, scenic space.

4.3.2 The Establishment of the Cemeteries

As San Francisco's cemeteries filled and people began to speak of their removal, religious and secular leaders began to think about new locations for the dead. Colma, a crossroads village, was the logical choice and a number of cemeteries were set up there during the late 19th and early 20th centuries, including seven in the project area.

Holy Cross Cemetery, 1886-1887

Since San Francisco's Roman Catholic cemetery was virtually full, Catholic leaders acted first. In the summer of 1886, San Francisco's Catholic Archbishop, Patrick W. Riordan, visited the Colma Valley looking for a good place for a cemetery. He found one on the lower slopes of San Bruno Mountain on the east side of Mission Road and the railroad line, and purchased 179 acres in August 1886. Work laying out the new Holy Cross Cemetery was ongoing during the winter and spring of 1887 and the first interment took place in June 1887 (Seavey, 1992:6; Svanevik and Burgett, 1992:7-8). This Catholic cemetery is the largest in Colma in both acreage (283) and one of the largest in number of burials (well over 300,000). Its key structures are its railroad depot and office building (1902), mausoleum (1921), and receiving chapel (1963).

In terms of its type, Holy Cross is one of the project area cemeteries closest to the rural cemetery style and its successors. Although its layout is mostly rectilinear, separating it from this tradition, it also has some curved roads, a significant amount of grass, trees, and open space, and a wide division between rows of graves. It has both family (private) and public mausoleums. It thus has some of the picturesque and open feeling of the rural cemetery style despite being a religious and not a secular cemetery.

Home of Peace, Hills of Eternity, Eternal Home and Salem, 1889-1901

In 1889, Martin Hiller, representing San Francisco's Congregation Emanu-El, purchased a tract of land (91 acres) lying to the north of Holy Cross Cemetery. Parts of this acreage were, over the next twelve years, sold to other Jewish groups for cemetery purposes. By 1901 all four above-named cemeteries had been established. Home of Peace is the largest, oldest and richest (it is also the oldest Jewish cemetery in the west), followed by Hills of Eternity. Eternal Home and Salem are simpler burial grounds serving mainly poorer people (Nava, 1943:4-5). Of these four cemeteries, Eternal Home and Salem, are also those least influenced by the rural cemetery ideal. Part of the reason was purely economic; the poor cannot afford the large open spaces needed for a picturesque cemetery because land is expensive. Accordingly, these cemeteries are characterized by straight rectilinear roads, graves close together in rows with little open space or trees. Both Home of Peace and Hills of Eternity are, on the other hand, both clearly influenced by the picturesque rural cemetery style. Both are set in a park-like landscape of lawns and mature stands of ornamental trees. Home of Peace also has a small lake and a naturalistic grotto made to look like a mountain cave. Both have handsome family mausoleums and columbaria for cremated remains. The layout of these two cemeteries is also mainly rectilinear with curbs on the roads, but a few curving roads exist as well. Thus both represent a mix of the more traditional European-American graveyard and the newer rural cemetery ideal.

Cypress Lawn, 1892

The first non-religious cemetery developed at Colma was Cypress Lawn, originally laid out on a hilly 47-acre plot on the east side of Mission Road/El Camino Real in 1892. Just after the turn of the century, an additional 100 acres were purchased on the west side of the highway. Some additional acreage has also been added in recent years. This cemetery was founded and organized by Hamden H. Noble (1844-1929), who was an upper class leader and member of San Francisco's financial and investment community (Svanevik and Burgett, 1992:15). Noble was evidently a man of thorough habits, and, prior to establishing Cypress Lawn, he spent extensive periods of time traveling throughout the United States visiting important cemeteries and gathering data. He came out of the experience convinced of the value and beauty of the rural cemetery concept, financed by perpetual care endowment (Svanevik and Burgett, 1992:15). Cypress Lawn has been patterned on both of these themes since its founding. In all its characteristics, Cypress Lawn represents the project area cemetery closest to the general rural cemetery theme. Its eastern section most closely represents the lawn-park conception which grew out of the rural cemetery tradition in the late 19th century. This area is located on a hilly section of land, where winding curved roads were installed early as part of the overall landscape design. Large numbers of trees and shrubs along with grass and lakes help create the desired natural effect. Graves and the large number of family mausoleums are irregularly spaced on large lots not usually in rows. Both secular and religious elements are present on the graves.

The western section of Cypress Lawn most closely represents the memorial park conception of the rural cemetery, common during the

20th century. This section is less wooded and more open, with more flat monuments for ease in grass cutting. The Laurel Hill monument, an example of the patriotic theme in the memorial park, is also located on the west side. Graves are often clustered by ethnic group or occupation on this side, and there are few family mausoleums. The overall importance of Cypress Lawn was recently summed up as follows by Kent L. Seavey:

Taken as a whole, Cypress Lawn Memorial Park is a visual history of the American Cemetery movement from the late 19th century to the present. It also represents, in part, the successful effort...to create "one of the greatest landscape Memorial Works of Art anywhere to be found" (Seavey, 1992:28).

The key buildings and art works at Cypress Lawn include the Noble Chapel (1892-93); original Columbarium (holding the urns of cremated remains) (1895); Mausoleum and Catacombs (about 1915-1924); Administration Building (1918); the unfinished Lakeside Columbarium (1927-1930); 87 private mausoleums; outstanding examples of statuary; and a very large collection of art and stained glass in both the major buildings and some private mausoleums. In addition, the two artistic entrances on the east side of the cemetery announce a special realm, establishing a boundary that distinguishes two worlds, the sacred and profane.

Cypress Lawn probably holds the graves of more outstanding economic, political, intellectual and artistic figures in the history of California and the West than any other cemetery in Colma or elsewhere. A few of the names will offer an idea of the significance of Cypress Lawn in this regard:

Intellectual, Artistic and Religious Leaders:

Gertrude Atherton
Hubert Howe Bancroft
Alfred Lee Brewer
Arthur Page Brown
Arthur Brown Jr.
Laura H. Crews
Lewis P. Hobart
George Kelham
James King
William I. Kip
John McLaren
William F. Nichols
Lincoln Steffens

Economic Leaders:

Elias J. "Lucky" Baldwin
John A. Buck
James Carolan

Henry Cowell
Charles F. and William H. Crocker
James De La Montanya
Charles De Young
John Dolbeer
Ansel I. Easton
Paul I. Fagan
James C. Flood
William P. Fuller
Andrew S. Hallidie
George, Phoebe Apperson and William Randolph Hearst
Walter S. Hobart
John A. Hooper
Timothy Hopkins
Charles S. Howard
William G. Irwin
William Kohl
Nicholas Luning
William Matson
Daniel T. Murphy
Herman I. Nager
Henry M. Newhall
Hamden H. Noble
Timothy S. Phelps
Andrew J. Pope
William C. Ralston
William Sharon
Claus and Rudolph Spreckels
Lloyd Tevis

Political Leaders:

Mayor William Alvord
Senator David Broderick
Governor Hiram W. Johnson
Thomas O. Larkin
Senator Milton S. Latham
George T. Marye

Italian Cemetery, 1899

In 1858 the Italian-Americans of San Francisco formed a Mutual Benefit Association to help each other. In 1879 the Association established the Italian Cemetery at the western end of California Street in San Francisco. It was reportedly the only Italian Cemetery in the United States at that time (Seavey, 1992:32). By 1898 the Association was ready to follow the lead of others and transfer its cemetery to Colma. The new cemetery was established in 1899 on 37 acres.

Among the seven cemeteries examined as part of this study, the Italian is the one least influenced by the rural cemetery movement. Planned in rectangular fashion with straight, curbed roads, its graves and monuments are laid out in rows close together. It is reflective of a traditional European cemetery with an emphasis on the stonecutter's art, rather than nature. Even the natural features present are controlled, such as carefully pruned trees planted in rows rather than allowed to grow in a more natural fashion. Grass has been planted in this cemetery, indicating that some aspects of the rural ideals have penetrated even here. Overall, the Italian cemetery represents a clinging to old world tradition, a demonstration of the continuing cohesiveness of this immigrant group, as well as a reaffirmation of the stability of their own identity in a nation of change. Its most important historic structures are the Receiving Vault Chapel (1903) and the John F. Fugazi Family Chapel (c. 1915). A recently constructed large mausoleum stands across F Street from the main cemetery. The local Italian-American community sees the Italian Cemetery in Colma as an important source of information about the lives of Italian immigrants (San Francisco Examiner June 20, 1979:C-2).

If these seven cemeteries are viewed in terms of a continuum, the two extremes would therefore be Cypress Lawn, a good example of the rural cemetery ideal, and the Italian, a traditional cemetery little influenced by this ideal. In between would be the remaining five cemeteries with the Holy Cross, Home of Peace and Hills of Eternity Cemeteries clearly influenced by the rural cemetery model, and Eternal Home and Salem less so.

4.4 THE INFLUENCE OF THE CEMETERIES ON COLMA AND VICINITY

The rapid development of a major necropolis in the vicinity of the small village of Colma had an almost immediate impact on the area. An electric trolley line was built along Mission Road through the project corridor from San Francisco into the Colma area during the 1891-1893 period, providing up-to-date transportation facilities for cemetery visitors (The Western Railroader, December 1948; Hynding, 1982:99). The San Francisco and San Mateo Railway Company, as it was known, created a special ornate railroad car to carry funeral parties to Colma. Called the "Cypress Lawn," it had a special compartment for a casket. When the United Railroads of San Francisco took over the line in 1902 as part of a larger consolidation, more elaborate funeral cars were added. These immaculate 43,000-pound cars with three compartments had luxuriously cushioned seats, carpets, drapes and beautiful woodwork, perfect for the San Franciscan who wanted to go "out in style" (Postel, 1988:38-39; The Western Railroader, December 1948). By late 1903, the line had been pushed on to San Mateo, with stations at Brooksville, Holy Cross, Baden, Tanforan, San Bruno, Millbrae, Burlingame and San Mateo. The completed line and its double tracked roadbed was described as follows in the January, 1904 issue of The Journal of Electricity, Power and Gas:

The ties are redwood, six inches by eight inches by eight feet. They are placed two feet six inches from center to center. The rail is a seventy-two pound T-rail, on the private right of way. The joints are cast-welded, with an expansion joint every 1000 feet. Each cast-weld weighs 110 pounds. In the town of San Mateo a nine-inch girder rail is used. With the exception of a slight grade in San Mateo the interurban line is practically level. Several views, reproduced from photographs, illustrate typical cuts and fills. Except in San Mateo the entire interurban line is heavily ballasted with crushed rock. Track centers are thirteen feet and the gauge is standard.

Wooden side-pole construction is used on the entire interurban section. The poles carrying high-tension wires are seven inches by seven inches at the top, thirteen inches by thirteen inches at the base, and thirty-five feet long. The other poles are eight inches by eight inches at the top, twelve inches by twelve inches at base, and twenty-five feet long. The other poles are eight inches by eight inches at the top, twelve inches by twelve inches at base, and twenty-five feet long. They are all of redwood, and the portion which extends into the ground was coated with crude oil. They are painted a dark green, with a mixture of linseed oil, yellow ocher and lamp black.

The cross-arms are all made of Oregon pine, those carrying the high-tension-wires being four inches by six inches by five feet, and four inches by six inches by seven feet. The three high-tension wires are arranged in a triangle on one side of the pole, making it possible to add another set if it is desired. One wire is carried on the upper cross-arm and two on the lower. The wire is No. o and is triple braided, waterproof.. The Locke No. 100 brown porcelain, single petticoat, iron pin insulators are used. The cross-arms carrying the feeder wires are four inches by six inches. Steel pin porcelain insulators are used. There are at present five feeder wires from Millbrae substation, all being 500,000 circular mils. The trolley wire is No. oo hard-drawn copper. The span wires are five-sixteenths-inch galvanized iron strand wire. The ears are all soldered. The construction work on this line follows the same high standard as that adopted on other parts of the system.

Power is furnished to this line as follows: From the ferries to Thirtieth Street the Bryant Street power house furnishes direct current at 550 volts; from Thirtieth Street to Holy Cross the Geneva Avenue substation supplies the power, and from Holy Cross to San Mateo the Millbrae substation is depended upon (The Journal of Electricity, Power and Gas, January, 1904).

The route through the project area of the "40 line," as it was called, was described as follows in December 1948:

Down the Peninsula the operation was on Mission Street through Daly City thense [sic] on private right of way to Burlingame Avenue in Burlingame. The private right of way just south of Daly City originally was a side of the road affair, but in 1926 the line was relocated to a center strip between the 101 highway lanes as far as Cypress Lawn. From Cypress Lawn Cemetery to Holy Cross Cemetery the line was on the east side of Mission Road crossing over the highway at Holy Cross and paralleling the Southern Pacific the rest of the way to Burlingame...

Along the cemeteries the 40 line had several connecting street car lines. Originally the Mt. Olivet Cemetery had a private line connecting just North of the S.P. underpass, but this line was later relocated to connect with the 40-line at a point 1/2 mile south where the Mt. Olivet built its own underpass. The original Mt. Olivet line was in City streets, but the line as rebuilt was on private right of way. The Mt. Olivet operated until 1926 as a free car no fares being charged.

At Woodlawn Cemetery there was a branch line which was used for funeral cars, but no regular service is known to have been operated over it. Funeral cars were operated for a number of years over the street railway lines and these cars also ran over the Mt. Olivet and Woodlawn lines. The United Railroads and Market Street Railway had three cars fitted for this service.

At Holy Cross the South San Francisco Railroad and Power Company operated its line along the county road and Grand Avenue to the meat packing plants of South San Francisco. The portion along the county road was abandoned about 1902 and a connection with the 40 line was made at Lepsic Junction at the foot of Grand Avenue. The Market Street Railway operated the line for a number of years and operations were abandoned December 31, 1948 (The Western Railroader, December 1948).

In discussing the end of the old "40 line" in December 1948, it is interesting to note that the author, writing in The Western Railroader, stated that "perhaps a rapid transit line may someday be built" along a variant of the 40 line, adding that:

Plans drawn by traffic engineers from time to time have shown a subway line out Mission Street...via private right of way through Bernal Cut and over the old S.P. line to connect with the 40 line right of way at Holy Cross thense [sic] to Burlingame (The Western Railroader, December 1948).

It should also be noted that the remains of this line, including rails and ties, still lie adjacent to these cemeteries under the center islands of today's El Camino Real.

As a result of a better transportation network and cemetery construction and development, the Colma area underwent an economic boom during the 1890s. In 1889, just as those first cemeteries were being established, Dun's Mercantile Agency Reference Book had only five business listings for the Colma area. These included a blacksmith, a saloon, a general store, a hotel and distillery (Dun and Company, 1889). By 1901, this list had grown to 28 listings, including ten saloons, four grave monument businesses, three combined hotel/saloon establishments, three blacksmiths and one each of the following: general store, florist, carpenter, butcher, California Fuse Works, painter, notions and shoemaker (Dun and Company, 1901). The full 1901 list is as follows:

COLMA, San Mateo Co.--5B
Pop. 750--Banking Town San Francisco

Belli, M. & S.	General Store
Biggio, John	Saloon
Bracken, John	Saloon
California Fuse Works (Inc.)..	See San Francisco
Casey & Green	Butchers
Colopy, Geo	Saloon
Conway & Millet	Saloon
Decamille, F.	Restaurant & Saloon
Dineen, B.	Monuments
Donahue & Brennan	Marble & Granite
Dunn, Mrs. B.E.	Dry Goods & Notions
Grallert & Co.	Florists & Nurserymen
Graziani, G.	Shoemaker
Harrison, T.	Blacksmith
Heagerty, J.D.	Saloon
Hohmann, V.J.	Saloon
McGrath, J.J.	Blacksmith
Meehan, J.J.	Hotel & Saloon
Morgana, A.	Grocer & Saloon
Moss & Borla (Holy Cross)	Hotel & Saloon
Mullaney, P.D.	Monuments
Nelson, John	Painter
O'Connor, J.C. (Holy Cross)	Hotel & Saloon
Pierce & Sullivan	Saloon
Pynchon, F.W.	Saloon
Roberts, D.A.	Monuments
Verlinden, A.	Carpenter
Zelinsky, G.	Blacksmith

(Dun and Company, 1901)

4.5 THE BANNING OF SAN FRANCISCO'S CEMETERIES AND TRANSFER TO COLMA

As the Colma cemeteries developed during the 1890s and turn-of-the-century years, the first wave of state and local legislation was passed regulating the use and very existence of cemeteries in the City and County of San Francisco. This legislation, representing the initial attempt to ban cemeteries within San Francisco proper, was but the first step in what was to become a complex and decades long legal and political struggle over the fate of these graveyards. During the period 1898-1901, both state law and local ordinance banned further burials in San Francisco cemeteries. Legal action by groups who wished to maintain cemeteries in San Francisco followed, but the state Supreme Court ruled for the City government (Seavey, 1992:6-7; Proctor, 1958:2; Trustees of Laurel Hill Cemetery, 1913). This was followed by the establishment of additional cemeteries in Colma, located outside the project area to the west. Another effect was the accelerated deterioration of the existing cemeteries of San Francisco. They became the haunts of grave robbers, vandals, delinquents, ghouls, tramps, lovers and teenage groups who held "bonfire rallies" prior to school athletic contests at the neglected cemeteries (Proctor, 1958:2-3). This increased the pressure from some nearby residents to have the cemeteries completely removed as "menace to health, eyesores and obstacles to community progress" (Proctor, 1958:4). This in turn led to a counter movement opposing on grounds of religious principle or historical significance any grave removal. The conflict continued into the 1920s when state law, local ordinance and court decisions mandated removal of graves from the Masonic and Odd Fellows cemeteries but not Laurel Hill or Calvary Cemeteries (Proctor, 1958:4). The human remains and monuments in the Masonic and Odd Fellows cemeteries were then removed to Colma, establishing a precedent. The problem of Laurel Hill and Calvary Cemeteries remained. Opposition to removing these two historic places, both filled with San Francisco pioneers, was strong. Eventually however, the Board of Supervisors passed an ordinance, ratified in a close vote by the electorate in November 1937 to force removal of all graves from these two cemeteries as well (Proctor, 1958:6-7; Seavey, 1992:12).

The process of removing remains from San Francisco's cemeteries to Colma was as complex and drawn out as the legal and political struggle which led to the banning of cemeteries in the City. In the case of Hills of Eternity and Home of Peace cemeteries, removal of bodies from their old graveyard located at today's Dolores Park began as early as 1889 and was ongoing during the early 1890s. Thousands of remains were moved during this period and the area was turned into a city park (Edmonson, 1993; Tilsen, 1993).

It took about ten years to move the 35,000 bodies from Laurel Hill to Cypress Lawn and the 55,000 bodies from Calvary to Holy Cross. In the case of Calvary's graves, the majority of the 55,000 were placed in a large burial mound, with no individual markers erected. In many cases families had remains of loved ones transferred to family owned vaults or to private lots in Holy Cross. Similarly, most of the 35,000 Laurel Hill bodies were placed in a five-acre sized burial mound at Cypress Lawn. About 1,000 bodies were privately disinterred from Laurel Hill and moved to private plots, often at Cypress Lawn. In some cases, the monuments over the graves were moved and placed over the new internment location (Proctor, 1958:8).

The long struggle to remove and relocate the monuments and remains of San Francisco's pioneers was a significant event in the City's history. It also represented a rare event in modern United States history. While removal of cemeteries from desirable areas of a city was common in early U.S. history, during the modern period this was an unusual occurrence. As an executive of the American Cemetery Association expressed it, "we do not know of any other community where cemeteries have been 'banished' from the city. On the contrary, cemeteries are generally considered an integral part of the community" (Seavey, 1992:12).

4.6 THE EVOLUTION OF THE TOWN OF COLMA

Once cemeteries became the main business of Colma, the place became known as a necropolis or city of the dead. From an early date the Town of Colma was run by the Cemetery Association, which has a representative from each cemetery. It was a unique community with a very small population, no churches, schools or retail stores. Prior to the mid-1920s, the town was unincorporated territory, but due to fears that Daly City (incorporated 1911) might expand and take over Colma, the "City of Lawndale" was incorporated on August 11, 1924 (Seavey, 1992:10; Jensen, 1931:113). The place remained known as Lawndale until November 1941, when due to the existence of another (and older) California town with that name, the name was changed back to Colma (Seavey, 1992:12).

4.7 COLMA AND THE CEMETERIES TODAY

By 1990 Colma had increased its living population to about 1100, and shopping centers and other retail outlets have appeared. But the numerous cemeteries of the area and their over one million residents are still by far the key business of Colma. The cemeteries continue to expand; Cypress Lawn purchased two additional acres of land in 1992, for example, and revenues and endowment funds are up. Cypress Lawn, the most prestigious of the Colma cemeteries, now has a $27.6 million endowment for permanent upkeep. In 1992, the Cypress Lawn Cemetery Association, a non-profit corporation, had revenues of over four million dollars in 1992, up from just over three and a half million in 1991. Its current directors include important San Francisco business leaders, men who often have relatives buried at Cypress Lawn (San Francisco Chronicle, May 24, 1993). More generally, the cemeteries all appear to have successfully preserved their character and importance.

5. DESCRIPTION OF RESOURCES

The research and field work conducted as part of this project found and evaluated seven cemeteries within the project APE. These are as follows:

Italian Cemetery
Eternal Home Cemetery
Salem Memorial Park
Home of Peace Cemetery
Hills of Eternity Memorial Park
Cypress Lawn Memorial Park
Holy Cross Cemetery

Of these, all but Eternal Home and Salem appear to qualify for the National Register of Historic Places as part of four separate districts. The reason that there are four and not five districts is due to the fact that Home of Peace and Hills of Eternity logically make up one instead of two districts; they are aesthetically one, are physically adjacent to each other, and are unified by a common history.

Due to the fact that hundreds of thousands of monuments exist in these cemeteries, it is impossible to record them all and produce a comprehensive list of contributing elements at this time. Thus only a sample of significant gravemarkers, as well as all buildings and exceptional landscape features, were recorded. In general, all buildings, gravemarkers, and landscape features dated prior to 1946 are considered to be resources which contribute to each respective district (some exceptions are noted below). The contributing features listed below are representative examples of the resources in each cemetery and illustrate the reasons why each cemetery district qualifies for the National Register.

Within the four districts, a total of 67 contributing and 20 non-contributing features have been recorded. These are as follows:

Italian Cemetery District

Contributing Features:
1. Receiving Vault Chapel - 1903
2. Memorial Column - 1872, moved 1936
3. Old Office Building - c. 1910
4. Flower Shop - 1933
5. Gateway - c. 1905
6. Domenico Tringale Tomb - 1921
7. Faggioni-Mori-Stratta Mausoleum - 1929
8. Mausoleum on San Antonion Street - 1920s-1930s
9. Fugazi Mausoleum - 1916

Non-Contributing Features:
10. Utilitarian Structures - 1930
11. Two recent community mausoleums - 1980s
12. A large community mausoleum - 1987
13. Cemetery Office - c. 1955

Home of Peace/Hills of Eternity Cemetery District

Contributing Features:

1. Grotto, ponds and rustic fence - c. 1889
2. Emanu-El Mausoleum - 1935, 1955, 1964
3. Lilienthal Family Mausoleum - c. 1919
4. Napthaly Family Mausoleum - 1910-1911
5. Levi Strauss Family Mausoleum - c. 1893
6. Heller Family Mausoleum - c. 1889-1890
7. Fisher-Sahlein Family Mausoleum - 1902
8. American Monumental Company - c. 1940
9. Horse Barn/Pump House - c. 1900
10. Old Pump House and Reservoir - c. 1910
11. Greenhouses - c. 1933
12. Portals of Eternity - 1933-1934
13. Blackman Memorial - c. late 1880s
14. Simon Cohn Memorial - c. 1889
15. Lewis Brown Family Mausoleum - 1901
16. Golinsky Gravemarker - c. 1892
17. Shilling Mausoleum - c. 1890
18. Henry Sieroty Tomb - c. 1935
19. Kollman Monument Co. - c. 1900
20. Pump House - c. 1910

Non-Contributing Features:

21. The Garden Mausoleum - mid-1960s
22. Shed near Horse Barn - c. 1920s
23. Office Building - 1961
24. ACME Memorial Office Building - c. 1975
25. Garden of Eternity - 1960s-1970s

Cypress Lawn Cemetery District

Contributing Features:

1. Lakeside Columbarium - 1927
2. Noble Chapel and Crematory - 1892-1893
3. Original Columbarium - 1893-1895
4. Cemetery Office Building - 1918, 1934
5. The Catacombs - 1915, 1919-1921, 1924
6. Mission Road Gate - 1892
7. Hillside Boulevard Gate - c. 1900
8. Charles deYoung Memorial - c. 1881
9. Rogers Tomb - 1929
10. Daniel Murphy Mausoleum - c. 1920
11. Thorne Family Monument - c. 1931
12. Charles Crocker Family Mausoleum - 1889-1898
13. Hearst Family Mausoleum - 1896
14. Andersen Monument - c. 1906
15. Valentine Monument - c. 1896
16. Hiram W. Johnson Mausoleum - 1949
17. Tevis Monument - c. 1912
18. Nager Mausoleum - 1912
19. Niebaum Mausoleum - 1908
20. Row of Mausoleums - 1905-1907
21. Claus Spreckels Mausoleum - c. 1910
22. Trolley Shelter - c. 1903

23. Vehicle Barn - c. 1915
24. Clubhouse - c. 1915
25. Baci's Engines and Machine Shop - c. 1910

Non-Contributing Features:
26. Corporate Yard
27. Laurel Hill Memorial - 1940-1955

Holy Cross Cemetery District

Contributing Features:
1. Old Lodge/Office Building - 1902
2. Entrance Gates - 1902
3. Holy Cross Mausoleum - 1921
4. McGuire Mausoleum
5. Kitterman Mausoleum - c. 1892
6. Governor Downey Monument - 1896
7. Fair Family Mausoleum
8. Phelan Mausoleum
9. Priest's Circle - c. 1880s
10. Dunphy-Burnett Mausoleum - c. 1920
11. Caretaker's House - c. 1900
12. Caretaker's House and Reservoirs - c. 1910
13. Native Son Florist - 1935

Non-Contributing Features:
14. Interment Chapel - 1964
15. Main Office Building - 1956
16-19. Recent Mausoleums - 1956-1985
20. Rest Rooms - c. 1956
21. Post-War Utility Buildings
22. Flower Building

All of the above resources and district boundaries are located in Figures 4-8 in Appendix I. The inventory forms in Appendix II offer detailed discussions of these specific contributing and non-contributing features, including their integrity.

6. A NATIONAL REGISTER OF HISTORIC PLACES SIGNIFICANCE EVALUATION

Part 60.4 of Chapter I of Title 36 of the Code of Federal Regulations outlines the criteria for evaluation of properties for possible inclusion in the National Register of Historic Places (NRHP):

The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures, and objects of State and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and

a) That are associated with events that have made a significant contribution to the broad patterns of our history; or

b) That are associated with the lives of persons significant in our past; or

c) That embody the distinctive characteristics of a type, period, or method of construction, or that possess high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

d) That have yielded, or may be likely to yield information important in prehistory or history (36 CFR 60.4).

Cemeteries are not ordinarily considered for listing on the NRHP; therefore, they are considered to be one example of a special grouping of types of properties which must meet additional special requirements before they can qualify. These special requirements are called Criteria Considerations. Criteria Consideration D deals with cemeteries. It states that a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, from association with historic events or due to its information potential can qualify for the National Register (National Park Service, 1991:25, 34-35).

This National Register of Historic Places significance evaluation therefore involves determining the category of historic property (district, site, building, structure or object); whether it is of local, state or national importance; the appropriate theme; and its period of significance. Finally, the NRHP significance criteria, including Criteria Consideration D, must be applied and the property's integrity determined.

1) These seven cemeteries are best viewed as six individual districts, each with a "significant concentration, linkage, or continuity...united historically or aesthetically by plan or physical development" (National Park Service 1991:5). Each cemetery makes up a separate district except that Home of Peace Cemetery and Hills of Eternity Memorial Park make up one district due to their physical proximity and historical and aesthetic unity.

2) These cemeteries are of state-level importance.

3) The appropriate theme is architecture, specifically landscape architecture.

4) Their period of significance is their founding date (1886-1901 depending on the cemetery) to 1945.

Applying the NRHP significance criteria, five of these seven cemeteries appear to qualify for the National Register as four districts.

6.1 THE ITALIAN CEMETERY

This cemetery, founded in 1899, clearly embodies the distinctive aesthetic principles and values of the southern European cemetery design in its plan (rectilinear, grid), buildings, minimal natural plantings, materials, funerary sculpture, grave markers, underground vaults, and mausoleums. It therefore appears to meet criterion c of the NRHP significance criteria. Its integrity is still good despite nearby development. It is, therefore, an authentic historic property and appears to meet the special cemetery criteria considerations for the National Register.

6.2 HOME OF PEACE CEMETERY AND HILLS OF ETERNITY MEMORIAL PARK

These cemeteries abut one another, were developed in tandem, and thus form one district with historic and visual unity. This district appears to qualify under criteria b and c of the National Register significance criteria. Both cemeteries, but especially Home of Peace, contain the graves of persons exceptionally significant in California's economic history: banker I.W. Hellman, clothier Levi Strauss, and leading members of the Lilienthal, Zellerbach, Haas, Sachs, Fleishhacker, and Shilling families, to name only a few. Lawman Wyatt Earp is also buried here. This district also represents an excellent example of cemetery design during the period 1889-1945. It shows both the influence of the traditional rectilinear cemetery design and the picturesque curvilinear design and natural landscaping of the more modern rural cemetery style. It therefore embodies the distinctive characteristics of design for both these types of cemeteries. This district also has excellent integrity of location, materials, workmanship, feeling, and association. Its integrity of design is only good, due to the loss of a monumental arched gateway and chapel during the 1906 earthquake. Its integrity of setting has been somewhat compromised by nearby developments and so is also only good. Notwithstanding some minor loss of integrity, this district is clearly an authentic historic property and appears to meet the special criteria consideration for the National Register.

6.3 CYPRESS LAWN MEMORIAL PARK

This cemetery appears to qualify for the National Register as a state-level district. For a number of reasons, it is the most important of all the cemeteries evaluated for this study. First, it contains the finest collection of funerary art and architecture found in Northern California. Second, even though it does not present a completely unified image, it is the fullest realization of the picturesque landscaping principles of the rural cemetery movement to be found in any of the Colma cemeteries. It therefore is one unified entity--a district. Third, it reflects the evolution of American cemetery design from 1892 through the World War II era (its period of significance). Finally, no cemetery in Northern California (and perhaps the entire state) contains the remains of so many people who played outstanding roles in the economic, political, intellectual, and artistic history of the state. This cemetery therefore appears to qualify for the National Register under criteria b and c, association with important people (such as historian Hubert Howe Bancroft, authors Gertrude Atherton and Lincoln Steffens, architect John McLaren, bankers William C. Ralston, William H. Crocker and Lloyd Tevis, newspaperman William Randolph Hearst and Charles De Young, mine owner and Senator George Hearst, philanthropist Phoebe Apperson Hearst, ship owner William Matson, mine owner James C. Flood, sugar magnate Rudolph Spreckels, Governor and Senator Hiram W. Johnson, and pioneer Thomas O. Larkin) and architectural and design values.

Cypress Lawn also appears to qualify under criterion a, association with significant events, specifically the long conflict over the transfer of Laurel Hill Cemetery out of San Francisco to Cypress Lawn. This was an important event and the close association of Cypress Lawn with this event is clear and unmistakable. In sum, Cypress Lawn Memorial Park qualifies under three of the National Register criteria, is an excellent example of the rural cemetery theme, has excellent integrity of location, setting, design, materials, workmanship, feeling, and association, and meets the special criteria consideration for the National Register.

6.4 HOLY CROSS CEMETERY

This cemetery appears to qualify for the National Register as a state-level district. As was the case for Home of Peace/Hills of Eternity district, it represents a combination of the traditional and cemetery styles, illustrating the evolution of these styles. This district appears to qualify under criteria a, b and c. As was the case for Cypress Lawn, Holy Cross Cemetery appears to be associated with significant events, specifically the long conflict over the transferring of cemeteries out of San Francisco. In the case of Holy Cross, the cemetery in question was Calvary Cemetery in San Francisco. Since the association of Holy Cross with the struggle over the transfer of Calvary Cemetery is clear and unmistakable, Holy Cross appears to qualify under criterion a. Holy Cross also appears to qualify under criterion b, because it contains the graves of person exceptionally significant in California's economic and political history (Governor John G. Downy, A.P. Giannini of the Bank of America, Mayor and Senator James D. Phelan, "Silver King" and Senator James G. Fair) and is an excellent example of cemetery design for the period 1886-1945. It has a fine collection of historic buildings, gravemarkers, and mausoleums. It illustrates both the influence of the traditional rectilinear cemetery design and the picturesque curvilinear design and natural landscaping of the more modern rural cemetery style. It therefore embodies the distinctive characteristics of design for both of these types of cemeteries. This district also has excellent integrity of location, setting, design, workmanship, materials, feeling, and association. It is therefore an authentic historic property and appears to meet the special criteria consideration for the National Register.

6.5 ETERNAL HOME CEMETERY AND SALEM MEMORIAL PARK

These two cemeteries are both small Jewish cemeteries which can be evaluated together. While they both have interesting examples of cemetery art, neither appears to qualify for the NRHP. The overall quality of their art and architecture is much lower than the other five cemeteries covered in this study. In addition, they do not have graves of persons of transcendent importance, are not associated with important historical events, and do not have the potential to yield important information not available in extant documentary sources. Consequently, the authors of this study have concluded that these two cemeteries are not eligible for inclusion in the National Register as separate districts. However, less than one half of the total Colma cemetery complex has been included in this study, since the remaining cemeteries lie outside the project APE. The authors, therefore, recognize the possibility that Salem and Eternal Home could be considered contributing elements of a single historic district that encompasses all of the historic cemeteries of Colma.

7. CONCLUSIONS

This report has determined that five of the seven historic cemeteries evaluated as part of the BART-San Francisco Airport Extension Project are apparently eligible for the National Register. These five cemeteries make up four districts as shown on Figures 4-8.

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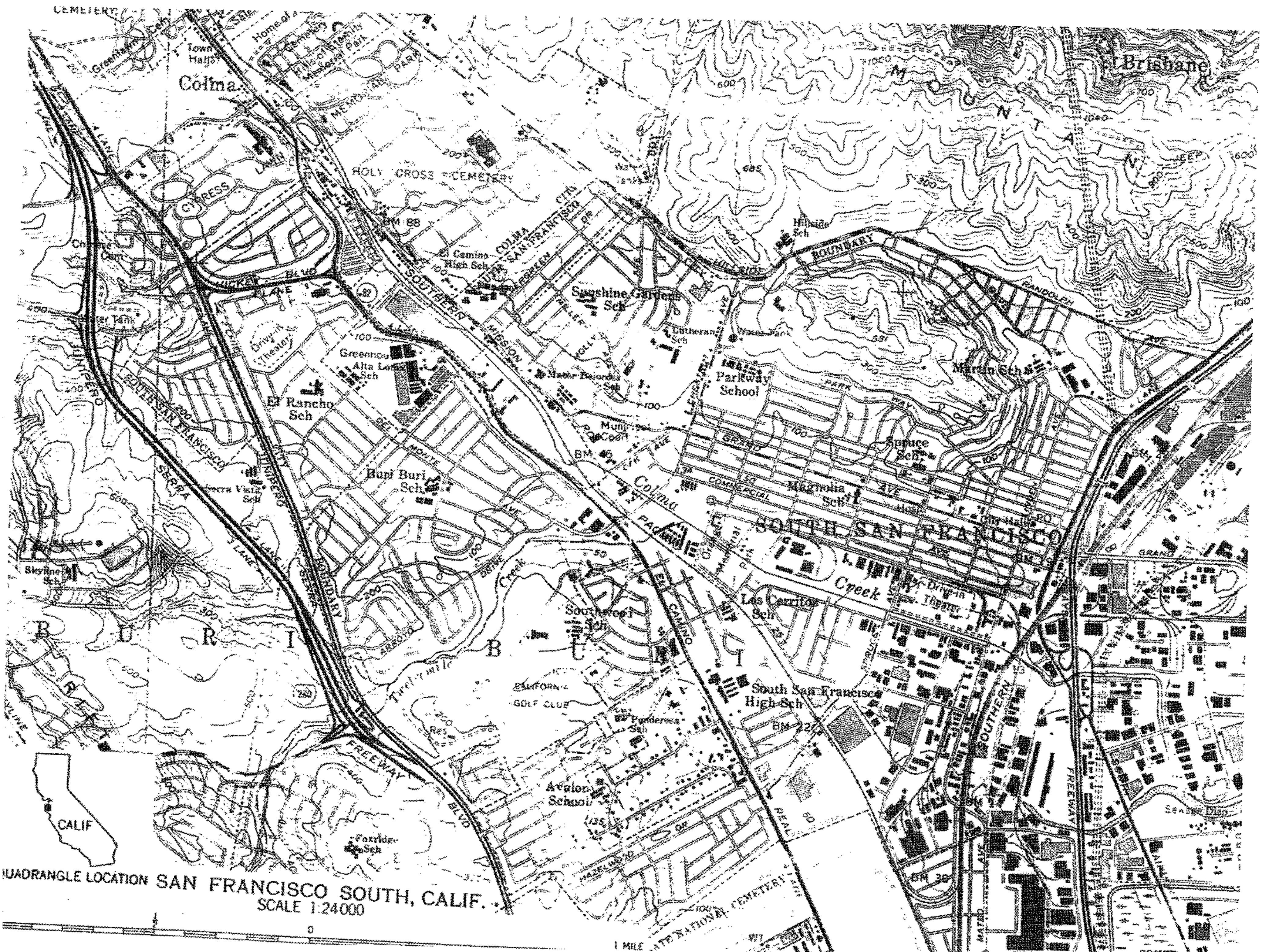
Appendix I: Figures



QUADRANGLE LOCATION SAN FRANCISCO SOUTH, CALIF.
SCALE 1:24000

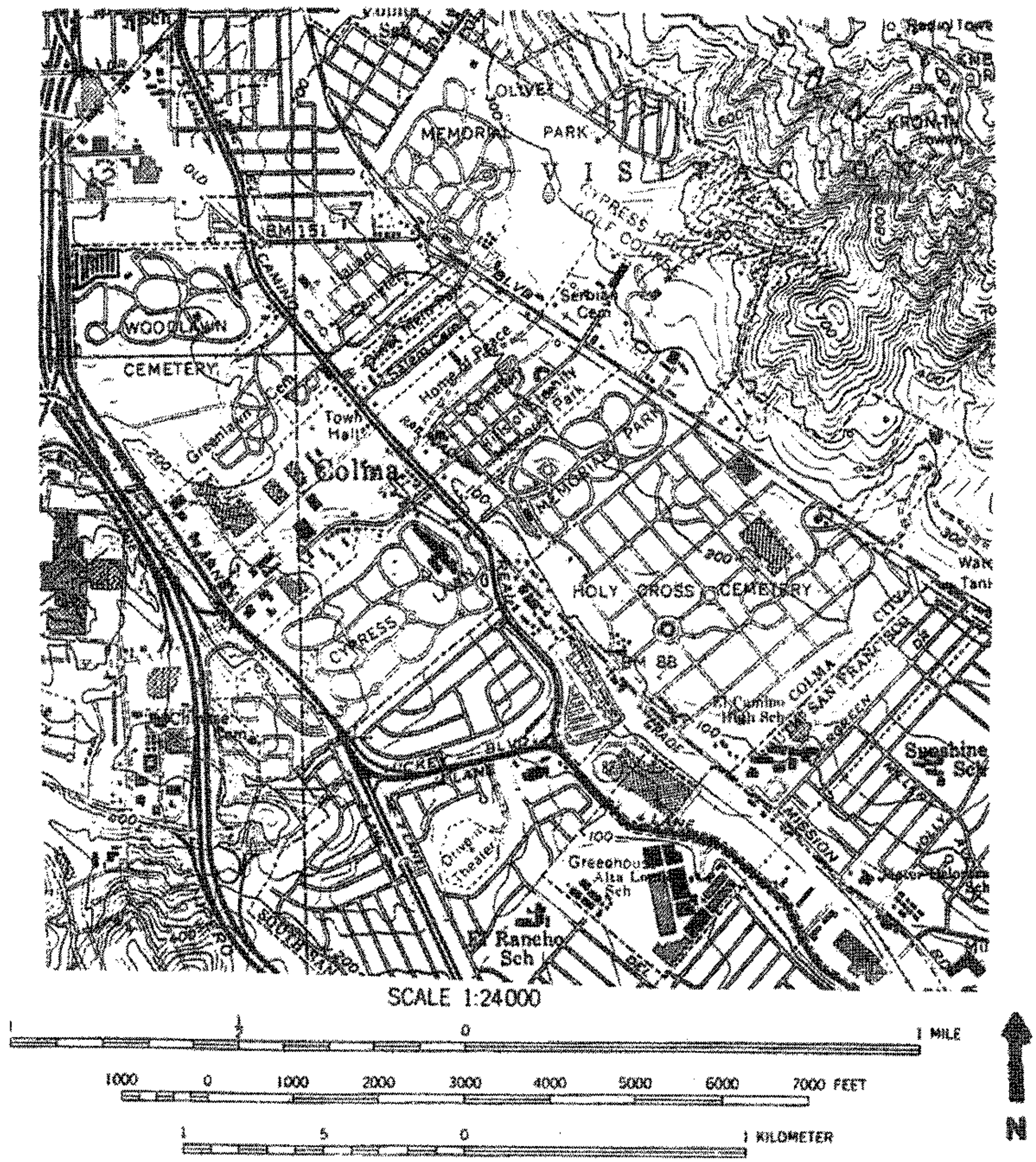
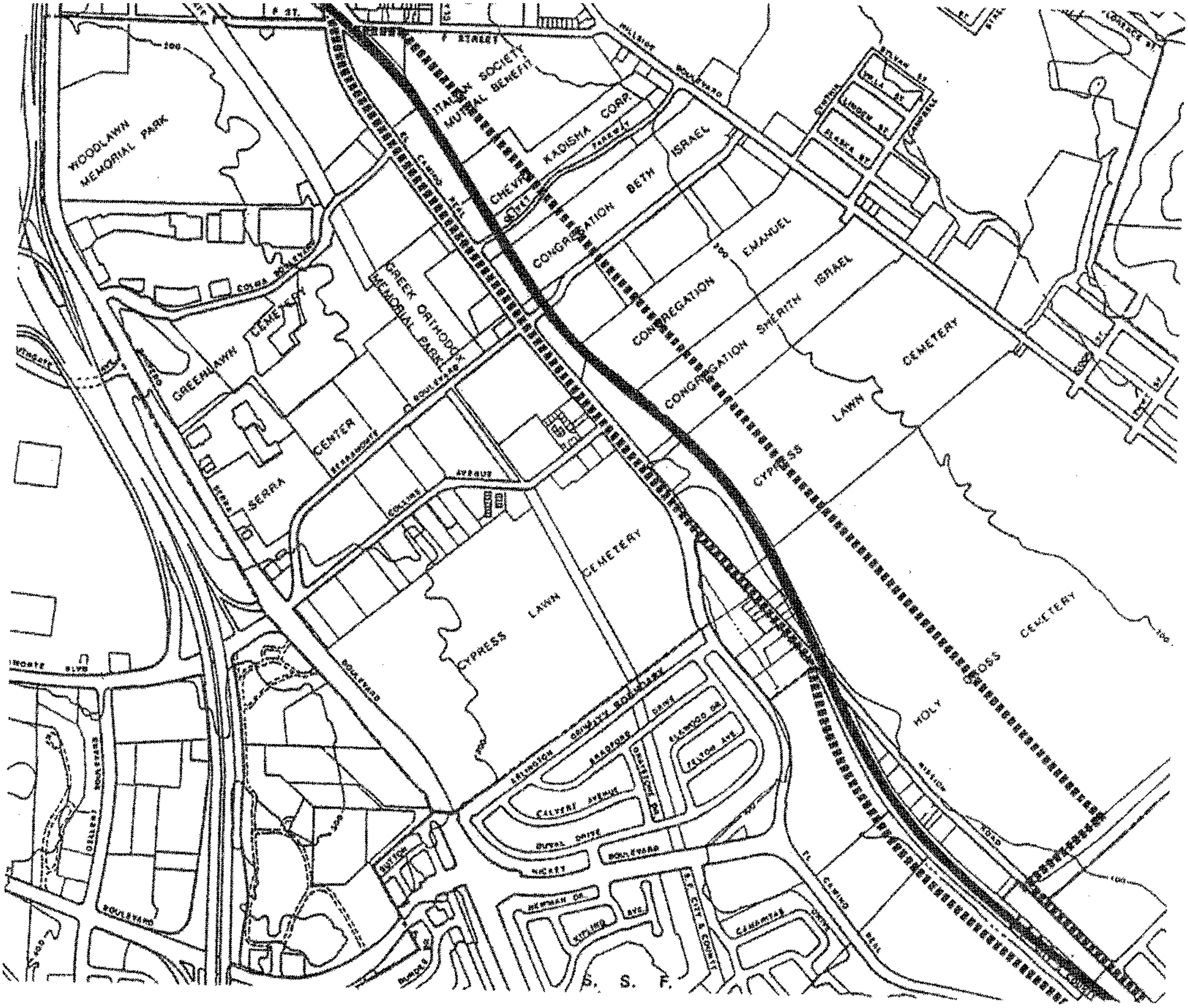


FIGURE 2: PROJECT LOCATION



WOODLAWN MEMORIAL PARK
ITALIAN SOCIETY MUTUAL BENEFIT
CHEVRA KADISHA CORP.
CONGREGATION BETH ISRAEL
CONGREGATION EMANUEL
CONGREGATION SHERITH ISRAEL
GREEK ORTHODOX MEMORIAL PARK
GREENLAWN CEMETERY
SERRA CENTER
CYPRESS LAWN CEMETERY
HOLY CROSS CEMETERY
F STREET
HILLSIDE BOULEVARD
EL CAMINO REAL
COLLINS AVENUE
CALVERT AVENUE
DUVAL DRIVE
BOULEVARD
MISSION ROAD
S. S. F.

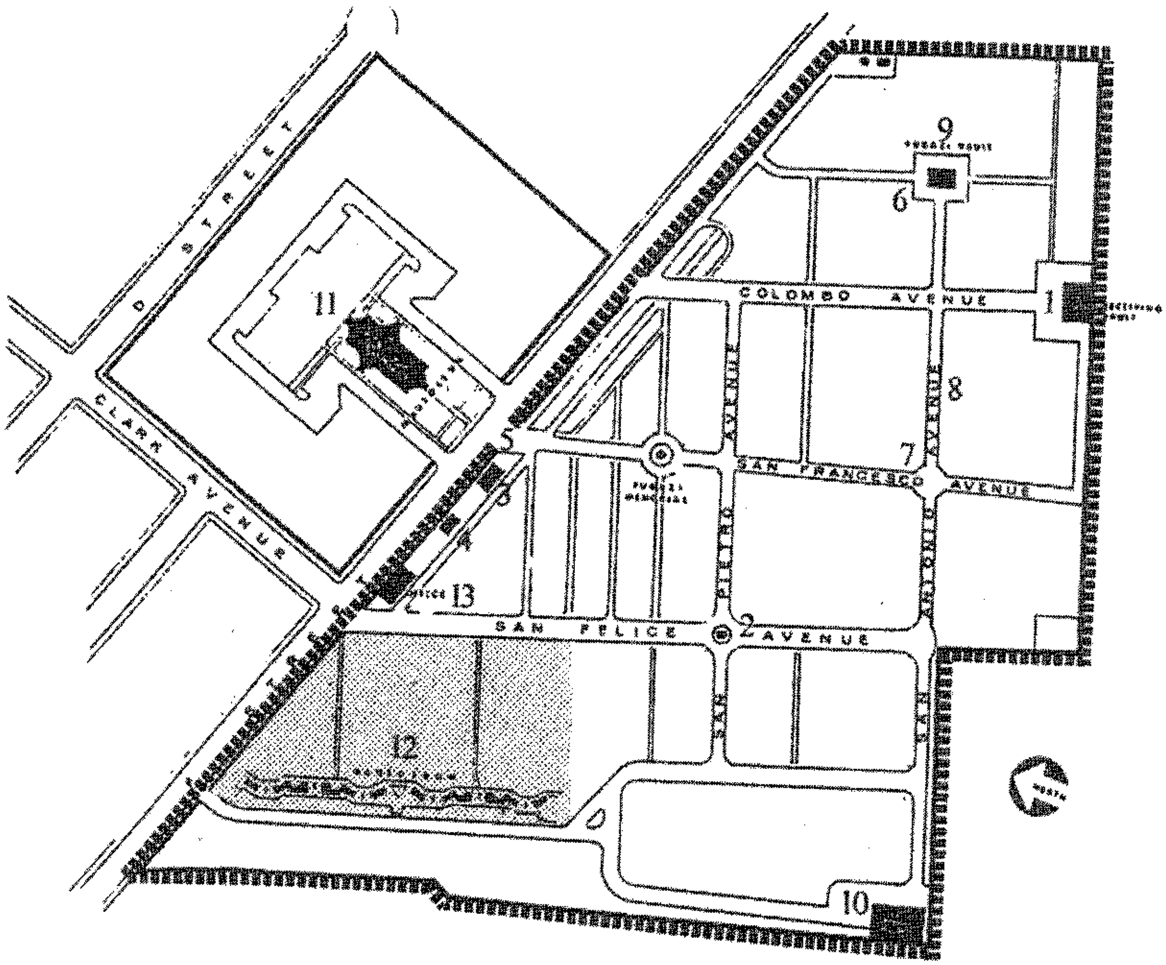
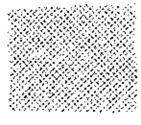


FIGURE 4: ITALIAN



AREA OF POST 1945 DEVELOPMENT

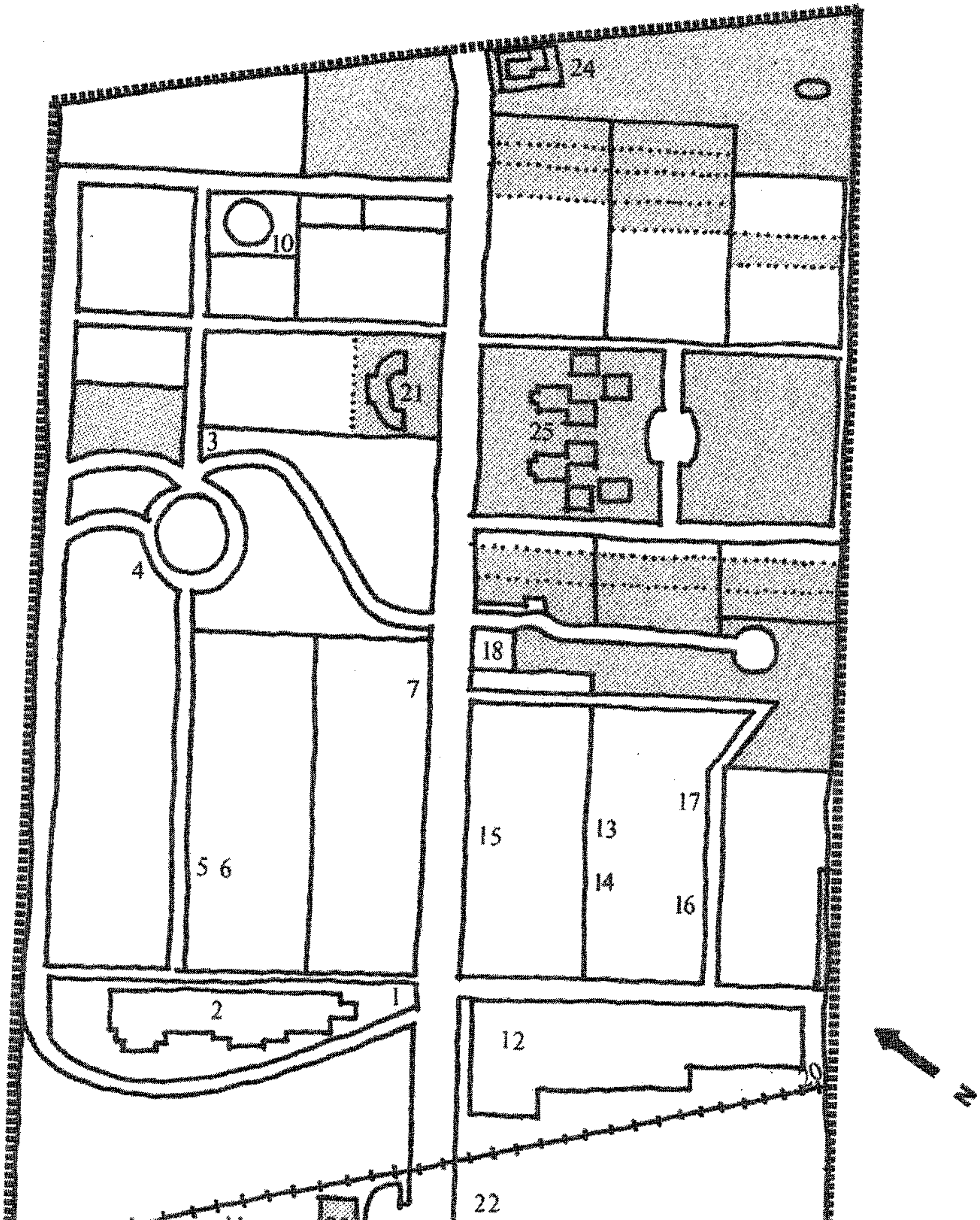


FIGURE 5: HOME OF PEACE/HILLS OF ETERNITY

AREA OF POST 1945 DEVELOPMENT

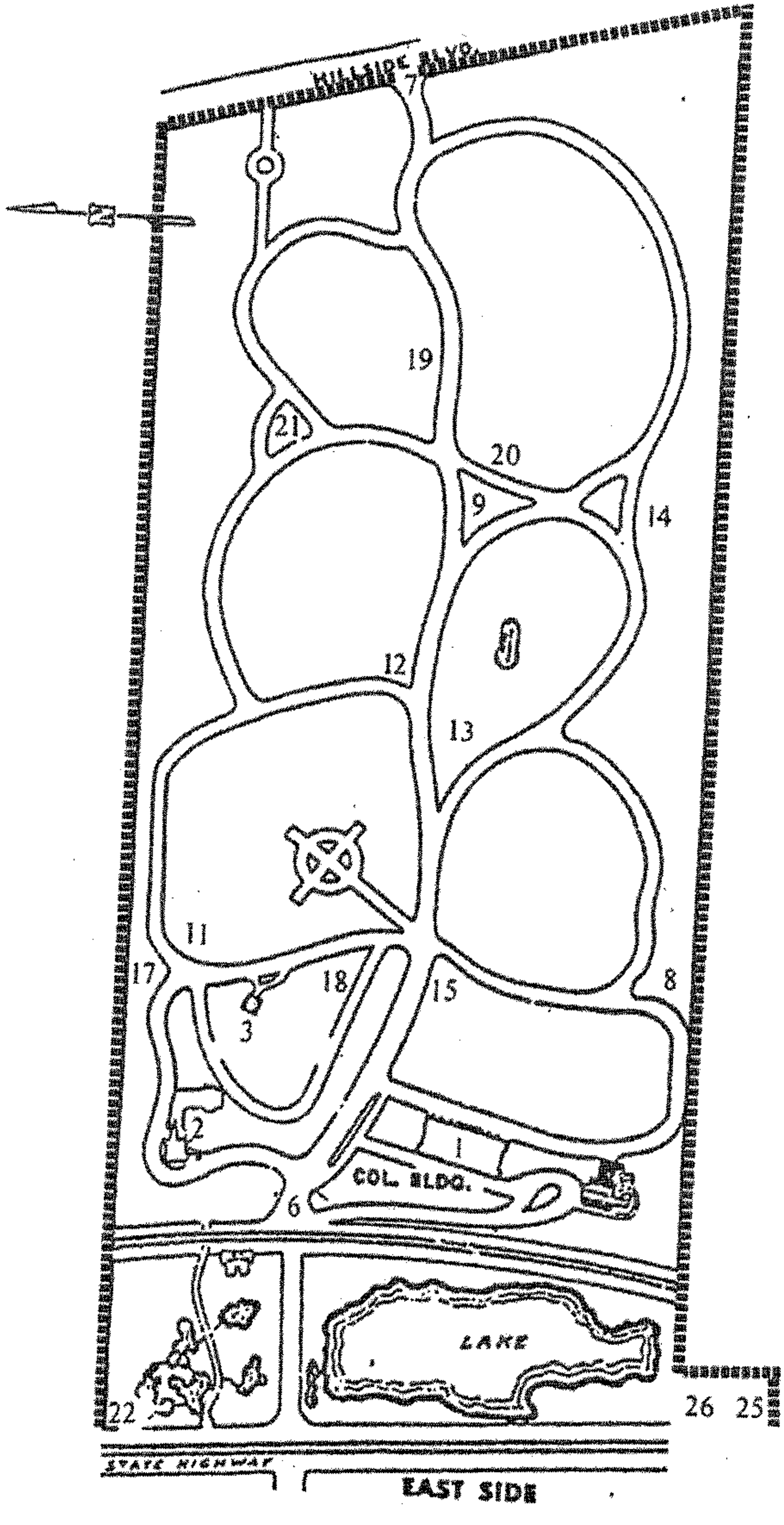


FIGURE 6: CYPRESS LAWN EAST

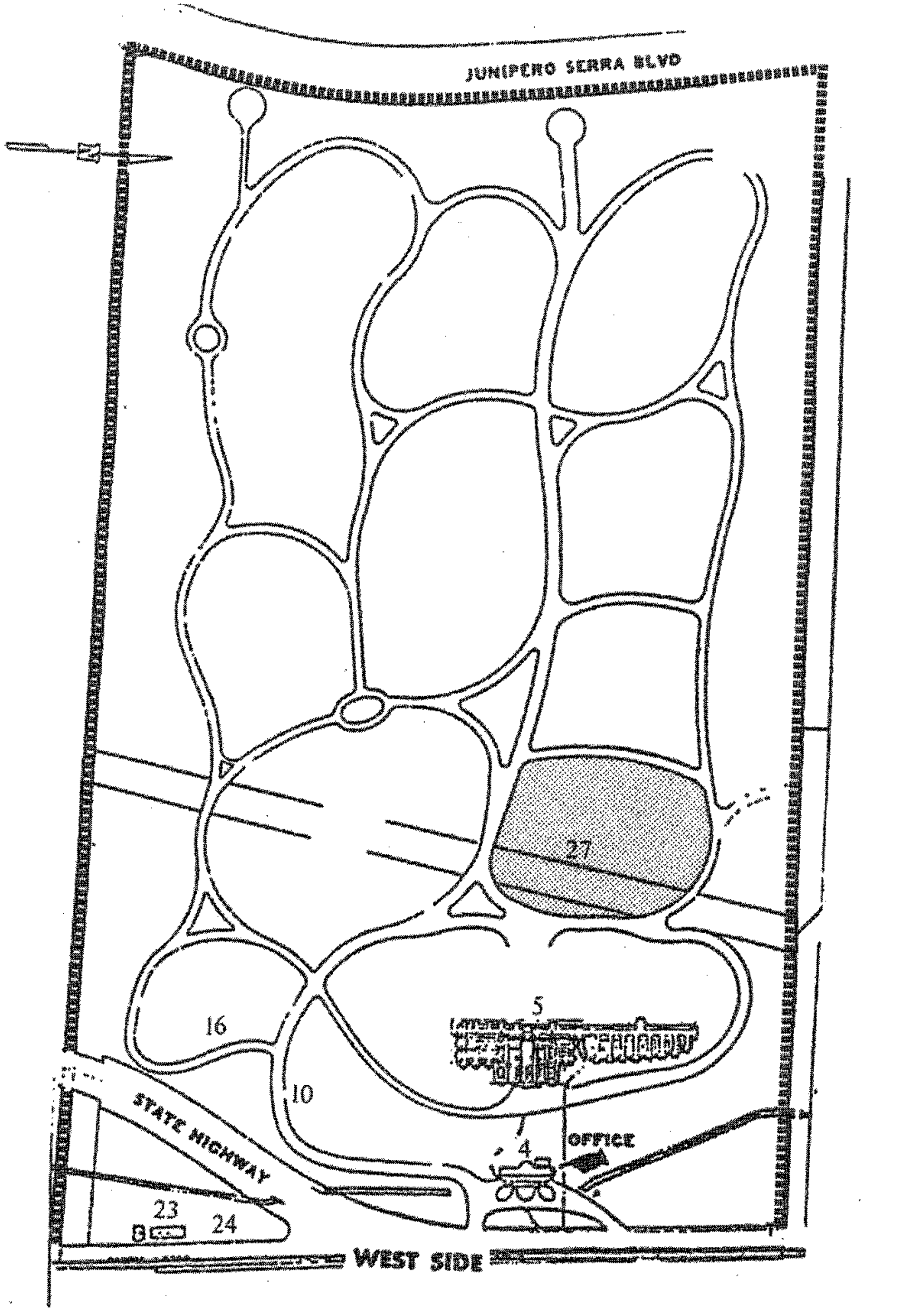


FIGURE 7: CYPRESS LAWN WEST

AREA OF POST 1945 DEVELOPMENT

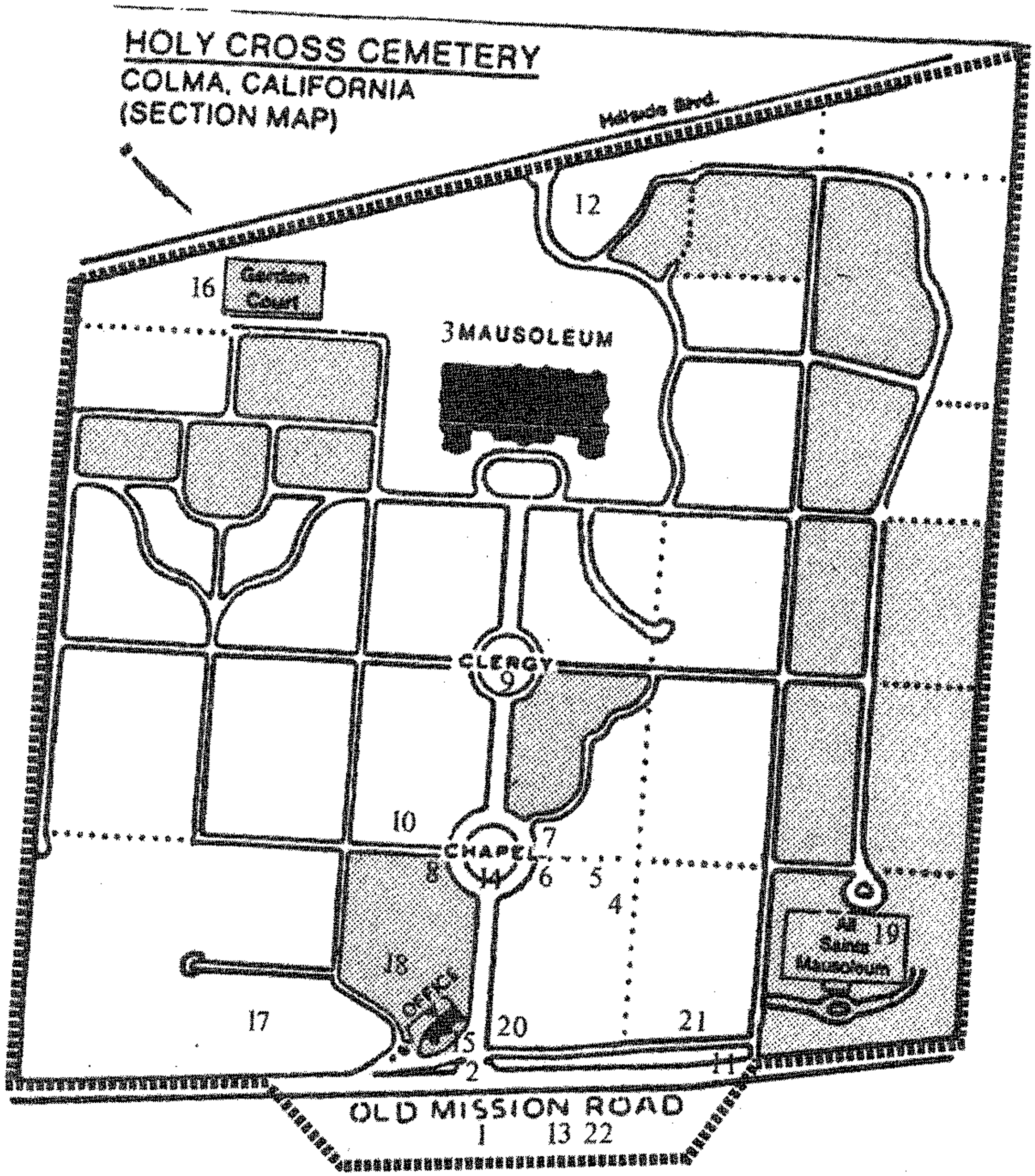
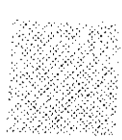


FIGURE 8: HOLY CROSS



AREA OF POST 1945 DEVELOPMENT

State of California -- The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

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C ________ D ________

HISTORIC RESOURCES INVENTORY

P-41-404

IDENTIFICATION

1. Common name: Cypress Lawn Memorial Park

2. Historic name: Cypress Lawn Cemetery

3. Street or Rural Address: 1370 El Camino Real
City: Colma Zip Code: 94014 County: San Mateo

4. Parcel numbers: 011-341-511, 010-421-170, 010-422-020, 010-423-030, 011-341-130, 011-342-061
Present Owner: Cypress Lawn Memorial Park Address: 1370 El Camino Real City: Colma Zip Code: 94014

5. Ownership is: ( ) Public (X) Private

6. Present Use: Cemetery Original Use: Cemetery

DESCRIPTION

7a. Architectural style: Rural (picturesque)

7b. Physical Condition: (Present condition of the site or structure and any major alterations from its original condition)

Cypress Lawn Memorial Park is a 147-acre cemetery with a picturesque arrangement of winding streets and uncrowded burials that distinguish it from the other historic cemeteries evaluated in this study. It is the only cemetery to extend over both sides of El Camino Real, which runs in a valley between the two sloping sides of the park.

The half of the cemetery to the east of El Camino Real was developed first, and its topography has been manipulated to achieve greater variety in elevation. Access to this half is on an axis that runs between a picturesque collection of ponds. One large pond is to the south and several highly irregular ponds (designed in the 1920s) are to the north of the axis. The axis proceeds through the monumental entrance gate and then branches to provide access to the Noble Chapel or the "Lakeside Columbarium." Behind (or to the east of) these community buildings are scattered burials on verdant mown lawns. This half of the park features the full range of late-nineteenth and twentieth century cemetery monuments. Numerous family mausolea (there are a total of 87 in the cemetery) dot the park with designs representing Classical, Renaissance, Egyptian, Gothic, Romanesque, and Art Deco styles. Many of these buildings are very large and represent substantial investments in workmanship and money and are the designs of prominent artists, architects, and sculptors. Gravemarkers include an almost limitless range of forms and motifs, including tablets, flush markers, lambs and cherubs (for children), posts, columns, urns, benches, sarcophagi, pyramids, angels, rustic boulders and carved tree-stumps, obelisks, tablets, crosses, and Celtic crosses. The oldest section of the cemetery is near the "Old" columbarium. Nineteenth- and early twentieth-century markers more commonly represent the deceased's place of origin, and details concerning the life of the male head of the family often supersede those for other family members. After approximately 1910, granite markers surpass marble in popularity.

The west side of the park is laid out along the same picturesque lines but is smoother and more regular than the eastern half, with fewer trees and fewer dramatic monuments. Flush and slant markers are more common in this side, yet some impressive gravemarkers and family mausolea are also found here. This half of the cemetery also features the early twentieth-century offices and the enormous community mausoleum which exhibits an enormous and remarkable collection of early twentieth-century art-glass ceilings. One publication likens the experience of the glass to "walking under and umbrella of color" (Savanevik and Burgett). Other examples of stained glass, including works by Tiffany, Lamb, and Connick, ornament individual family mausolea.

The grounds feature a fine collection of trees and shrubs. Evergreens are especially well represented, including deodar, pine, Monterey pine, Monterey cypress, cedar, juniper, Norfolk Island pine, fir, redwood, and yews. Other trees include acacia, eucalyptus, palm, liquid amber, oak, and pepper. Holly bushes and box hedges are also represented.

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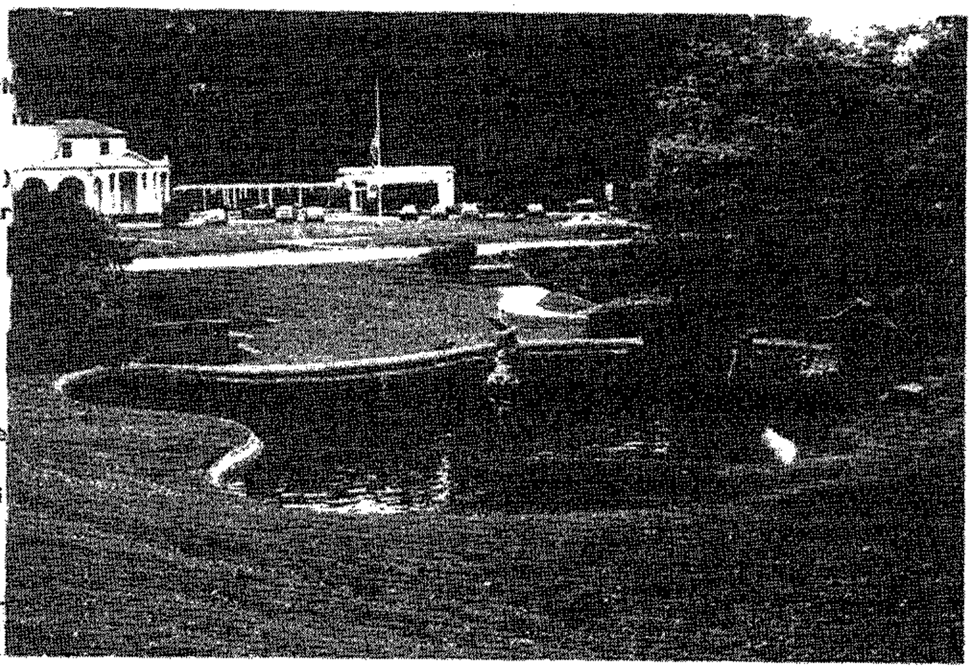


8. **Construction date:** Establishe
Estimated ( ) Factual: (X)

9. **Architect:** Numerous

10. **Builder:** Numerous

11. **Approximate Property Size:**
Acreage: 140+ acres

12. **Date(s) of Photograph(s):**
September-October 1993

13. **Condition: Excellent (X) Good ( ) Fair ( ) Deteriorated ( )**

14. **Alterations:**

15. **Surroundings: (Check more than one if necessary)**
Open Land (X) Scattered Buildings (X) Densely Built-Up ( ) Residential ( )
Industrial ( ) Other: Cemeteries

16. **Threats to site: None Known ( ) Private Development ( ) Zoning ( )**
Vandalism ( ) Public Works Project (X)

17. **Is the Structure: On Its Original Site? (X) Moved? ( ) Unknown? ( )**

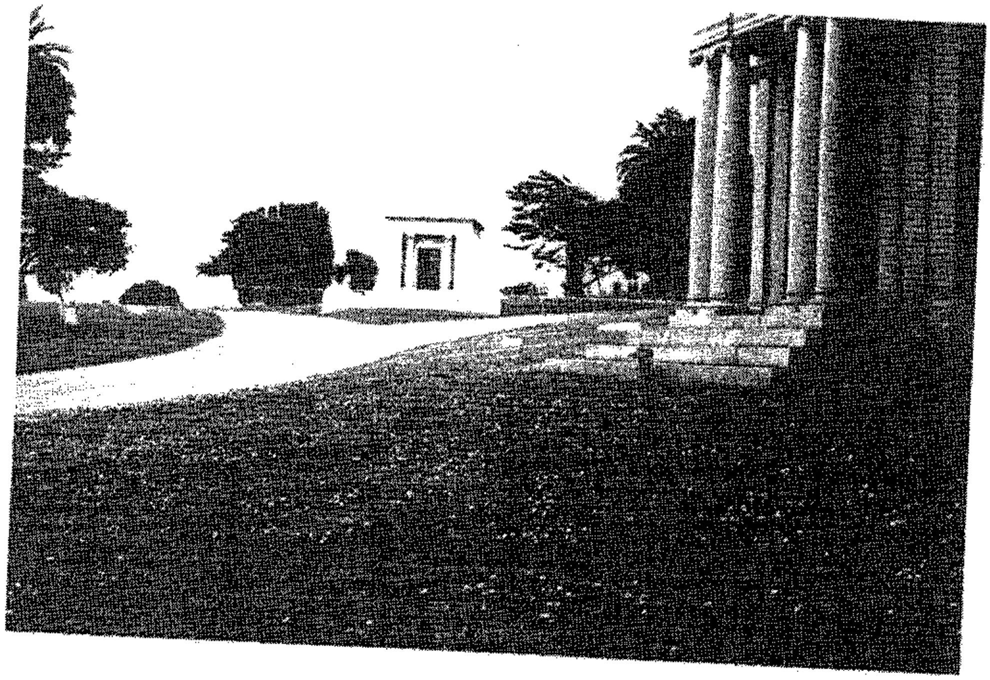
18. **Related features:**

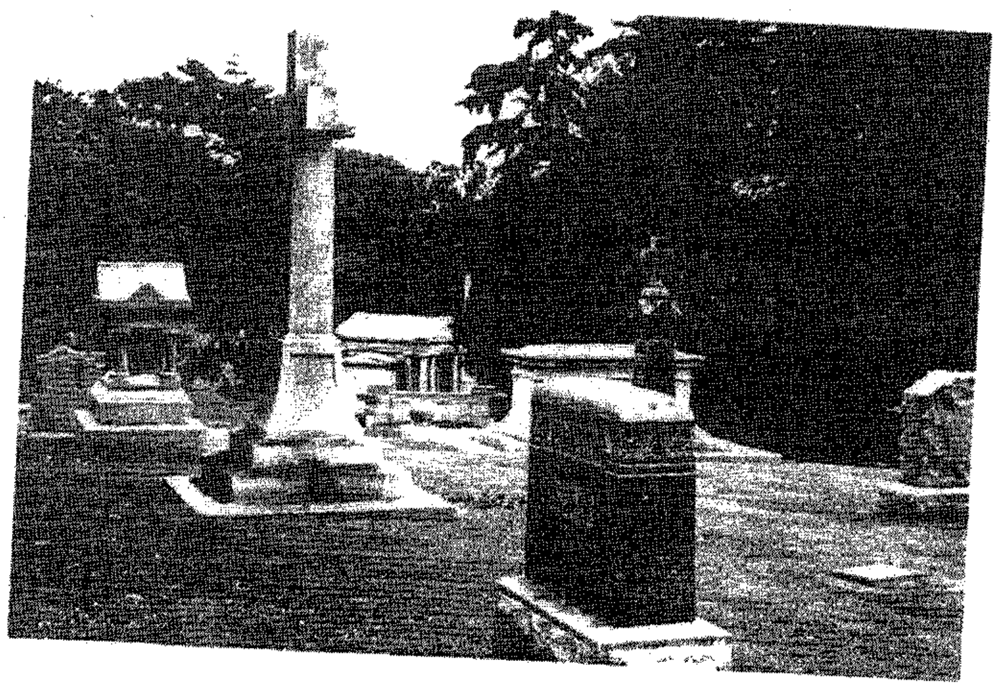
SIGNIFICANCE

19. **Historical and/or architectural importance (dates, events, and persons associated with the site):**

Cypress Lawn Memorial Park appears to qualify for the National Register as a state-level district. For a numbe
reasons, it is the most important of all the cemeteries evaluated for this study. First, it contains the fines
of funerary art and architecture found in Northern California. Second, even though it does not present a compl
unified image, it is the fullest realization of the picturesque landscaping principles of the rural cemetery mo
found in any of the Colma cemeteries. It therefore is one unified entity -- a district. Third, it reflects th
of American cemetery design from 1892 through the World War II era (its period of significance). Finally, no c
Northern California (and perhaps the entire state) contains the remains of so many people who played outstandin
the economic, political, intellectual, and artistic history of the state. This cemetery therefore appears to c
the National Register under criteria B and C, association with important people (such as Bancroft, Larkin, Stef
Matson, Crocker, Tevis, Hearst, DeYoung, Spreckles, Cowell, Atherton, McLaren, and Baldwin) and its architectur
design values. It is an excellent example of its theme, has excellent integrity of location, setting, design,
workmanship, feeling, and association, and meets the special criteria consideration for the National Register.

General Description, Photo continuation page
Cypress Lawn Memorial Park

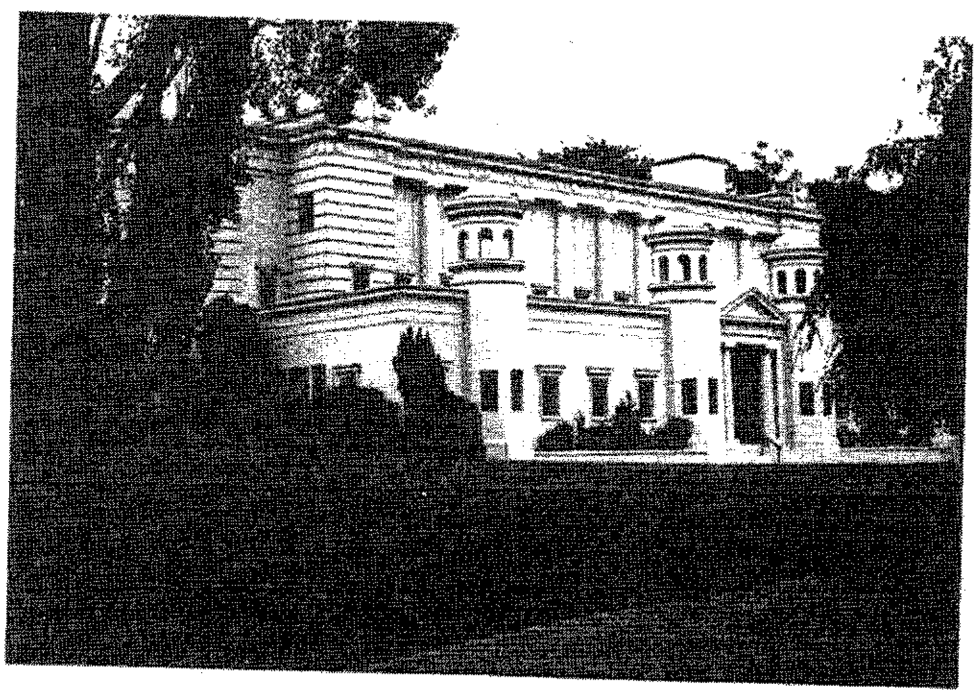




CL #1

Cypress Lawn Memorial Park: 'Lakeside' Columbarium, 1927 - 30. Designer: B. J. S. Cahill.

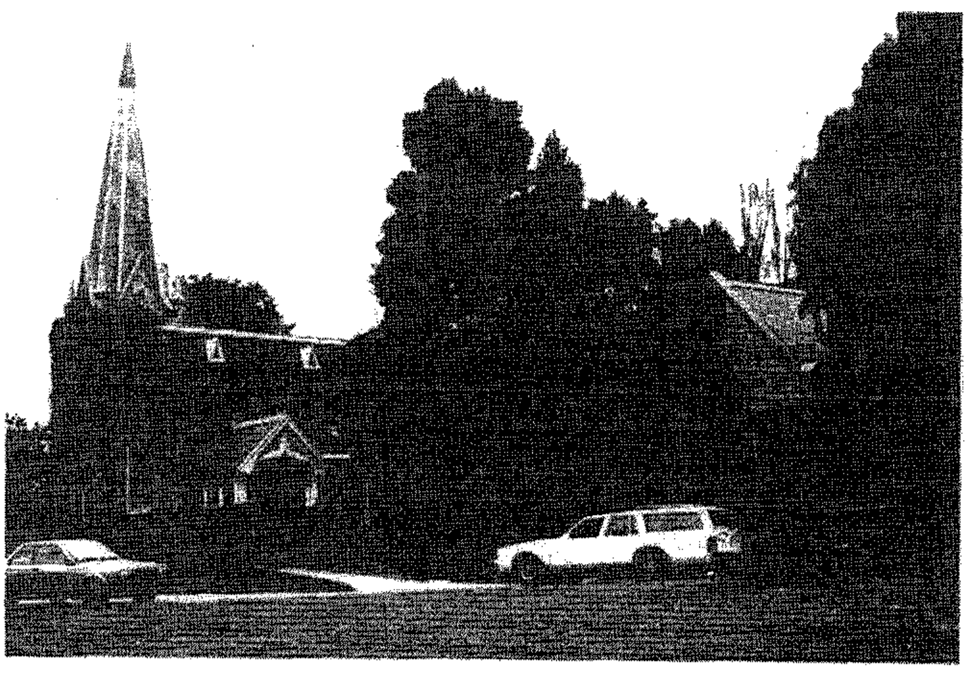
This monumental, three-story reinforced concrete structure has a complicated elevation with a one-story block before a three-story section. The building is executed in a simplified neo-classical manner. A pedimented entrance supported by Doric columns is flanked by octagonal towers that Kent Seavey has compared to those on a late Roman imperial palace. Engaged Doric Columns form a blind colonnade on the upper section of the building. Rusticated, projecting pavilions also separate the main body of this section from polygonal apses that are found at each end. A terra cotta cornice and a frieze with rondels also ornament this section. The interior features the typical plan of branching, skylighted rooms executed in many types of marble. It features glazed niches with bronze frames and a variety of urns. When work was stopped in 1930 (the building was not completed on the east side as originally planned), it contained 10,000 niches making it one of the largest mausoleums in the world. This east side of this columbarium was never finished according to the original plans. The designer of the columbarium was B. J. S. Cahill who was also the editor of the journal The Architect and Engineer of California. Cahill appears to have had a close relationship with Cypress Lawn as he designed the offices and mausolea on the west side of the park as well as several family mausolea. The building is in a very good state of preservation and is a contributing element to the historic district. To the south of the columbarium is a reinforced-concrete chapel, ca. 1965. It is designed in a post-war modern style with a tall glazed entry and a cantilevered porte-cochere. This columbarium is a contributing element to the district.



CL #2

Cypress Lawn Memorial Park: Noble Chapel and Crematory, 1892-1893.
Designer: Thomas Paterson Ross.

This one-story, Gothic Revival building is named in honor of the cemetery's founder, Hamden H. Noble (1844-1929). The plan is irregular, with the chapel connected to an offset crematory by a hyphen structure. Like a typical English village church, the building is entered from a side porch. All roofs are gable in form, with the exception of the octagonal steeple rising from the square tower. The original slate cladding remains on the steeple, crematory and porch entry roofs, but has been replaced on the main chapel by composition shingle. A simple conical copper cap has replaced the original copper or zinc crocketed pinnacle. The walls are clad in uncoursed rubble stone with raised mortar joints and stone-faced ashlar quoins and voussoirs. The gable ends and tower are clad in a variegated mixture of beige and reddish-brown Roman brick, with unglazed terracotta trim. The two principal west-facing walls are pierced by large pointed arched openings filled with stained-glass and tracery in the Perpendicular style of the late English Gothica. The porch has a wooden superstructure resting on short walls of rock-faced ashlar stone. The interior of the chapel opens into a shallow chancel, and has brick walls, a plaster ceiling, and wood hammerbeams. Shed-roofed solariums with brick walls, wood rafters and corrugated fiberglass roofing have been added on either side, circa 1960. The architect of this building, Thomas Paterson Ross (1873-1957) was born in Scotland and immigrated to the United States in 1885. His works included many of the Chinese-inspired buildings in Chinatown, San Francisco built after the earthquake of 1906, and the Little Church of the Flowers at Forest Lawn Cemetery (1918) in Glendale, CA. The Noble chapel is included on the municipal inventory of historic sites and is a contributing element to the historic district.



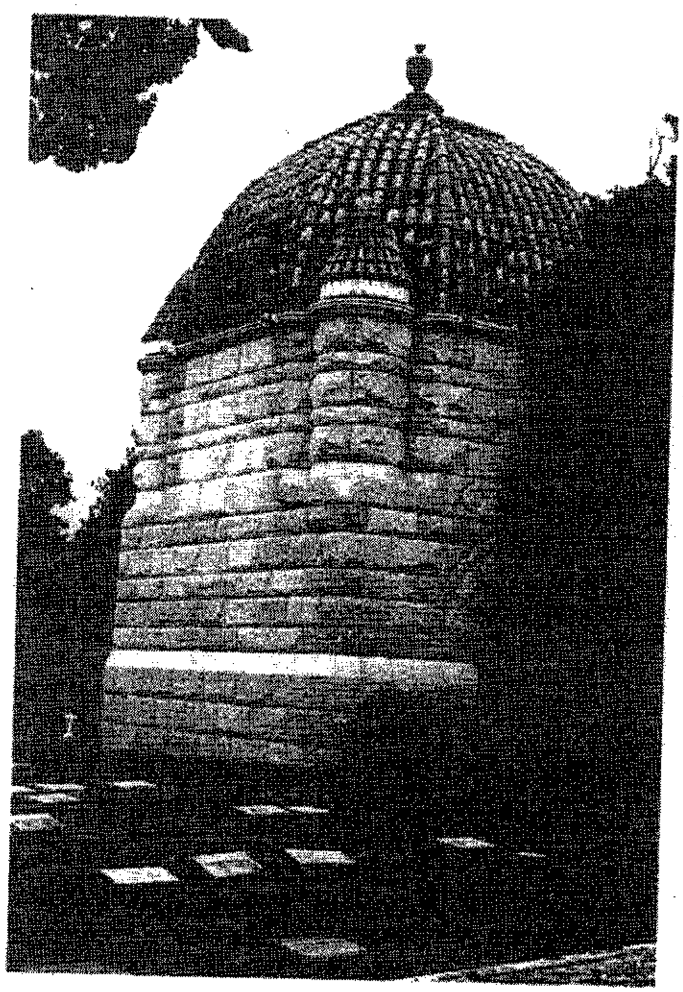
CL #3

Cypress Lawn Memorial Park: Original Columbarium, 1893-5. Designer: Thomas Paterson Ross and Edward A. Hatherton.

This two-story, rock-faced granite columbarium of rusticated ashlar is square in plan and rests on a concrete foundation. It exhibits a raised base and fine, thin joints that are meant to appear mortarless. A Syrian arch with radiating voussoirs rises from a low springing point in the entryway to the building. Begining midway up the walls at the corners of the building are turrets with conical roofs. Carved granite drain spouts project from the cornice. The building has a high tiled octagonal dome that is capped skylights surrounding a decorative urn.

The interior is accessed through an entryway with a wrought iron gateway. Inside, the phrase "Disturb not the ashes of the dead" is inlaid into a mosaic tile floor which features a central planter. Round-arch niches framed in metal contain cremated remains in urns of various designs. These niches are faced with marble plaques, clear glass or metal grilles. A pointed-arch corbel table is visible above the arches. The second-story gallery displays a decorative wrought-iron railing and accessible by an open metal staircase. A domical ceiling is finished in plaster.

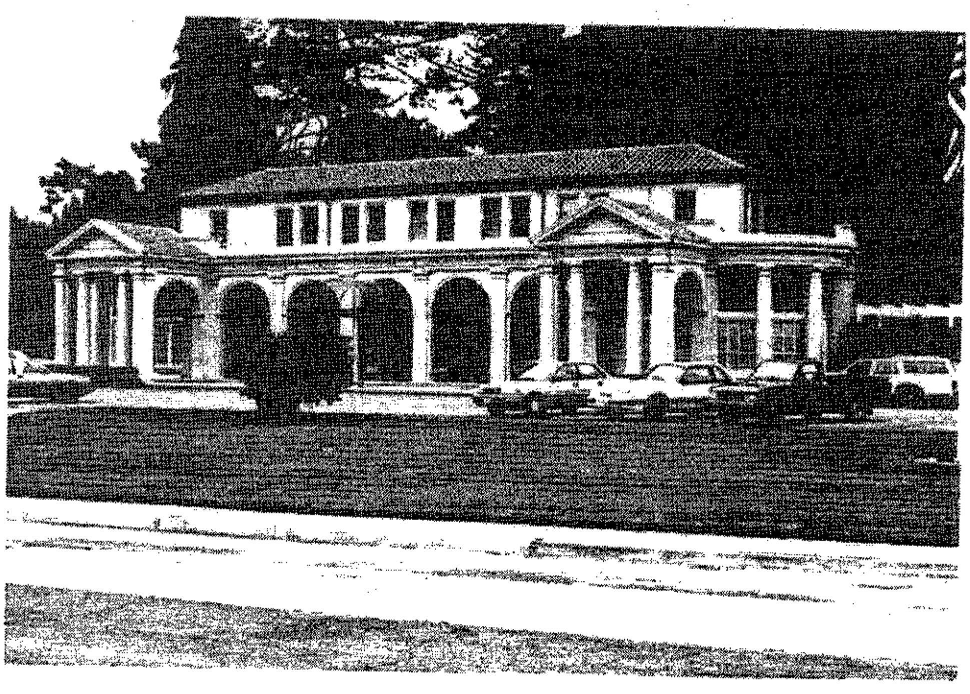
Although some architectural historians (Weitze, Seavey) have described this buildings as Mission Revival in style, the form, massing and detailing of the building is far more obviously influenced by the Richardsonian version of the Romanesque Revival. This building is included on the municipal inventory of historic sites and is a contributing element of the historic district.



CL #4

Cypress Lawn Memorial Park: Cemetery Office Building, 1918, 1934. Designer: B. J. S. Cahill

This building takes the form of a two-story, Renaissance-revival villa. The first story (1918) is reinforced concrete on a concrete foundation, clad in smooth stucco scored as stone, with heavy-dash stucco in the rear. (James Wong, Cypress Lawn structural engineer). The second story (added in 1934) has a wood-frame clad in smooth stucco. The hip roof of the main block is covered with mission tile. The building is entered through an arcaded loggia paved with brick. This loggia is flanked on either side by projecting porches, possibly originally designed as porte-cocheres. These porches take the form of temple-fronted porticos, distyle in antis, that is, with two columns recessed between pilasters. The one-story wings on either side of the building are fronted by curved colonnades enclosing conservatory-type rooms. Arcade, porticos, and colonnades are all designed in the Tuscan order. Five arched openings on the inside wall of the arcade echo the pattern of the arcade itself. The lunettes of the two outside openings are filled with decorative relief panels. French doors with wood sash are typical. Window types include multipane fixed wood sash and wood casements at the first story, and 1/1 double-hung wood sash with simple surrounds at the second story. Some of the first-story windows have operable transoms. The plan of the building is characterized by a double-height entry hall, with passages on the first floor leading to smaller rooms on both sides and terminating in the conservatories. Related features on the north side of the building include a tombstone display area, defined by a white-painted wooden pergola with Tuscan columns; a detached flower shop in reinforced concrete, similar in



CL #4 continued
Cypress Lawn Memorial Park: Cemetery Office Building

design to the main building, with a flat roof, multipane wood windows, and a multipane French door with an operable transom. A modern canopy, made of black-painted tubular metal and plastic panels, has been recently added to the front of the building. This building is included on the municipal inventory of historic sites and is a contributing element of the historic district.

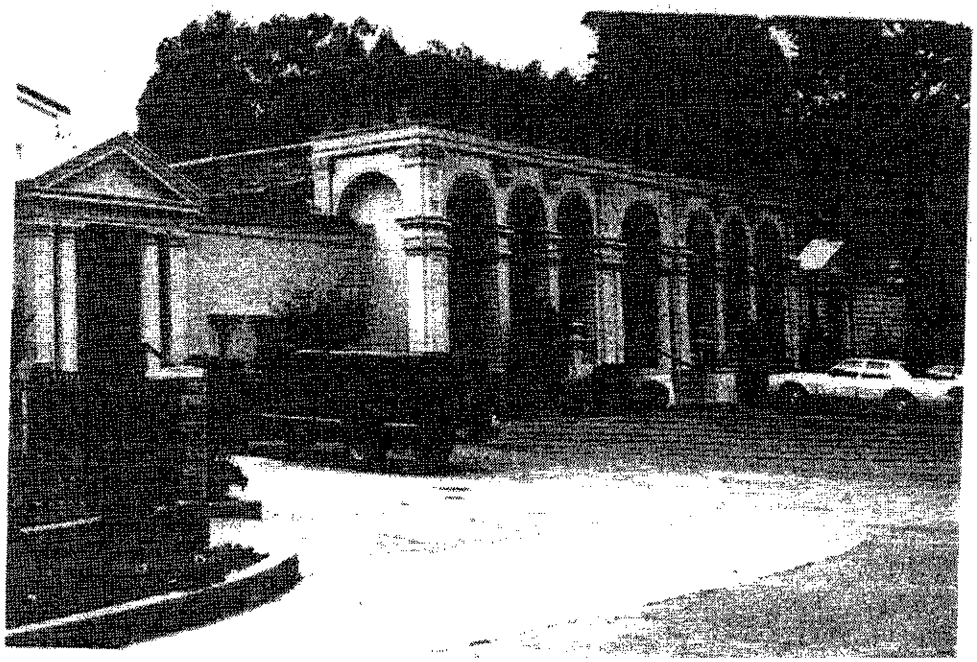
CL #5

Cypress Lawn Memorial Park: The Catacombs, 1915, 1919-1921, 1924. Designer: B. J. S. Cahill

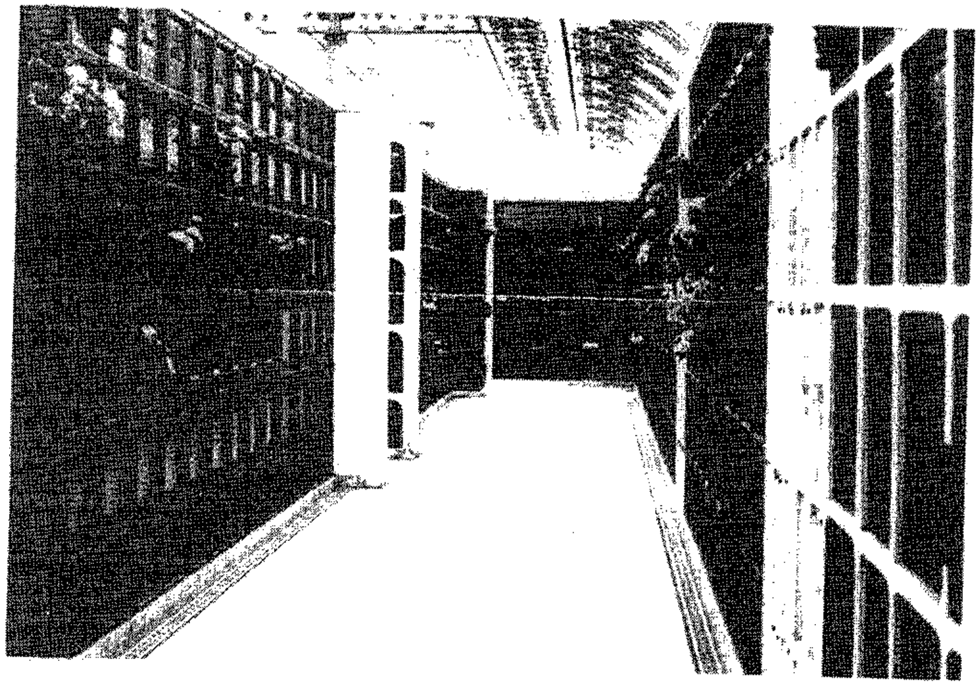
This one-story, reinforced-concrete building rests on concrete foundations, with walls clad in cast stone. The plan is extremely complex, reflecting numerous additions. The core is a columbarium entered by an ornate Roman Renaissance arcaded loggia, built in 1915-1916. The loggia is capped by an elaborate, deeply overhanging bronze cornice supported by bronze consoles. The loggia has a floor of marble mosaic and is approached by a short flight of granite stairs. The columbarium proper has Latin-cross plan, with tiled floors and niches faced in metal, glass and stone. A community mausoleum with a complex, branching plan surrounds the columbarium and is entered by two pedimented porticos flanking the loggia on either side. Approached by granite stairs, these porticos are similar in design to those projecting from the office building on El Camino Real. Interior details of the mausoleum include floor tile, variously colored marble facing on the walls and crypts, and bronze gates enclosing private vaults. An octagonal, Romanesque-revival chapel in the southern half of the building has walls clad in terra cotta, clerestory windows filled with stained glass, and a domical plaster ceiling framed in wood. The ambulatory which surrounds the chapel has ribbed plaster vaults. An equivalent eight-sided room on the north side of the building is designed in an exotic Moorish style, with mosaic-tiled walls, floor and fountain, as well as a stained-glass, domed ceiling. Indirect light filters in though a screen wall of pointed arches. The columbarium and the original parts of the mausoleum all have fine stained-glass ceilings under metal and glass greenhouse roofs. The designs of these ceiling are either floral or abstract ornamental. The forms are coved, domed or vaulted, with paintings by various artists including David Grolle and Arthur Matthews decorating the lunettes

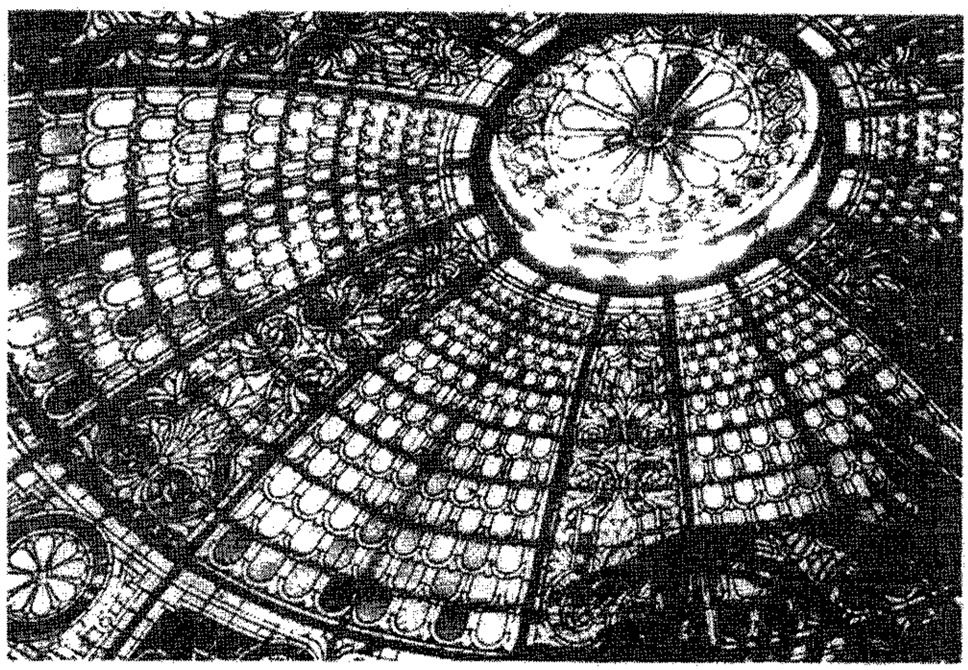
CL #5 continued
Cypress Lawn Memorial Park: The Catacombs

beneath the vaults. This very large installation of stained glass, fabricated the United Glass Co. of San Francisco, and designed by artists such as Harold Cummings, Walter Judson, Joseph and Richard Lamb, is a significant example of the art-glass revival that began in this country in the late 19th century. The cemetary is in the process of establishing a workshop to restore broken panels. New additions to the mausoleum depart in various degrees from the original design. One major expansion to the north (1919 - 1924), also a contributing element, is styled in the Mission Revival, with concrete walls clad in smooth painted stucco, arched openings filled with plate glass, elaborate sculpted parapets or espadañas, and a belltower pierced by pointed arched windows. One of the more recent additions contains a courtyard forming an open-air mausoleum and columbarium. A related feature is the rubble-stone retaining wall fronting the Mission Revival addition. This building is included on the municipal inventory of historic sites and is a contributing element of the historic district.



CL #5 Photo continuation page
Cypress Lawn Memorial Park: The Catacombs

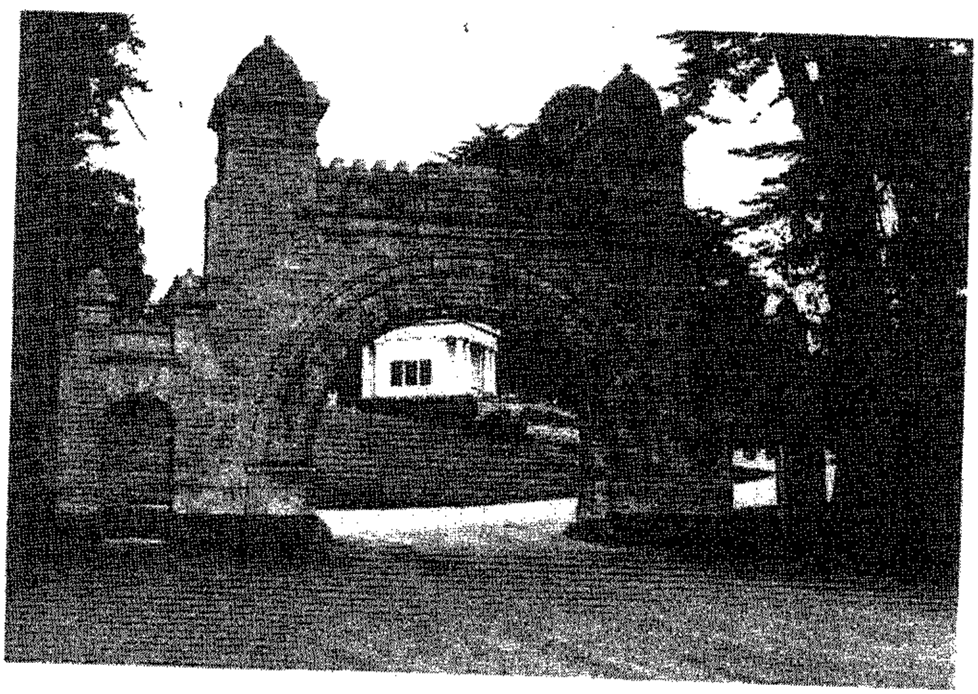




CL #6

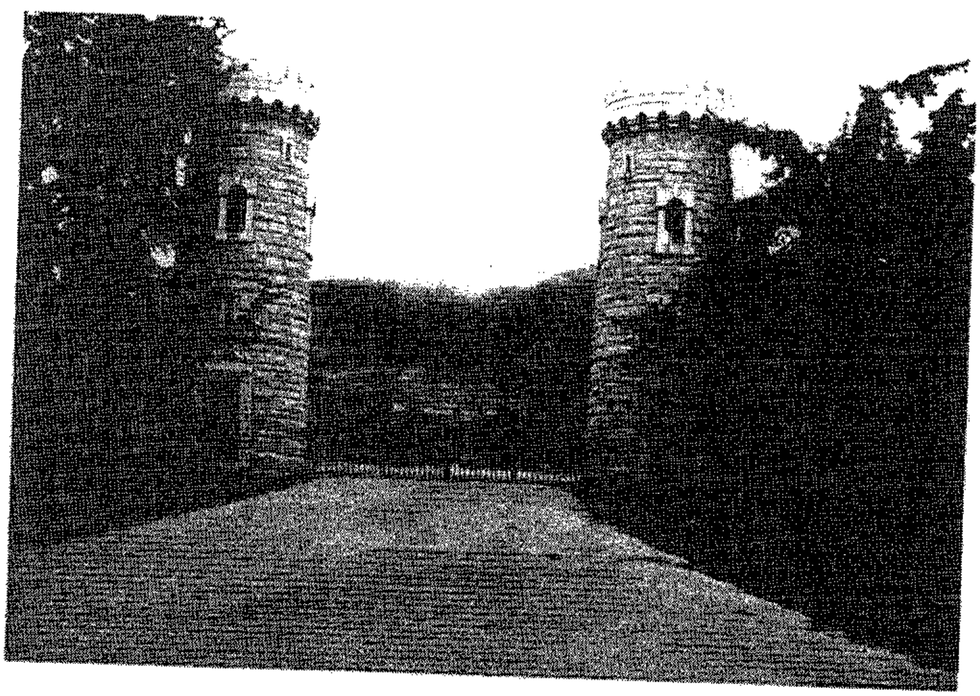
Cypress Lawn Memorial Park: Mission Road Gate, 1892.
Designer: Barnett McDougal & Son, San Francisco.

The original entry to the eastern section of Cypress Lawn is a three-part granite gateway, smooth-faced on the side facing El Camino Real, and rock-faced on the side facing the cemetery. The significance of the different finishes is intriguing but unresolved. The larger central part consists of a low-sprung, Syrian arch bearing the name of the cemetery in raised letters. A crenellated frieze with swags and fragments of a Greek fret separates two short square towers. These terminate in a crenellated battlement containing a pointed chattri-like dome. Two smaller arched doorways with a similar design flank the central part on either side. Citing an article in an April 1892 issue of the San Mateo Times Gazette, the Colma Historic Resources Survey describes this gateway as "one of the earliest extant examples of the Mission Revival style of architecture in California." In fact, this eclectic design, combining aspects of the Richardsonian Romanesque and medieval building, bears little real resemblance to any of the Renaissance-inspired architecture of the California missions, although it is a witty and sophisticated complement to the fortified towers on Hillside Boulevard. The gate is flanked by mature Monterey cypresses. This building is included on the municipal inventory of historic sites and is a contributing element of the historic district.



CL #7
Cypress Lawn Memorial Park: Hillside Boulevard gate, ca. 1900.

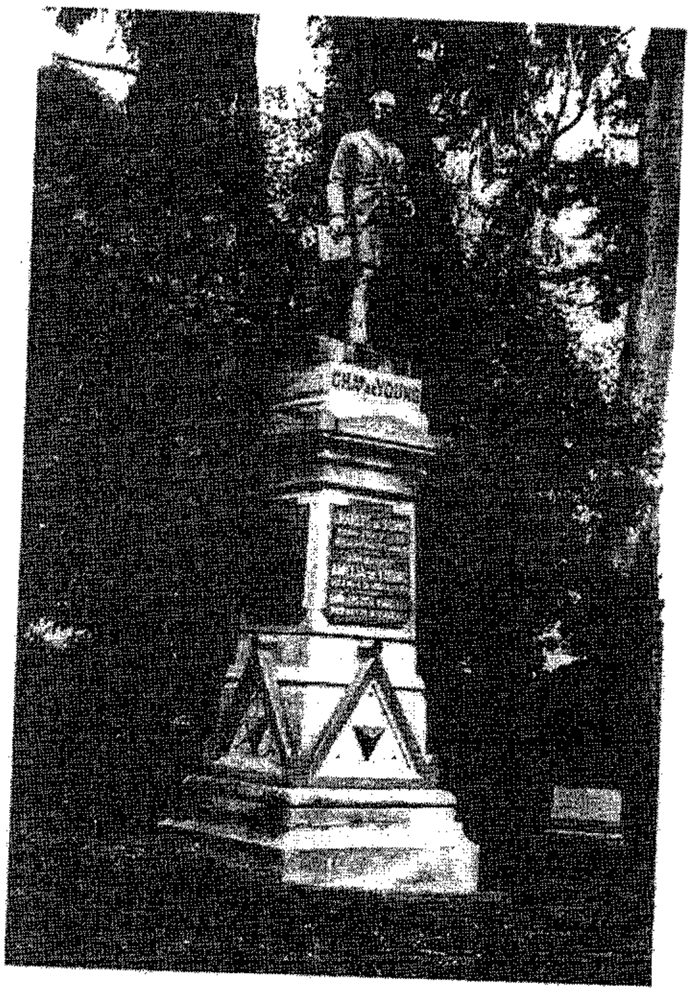
A pair of identical, 40-foot-high, fortified towers forms an impressive gateway from Hillside Boulevard to the older eastern section of Cypress Lawn. Battered walls are made of concrete clad in rock-faced, coursed stone. In contrast, the crenellated and machicolated battlements are made of smooth coursed stone. Raised door and window surrounds are also made of smooth-faced stone, cut in monolithic blocks. Window openings are arched. Door openings are battered and lintels capped by anthemion reliefs, giving the entries a strange Greek Revival flavor. The original massive wooden doors have been replaced on the west side by double iron doors. Inside, slits in the wooden floor of the second level make it appear that these structures were designed as bell towers. The builder is unknown. This building is included on the municipal inventory of historic sites and is a contributing element of the historic district.



CL #8

Cypress Lawn Memorial Park: Charles deYoung Memorial, ca. 1881.

This Victorian monument to Charles de Young (1845-1880), co-founder of the San Francisco Chronicle, consists of a lifesize bronze figure, standing with pen and paper in hand atop a tall pedestal of polished granite. The monument was moved from Laurel Hill sometime between 1940 and 1946, after the the San Francisco supervisors voted to vacate the city's cemeteries. It marks the site of three graves--those of de Young, his mother, Amelia, who died in 1881 at the age of 72, and his sister, Virginia, who died in 1877 at the age of 42--but in the manner of the period it only depicts the male head of the family. "In 1880, [Charles] de Young shot mayoral candidate Isaac Kalloch, who had defamed his mother, declaring that she ran a house of ill repute. Kalloch's son subsequently stalked de Young and six months later murdered him" (Svanevik and Burgett, Pillars of the Past). This building is included on the municipal inventory of historic sites and is a contributing element of the historic district.

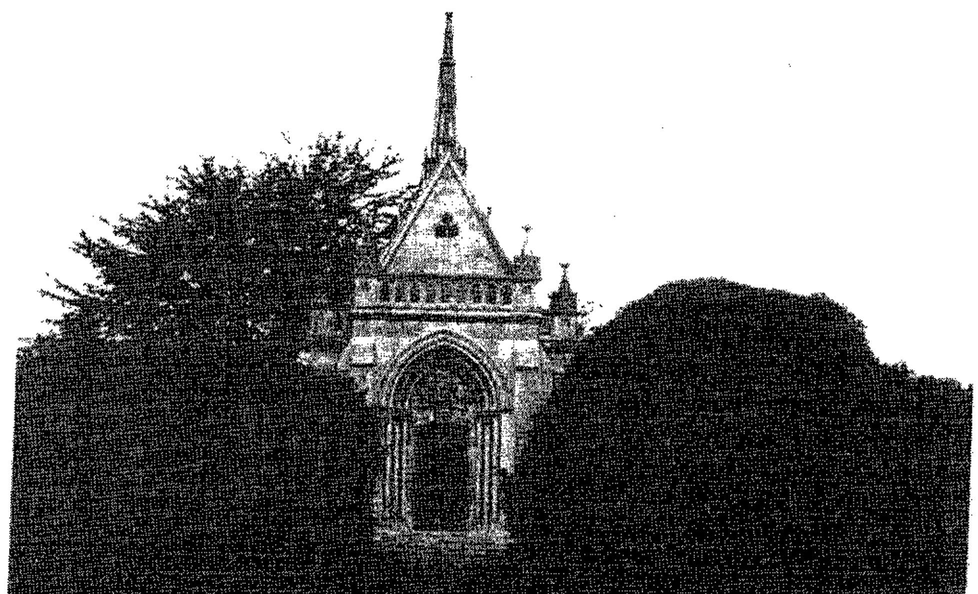


CL #9
Cypress Lawn Memorial Park; Rogers Tomb, 1929.

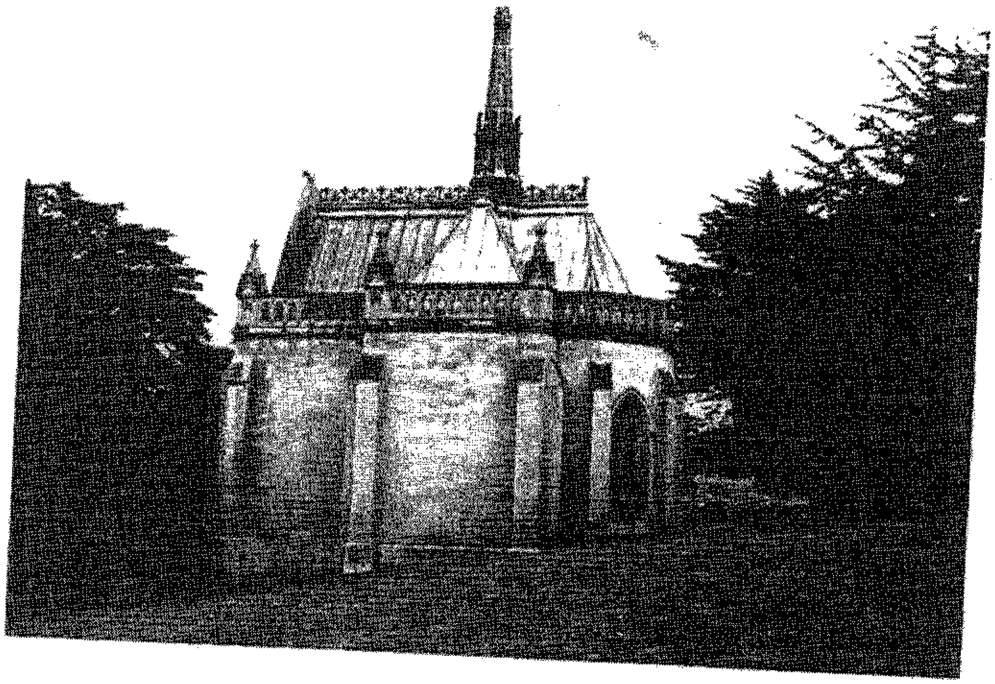
This granite tomb was built for Arthur Rodgers (1848-1929), the son of a California 'argonaut'. The tomb is built into a small, landscaped hillside. Curving rusticated, stepped walls flank either side of the Egyptian Revival temple front tomb. It is one of several Egyptian Revival mausolea to be found at the cemetery. The termination of the walls is marked by paired, marble sphinxes, creating an abstracted, exedra format. The temple facade is composed of coursed ashlar in battered walls. It is capped by a cavetto cornice decorated with leaves and a winged solar disk with serpent. While most Egyptian Revival buildings are flat-roofed, this structure exhibits a low, stepped hipped roof capped with a flaming urn. The entrance to the tomb features a pair of papyrus columns in antis, and the recessed porch features two benches and bears the inscription "Rodgers". Guarding the crypt are impressive bronze doors with sphinx heads and repeated Egyptian vegetal motifs. Within the tomb is a mosaic floor that exhibits inlaid sphinxes and the ceiling and walls are decorated with Egyptian Revival motifs. This building is included on the municipal inventory of historic sites and is a contributing element of the historic district.

CL #10
Cypress Lawn Memorial Park: Daniel Murphy mausoleum, c 1920.

This handsome mausoleum is located in the part of the cemetery to the west of El Camino Real. It was built for Daniel Murphy (1861-1919), an heir to a dry goods fortune. It is executed in walls of cast stone (or perhaps sandstone) on a granite base and takes the form of a French Gothic church. The plan features a nave with shallow transepts and a polygonal apse at the rear that is illuminated by Gothic windows with lancet windows and trefoils formed by the tracery. The entrance features a Gothic, compound arch with colonettes with a sculpture of the Virgin, Christ child and angels executed in a modern idiom in the tympanum. Elaborate, wrought-iron doors guard the interior. The steep roof is clad in copper with standing seams and the ridgeline features delicate metal tracery. The composition is capped by a flèche or metal spire that is typical of Gothic design in France. Other details include: wall buttresses, Gothic pinnacles and an arcaded balustrade encircling the building above the eave. The interior features a Gothic altar and a quadrapartite, ribbed, vault ceiling. Stained glass windows in the apse are by Charles Connick of Boston, who also executed windows at Grace Cathedral, San Francisco, and at the West Point Military Academy. The Murphy mausoleum is a sophisticated design that suggests it was designed by an academically-trained architect. Kent Seavey has speculated that it may be the work of B.J.S. Cahill. This building is included on the municipal inventory of historic sites and is a contributing element of the historic district.

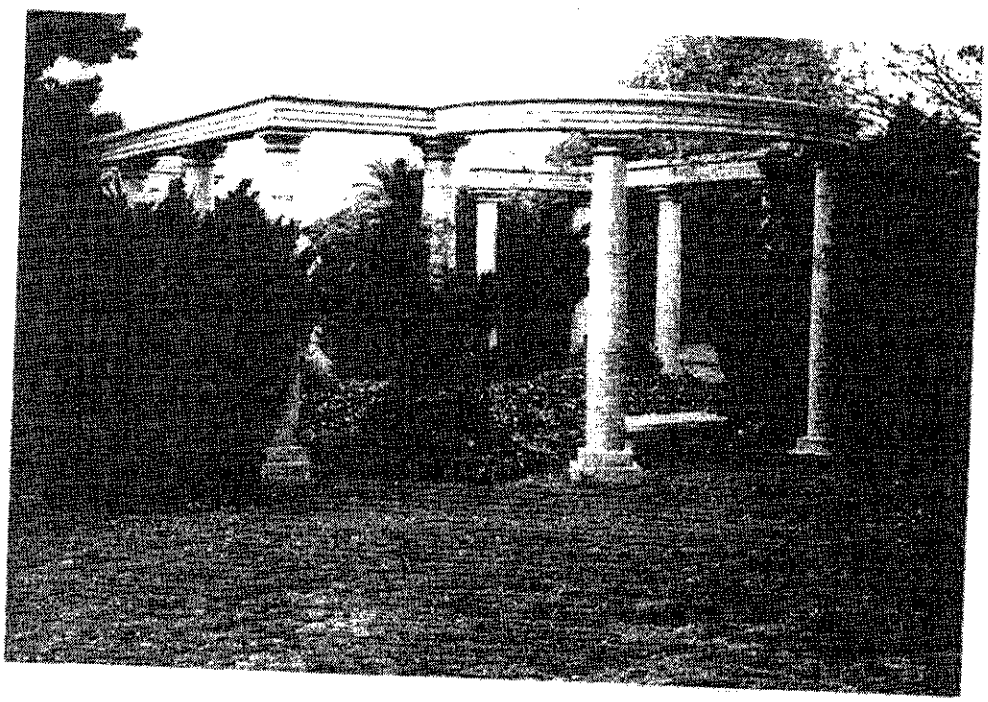


CL #10 Photo continuation page
Cypress Lawn Memorial Park: Daniel Murphy mausoleum



CL #11
Cypress Lawn Memorial Park: Thorne family monument, ca. 1931.

This type of monument is known as a 'peristyle' tomb and it features a colonnade or pergola of travertine, Tuscan columns supporting an architrave. The colonnade surrounds a central open section that received the burials. This area is now completely overgrown with ivy and any gravemarkers are hidden. At one end, the pergola forms an apse or exedra that contains a marble bench. Junipers have been planted around the periphery of the pergola. The overall effect is of a peaceful garden building without the funereal air of most family monuments. Other features include a concrete foundation for the colonnade and a rustic slate steps leading to the street. The first burial in the plot was Julian Thorne in 1931. This monument is included on the municipal inventory of historic sites and is a contributing element of the historic district.

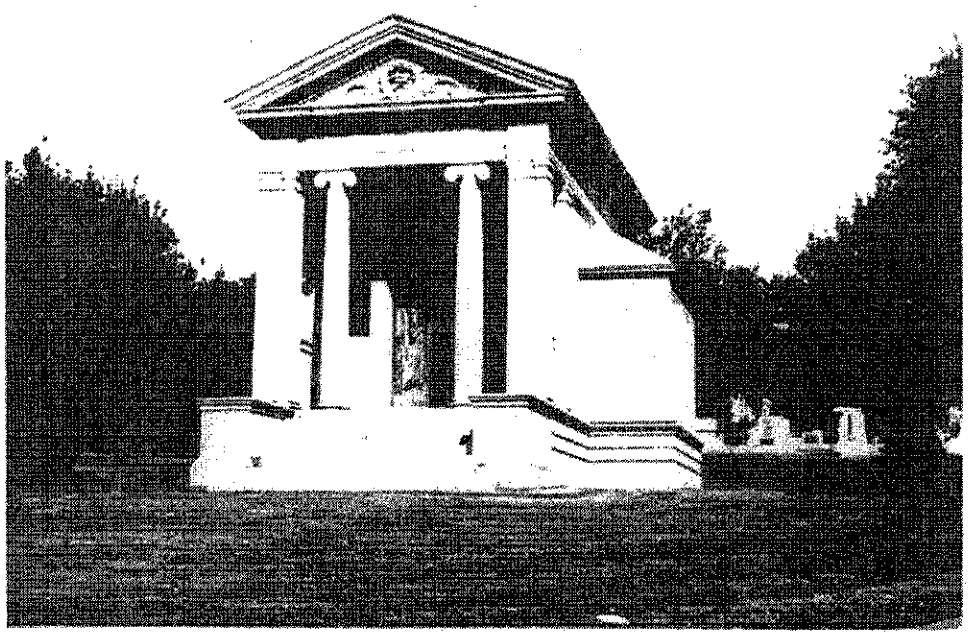


CL #12

Cypress Lawn Memorial Park: Charles Crocker family mausoleum. Designed: 1889. Construction Date: 1895-98. Designer: A. Page Brown.

This mausoleum was designed to house Charles F. Crocker (1822-1888), son of railroad magnate Charles Crocker and himself a Vice President of the Southern Pacifica. It originally stood in the Laurel Hill Cemetery and was moved here when that cemetery was closed. Like many other family mausolea, this monument was apparently designed and sited to be seen by the roadside.

This mausoleum, constructed of granite, is irregular in plan and rests on a stone foundation. It is in the form of a Greek temple with two Ionic columns in antis. On either side of the temple front are the hip roof wings which house the tomb vaults. The structure also features a wreath interwoven with a crowned cross and other foliage in its pediment as well as egg and dart and dentil moldings. The mausoleum's bronze door was sculpted by Robert Ingersoll Aitken (1878-1949), a native Californian and internationally-prominent American sculptor and art teacher. Titled "The Gate of Silence," from 1898, the relief sculpture exhibits an angel with closed eyes holding a flower. Other major commisssions include "Victory" atop the Dewey monument in Union Square, San Francisco and the George Rodgers Clark monument at the University of Virginia. The structure itself was designed by A. Page Brown, a New York-born architect employed by McKim, Mead and White before coming to San Francisco in 1889. Other Brown designs included a number of buildings at Princeton University, the California Building at the World's Columbian Exposition in Chicago (1892), and in San Francisco, the Ferry Building(1892-98), the Church of the New Jerusalem (1894), and Trinity Church (1891). He designed several houses



CL #12 continued
Cypress Lawn Memorial Park: Charles Crocker family mausoleum.

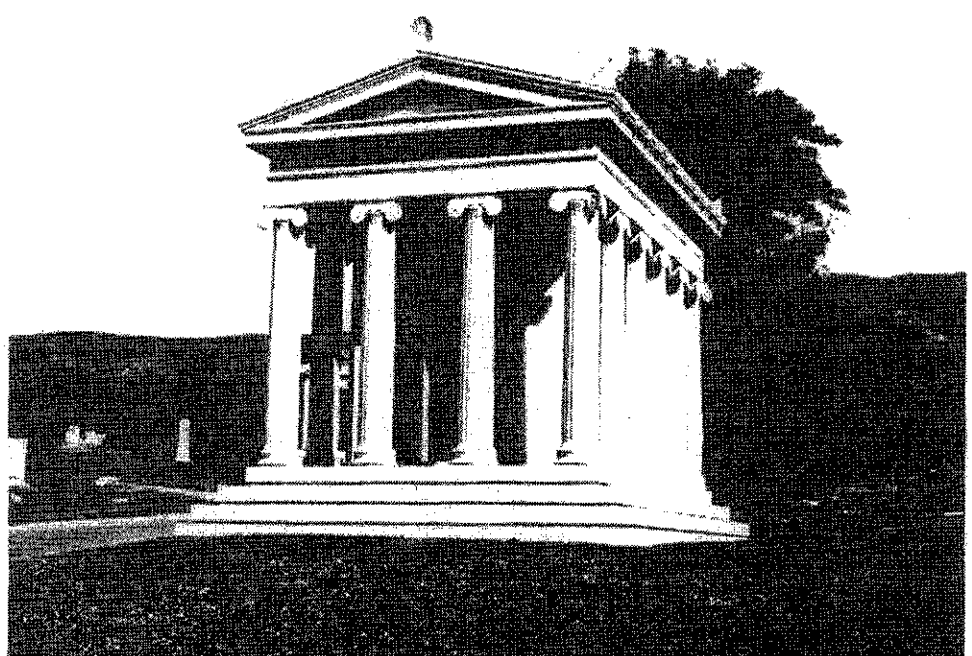
for members of the Crocker family and another Crocker mausoleum at Mountain View Cemetery in Oakland.Brown's career was cut short by his untimely death. The Crocker Mausoleum is included on the municipal inventory of historic sites and is a contributing element of the historic district.

CL #13

Cypress Lawn Memorial Park: Hearst Family Mausoleum, 1896. Designer: Albert CA. Schweinfurth.

This large, granite mausoleum was initially constructed for George Hearst (1820-1891), a mining tycoon and U.S. Senator from California (1886-1891) The monument also contains the body of his wife, Phoebe Apperson Hearst (a philanthopist especially noted for her gifts to the University of California) and his son, William Randolph Hearst, the notorious publisher, politician and arts patron who was one of the most prominent Californians in the first half of the twentieth century.

The mausolem is in the form of an academically-correct Greek Ionic temple with a peripteral colonnade set on asteeped base. Kent Seavey has speculated that the mausoleum "may derive its inspiration from the Temple of Athena Nike, a component of the Athenian Acropolis.", although that building is an amphiprostyle with columns only on the gable ends. The roof decoration includes acroteria and antefixes. Lion heads and an egg-and-dart molding adorn the cornice. Surrounding the glazed, bronze doors is a carved stone door frame with classical Greek motifs. The structure was designed by Albert CA.Schweinfurth, but may have been executed by his brother Julius Schweinfurth. A.CA.Schweinfurth was a Bay Area architect who worked in the office of A. Page Brown before going into private practice in San Francisco. Other projects Schweinfurth completed for the Hearst family included the "Hacienda del Pozo de Verona" (1895) near Pleasanton for Phoebe A. Hearst and the San Francisco Examiner Building (1897, destroyed 1906) for William Randolph Hearst. Schweinfurth also designed the First Unitarian Church of Berkeley. A sophisticated and promising designer, his career was cut short by an early death. This building is included on the municipal inventory of historic sites and is a contributing element of the historic district.



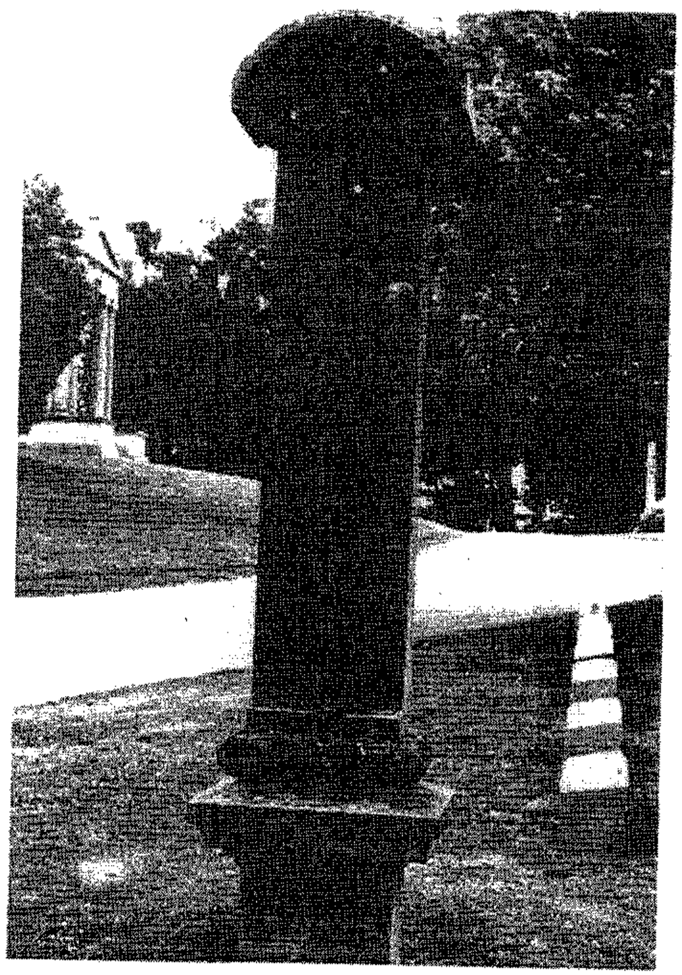
CL #14
Cypress Lawn Memorial Park: Andersen monument, ca. 1906.

This monument marks the burial place of Christine Andersen Rohde (1864-1944) and Frederick CA. Andersen (1865-1906). A winged, robed angel carved in marble stands in a *contrapposto* position atop a tall, marble sarcophagus with carved foliated ornamentation. The gaze of the angel is fixed downward and she holds a rose in her left hand. Beneath the angel on the cornice of the post is a classical floral carving, a Masonic emblem and frieze of ivy. A carved dove pecks at a leaf among a spray of roses in the lower section of the base. Beneath this carving is a placard bearing the name Andersen carved in relief. The entire monument rests upon a rusticated granite base. This monument is typical of figural grave markers popular in Christian cemeteries in the late-nineteeth and early-twentieth centuries. It is finely carved with a beautiful, pensive angel and naturalistic foliage. This monument is a contributing element of the historic district.

CL #15
Cypress Lawn Memorial Park: Valentine monument, ca. 1896.

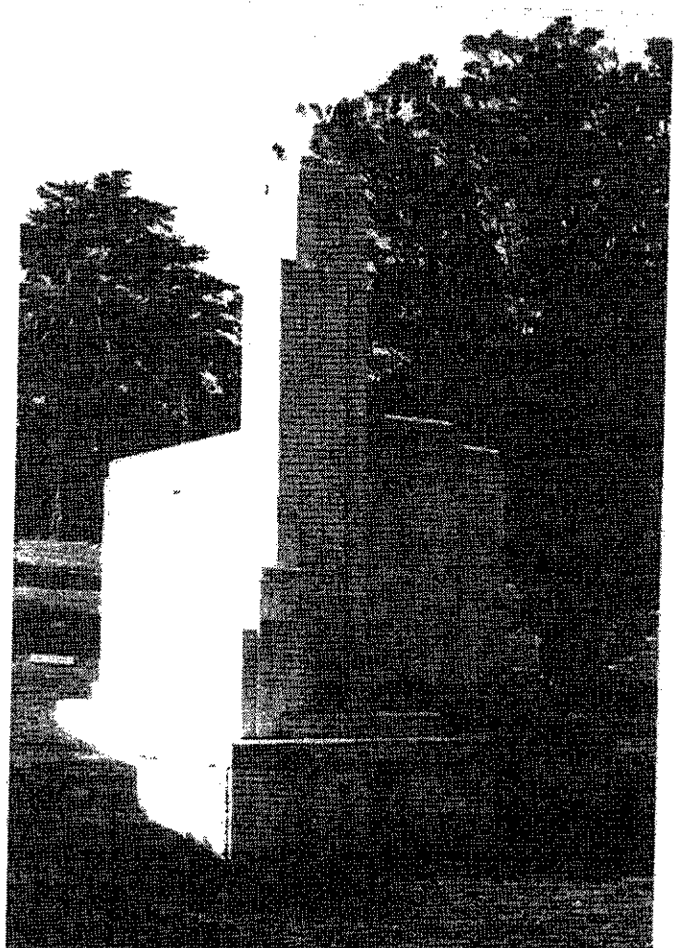
This monument consists of a bronze post or pylon raised on a bronze base and set on a concrete foundation. Its cornice features an acanthus pattern. A broken arched pediment displays a cross set in a crown over a laurel wreath. The shaft of the pylon bears a standing, robed, male figure bearing an expression of grief. Interrments include those for Thomas B. Valentinue (October 27, 1896) and Jennia A. Valentine (October 6, 1916).

The monument was created by Douglas Tilden and cast by the Globe Brass Works, San Francisco, as inscribed on the base of the monument. Tilden (1860 - 1935) was a nationally-prominent San Francisco sculptor who is was reponsible for the Mechanic's Monument on Market Street in San Francisco; and the figures of Junipero Serra and the Baseball Player in Golden Gate Park. This gravemarker is a contributing element of the historic district.



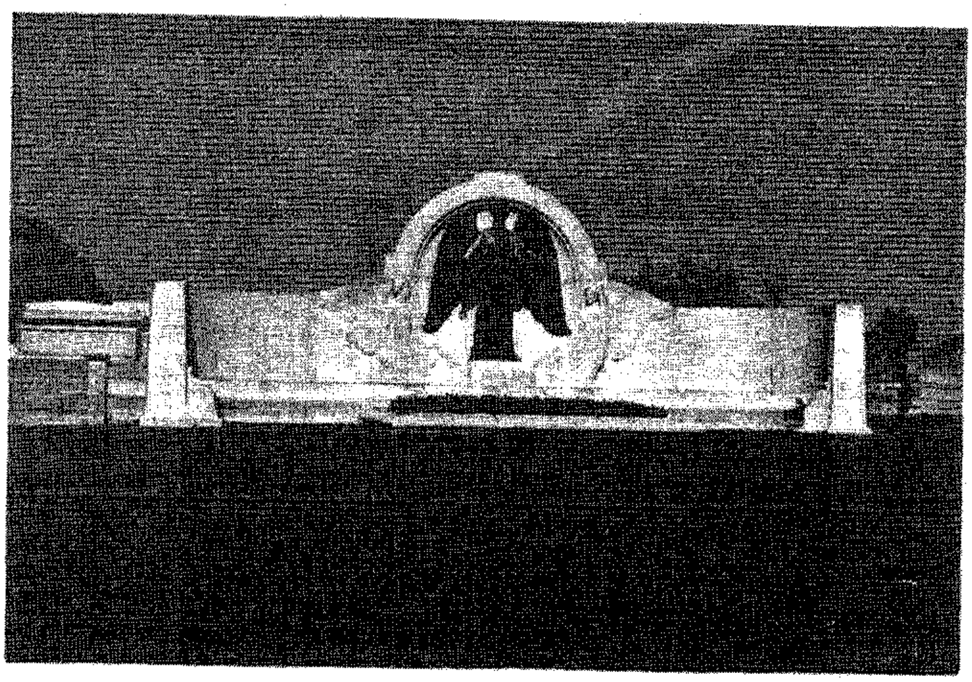
CL #16
Cypress Lawn Memorial Park: Hiram W. Johnson Mausoleum, 1949.

This striking, white marble mausoleum on a high stepped base serves as a monument to California governor Hiram W. Johnson (1866-1945, governor 1910-1916). It is the best example of the Art Deco/Moderne aesthetic to be found in the cemetery. In the early 20th century, Johnson was one of the most progressive and powerful politicians in the country. He aggressively promoted reforms in state government that were copied by many other states. He also served as a U.S. Senator (1917 - 1945), and Theodore Roosevelt's vice-presidential running mate in 1912. The mausoleum itself takes the form of an altar whose rectangular symmetry is disturbed by a stepped pylon appended to the southeast corner. Resembling a skyscraper in miniature, the pylon serves as a perch for a statue of a federal eagle, whose gaze is fixed in the distance. Bas-relief decorations include a vertically elongated shield bearing the stars and strips, stylized laurel wreaths, and an emblem indicating Johnson's status as a Mason. Although dedicated to Johnson, the mausoleum also contains the remains of his wife, Minnie L. McNeal Johnson (1869-1955), and Hiram Johnson, Jr. (1886-1959) and Major Archibald McNeal Johnson (1890-1933). The structure is included on the municipal inventory of historic sites. Although this monument falls slightly outside the period of significance for Cypress Lawn cemetery, this survey believes it to be a contributing element of the historic district based on its artistic value and association with an outstanding personage in the history of California.



CL #17
Cypress Lawn Memorial Park: Tevis Monument, ca. 1912. Designer: John Galen Howard

This smooth granite monument takes the form of an exedra, an ancient Greek form revived as a funeral monument in the late 19th century as American architecture became more and more dominated by the academic classicism of the Ecole des Beaux Art in Paris. At the center of this monument rises a sculptural grouping composed of a lifesize bronze angel standing on a granite base with outspread arms and wings. The sculptor is identified as Herbert Adams and the foundry as Gorham Manufacturing Co. This angel is set within a shallow bowl formed by a stylized Celtic cross, and flanked on either side by kneeling angels carved in relief. Projecting from the ensemble is a low rectangular planter, ostensably a cover for the graves of Lloyd Tevis (1824-1899), a mining tycoon and president of Wells Fargo Bank, and his wife, Susan G. Tevis (1831-1902). The exedra is inscribed with the phrase, "I will lay me down in peace/and take my rest," the base of the angel with the single name, "TEVIS." Significantly, this monument does not memorialize the man above other members of his family. The monument is on axis with the drive that approaches it, showing the influence of City Beautiful ideas on the cemetery design. The architect, John Galen Howard was trained at the Ecole de Beaux-Arts and worked for both H. H. Richardson and McKim, Mead and White before heading West were he became one of the most important architects to practice in California in the early-twentieth century. He founded the school of architecture at U.CA. Berkeley and designed many monumental buildings on the campus. He also designed many houses in the Bay Area and helped replan the San Francisco Civic Center after the 1906 earthquake.

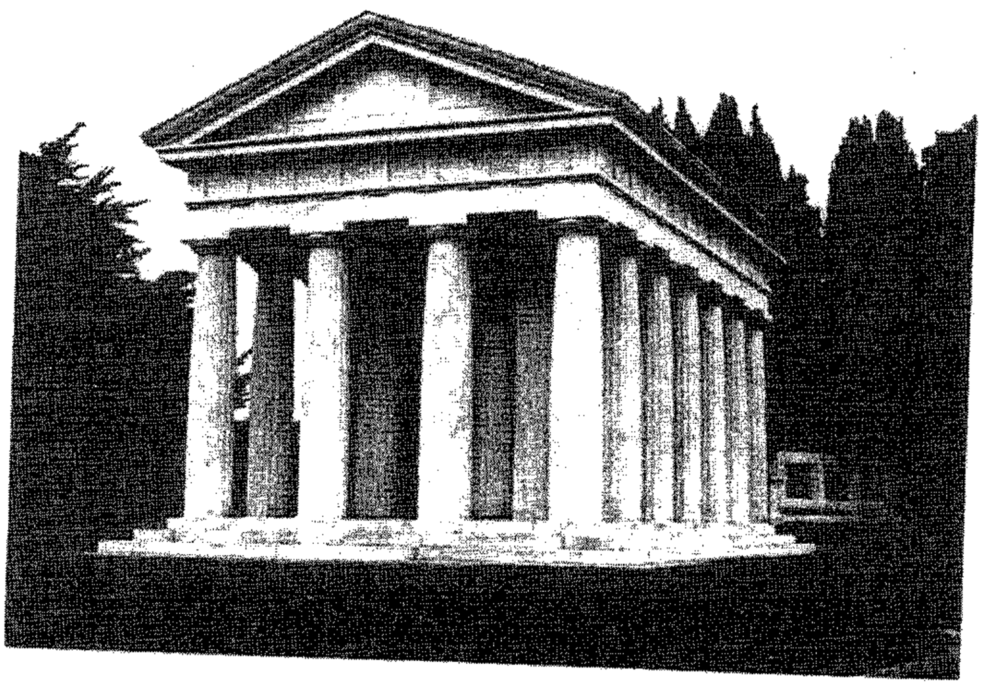


CL #17 continued
Cypress Lawn Memorial Park: Tevis Monument

Herbert Adams (1858 - 1945) was a nationally-prominent sculptor who completed many major commissions including: the Macmillan Fountain in Washington D.CA., and figures for the Library of Congress and and the Brooklyn Museum. This monument is included on the municipal inventory of historic sites and is a contributing element of the historic district.

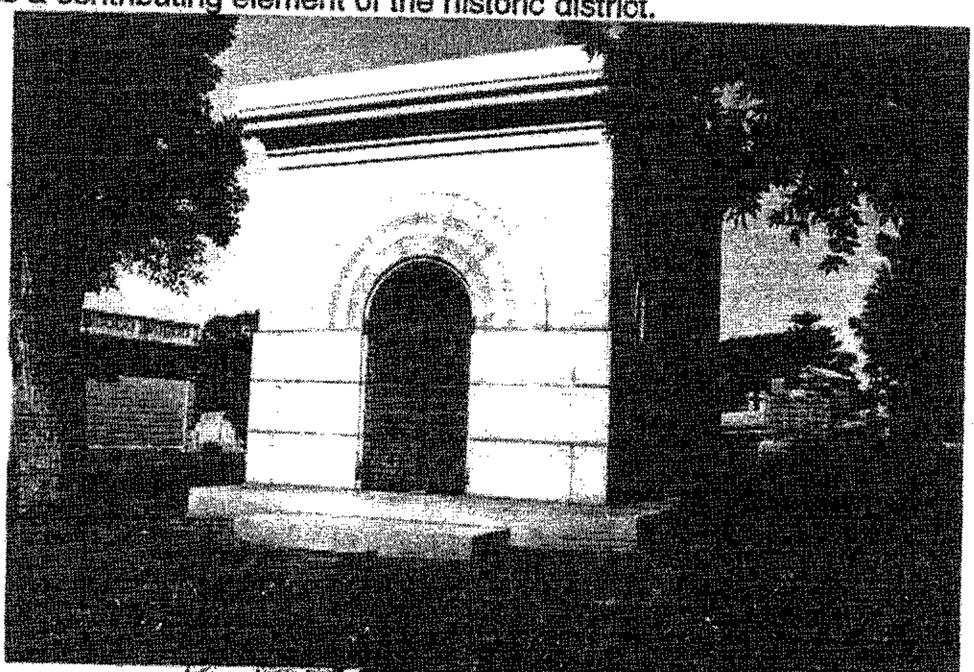
CL #18
Cypress Lawn Memorial Park: Nager Mausoleum, 1912. Designer: B. J. S Cahill.

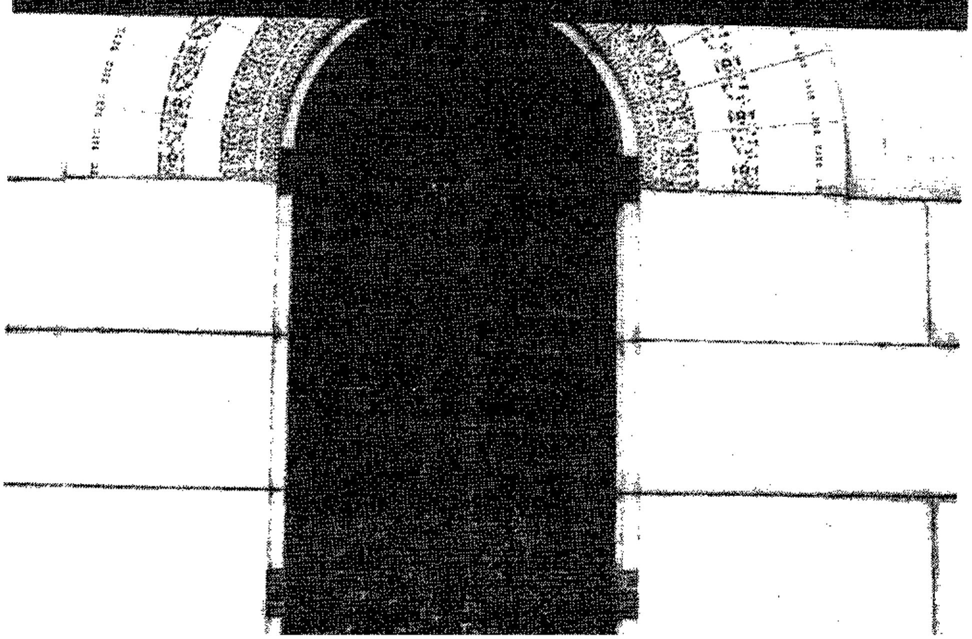
This chaste white marble temple serves as the final resting place of Herman I. Nager, known as the "Potato Chip King." The building is an archeologically correct exercise in the Doric order, a peripteral tetrastyle design with a simple pediment (no sculpture in the tympanum), heavy entablature, fluted columns carved with the slightly curving profile known as entasis, and a three-stepped stylobate or base. The entry is distyle in antis, that is, centered between two columns recessed between the antae or pilasters terminating the side walls. Doors and windows are bronze, with bronze grilles and glass panels. The chamber, which contains a number of crypts in the back wall, is entirely faced in colored marble. This building is included on the municipal inventory of historic sites and is a contributing element of the historic district.



CL #19
Cypress Lawn Memorial Park: Niebaum Mausoleum, 1908.

This granite monument to the founder of Inglenook Vineyard, Gustave Niebaum (1842-1908), is a somewhat simplified but remarkably faithful copy of Louis Sullivan's famous Getty Tomb in Chicago's Graceland Cemetery, built in 1908 as a monument to Carrie E. Getty. The Niebaum Mausoleum has similar dimensions and the same massive plinth, the same three courses of massive ashlar providing a spring line for the arched doors and windows, the same incised and foliated decoration in the heavy voussoirs, the same scalloped parapet expressing the division of the roof into four massive stones. Also similar are the bronze gates, which bear the inscription: "BUREAU BROS./BRONZE FOUNDERS/PHILA. PENNA." The Niebaum Mausoleum differs in having a simpler, stepped cornice, in lacking a diaper pattern in the panels above the arched openings, and in having strangely Neoclassical window grilles resembling fanlights. This building is the closest of two copies of the Getty Tomb to be found in the Colma cemeteries. The medium for the transmission of this design has not been determined. This building is included on the municipal inventory of historic sites and is a contributing element of the historic district.

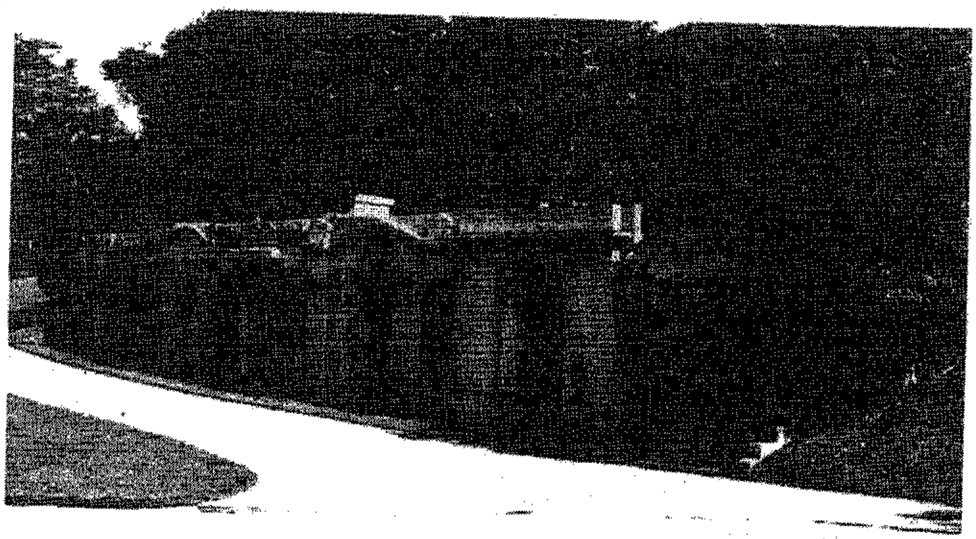




CL #20

Cypress Lawn Memorial Park: Row of mausoleums, 1905, 1906 and 1907.

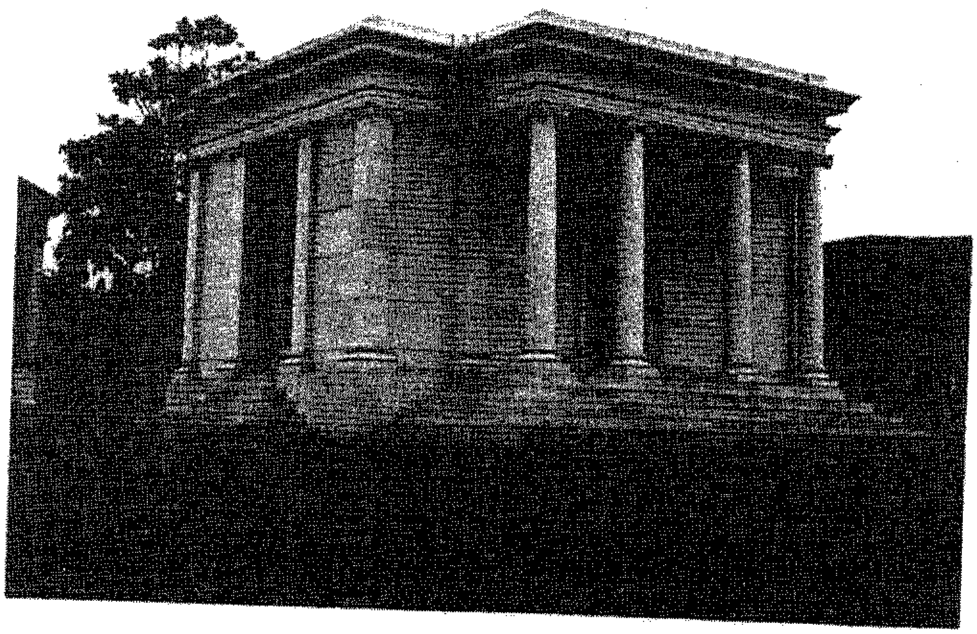
Seven mausoleums for the Lacoste, Pearl, Peckham, Beleney, Wreden, Lee and Patterson families form a continuous row --the only example of this type of development at Cypress Lawn. The granite fronts are built in a variety of styles including Egyptian and Classical revivals, and fitted with bronze gates of varying designs. The vaults are all built into the hill and covered by lawn. The interiors are all faced in white marble with some granite and black marble used at the floors. Although attached, the mausolea were developed and owned independently. These buildings are contributing elements of the historic district.



CL #21

Cypress Lawn Memorial Park: Claus Spreckels Mausoleum, transferred from land burial to mausoleum February 15, 1912.

This mausoleum is a monument to a famous San Francisco family that made its money in Hawaiian sugar and were the largest exporters of sugar to the West Coast. This mausoleum is prominently situated on its own hillock. The building consists of a rectangular block with colonnaded porticos forming a Greek cross in plan. It is constructed of pale white granite and elevated on a high base, with stairs approaching openings on all four sides. The design is very French, recalling the Spreckels Mansion in Pacific Heights. The style is severe Ionic, the porches supported by unfluted columns, the walls and pilasters made of monolithic blocks of coursed ashlar, the entablature composed of a plain frieze and triple fascia, all capped by a simple but bold cornice. The roof is flat. The doorway consists of a carved architrave beneath a detached cornice supported on consoles. The glazed doors are protected by bronze gates. The arched windows are recessed between pilasters and protected by a bronze grille. The interior is finely finished in black-veined white marble, with Corinthian pilasters, coffered ceiling, and marble benches. In the middle of the vault stands a sculpture, approximately five-foot-high, composed of four putti standing on a high base and supporting an urn. A newspaper report from 1910 placed the cost of the mausoleum at $45,000. Claus Spreckels was born in Germany and became known as the Hawaiian "Sugar King." He built a 60-room mansion along Van Ness Avenue in San Francisco, which was destroyed in 1906. Among the ten members of the Spreckels family buried here, one should note the infamous Alma de Bretteville Spreckels, the free-thinking socialite who scandalized San



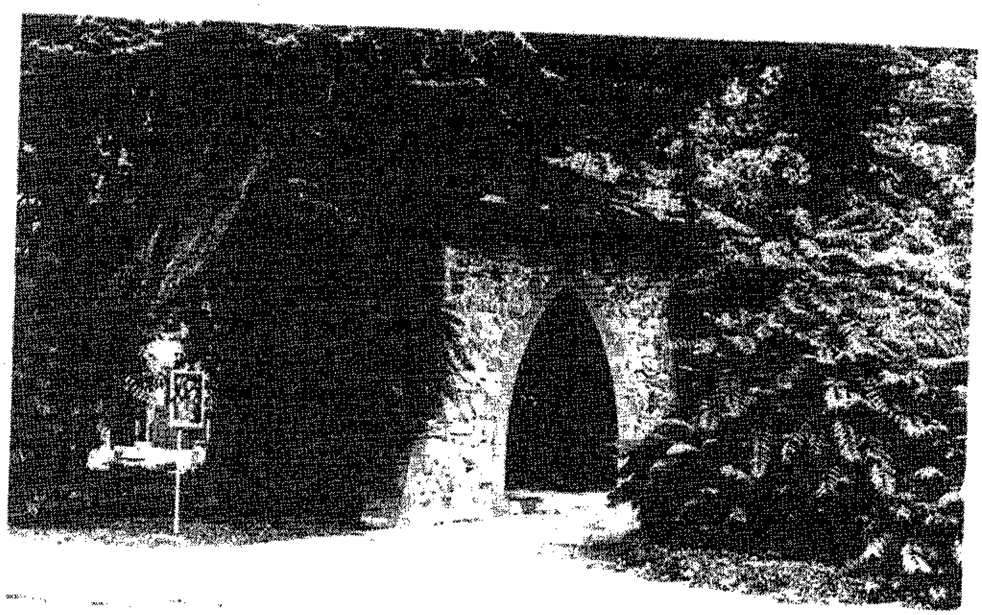
CL #21 continued
Cypress Lawn Memorial Park: Claus Spreckels Mausoleum

Francisco society when she served as the model for Robert Ingersoll Aitken's Victory (1901), which stands on top of the 95-foot-high Dewey Monument in the center of Union Square. This building is a contributing element to the historic district.

CL #22

Cypress Lawn Memorial Park: Trolley shelter, (adjacent to Kolman Monument on El Camino Real), ca. 1903.

This rustic/ Craftsman structure, rectangular in plan, has walls made of uncoursed rubble stone supported by battered buttresses and a concrete foundation. The doorway takes the form of a large pointed arch with red sandstone voussoirs and a granite threshold. The window openings are similarly framed. The roof is framed in wood, with exposed rafters, purlins and sheathing, and clad in mission tile. The interior space has a red square tile floor, built-in rustic benches of concrete, a wainscot of broken tile, and, above the wainscot, a wood framework built out from the stone walls which appears to have once contained wood paneling. There is a mature Monterey cypress immediately west of the building. A charming building, it served the riders of the # 40 trolley which operated here between the early 1890s and 1948. This building is a contributing element of the historic district.



CL #23

Cypress Lawn Memorial Park: Vehicle Barn, (immediately north of building at 1773 Mission Road), ca. 1915

This is a one-story, wood-framed structure on a concrete foundation, with a low concrete wall at the south end. The shed roof is clad in corrugated metal. The walls are clad in corrugated metal and chamfered, tongue-and-groove wood siding. The face of the building is almost entirely characterized by sliding, wood barn doors in matchstick board under a large sheet-metal cornice. Windows are fixed, multi-pane, industrial type with metal sash. The color scheme is green. There are numerous ells in back - deteriorated wood-frame structures clad mostly in corrugated metal. Although somewhat deteriorated, the building is a contributing element of the historic district.

CL #24
Cypress Lawn Memorial Park: 'clubhouse' (north of Vehicle Barn on Mission Road), ca. 1915.

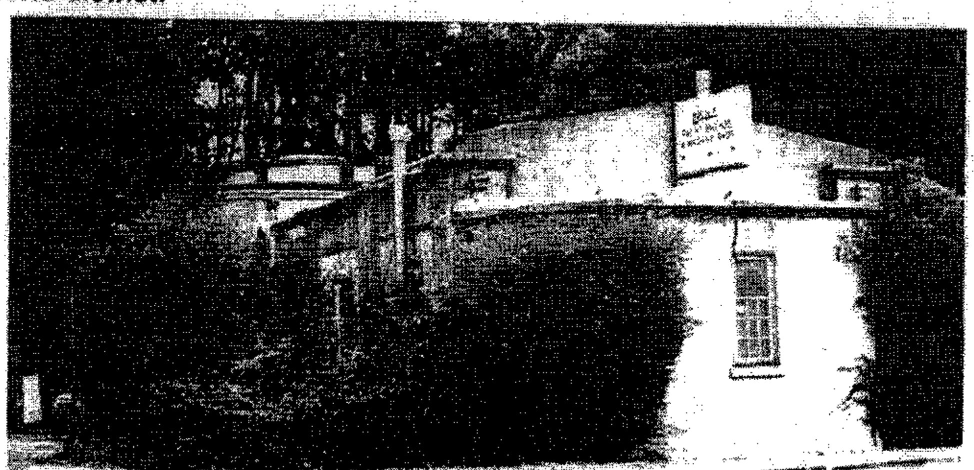
This one-story, wood-framed bungalow on a concrete foundation now serves as an employee lounge and lunchroom. Its original use is unknown but undoubtedly was utilitarian in nature. The roof is gable in form, with the ridge aligned parallel to the street. The walls are clad in chamfered horizontal wood siding, the roof in composition shingle. Doors are wood. Windows are both fixed and double-hung with wood sash and simple wood surrounds, replaced in some locations by sliding aluminum. Other details include: bracketed eaves, exposed rafter tails. The building is in relatively good condition and is a contributing element to the historic district.

CL #25
Cypress Lawn Memorial Park: 1690 Mission Street, currently Baca's Engines and Machine Shop, ca. 1910.

Building 'A' - This concrete building is faced in smooth cement stucco and features an irregular plan, a central octagonal rotunda, metal doors and projecting piers. The building was originally used as the pump house for the Cypress Lawn water system and housed diesel pumps. The structure is now used as an automobile repair facility and two metal incinerators are in use. The flat roof features metal vents and drainage gulleys. A metal penthouse story, probably a later addition for ventilation, projects from the roof of the building. The building features a cavetto cornice (an Egyptian Revival motif). Irregular fenestration includes fixed multipane metal windows and windows covered over by metal grating. The garage entryway, now featuring a corrugated metal door opening, is surmounted by a simple pediment. This building is a contributing element of the historic district.

Building 'B'
This concrete shed features a flat roof and wooden, glazed hinged doors. A later addition includes: two wood sheds with sloping roofs, one wood hinged door and other metal doors.

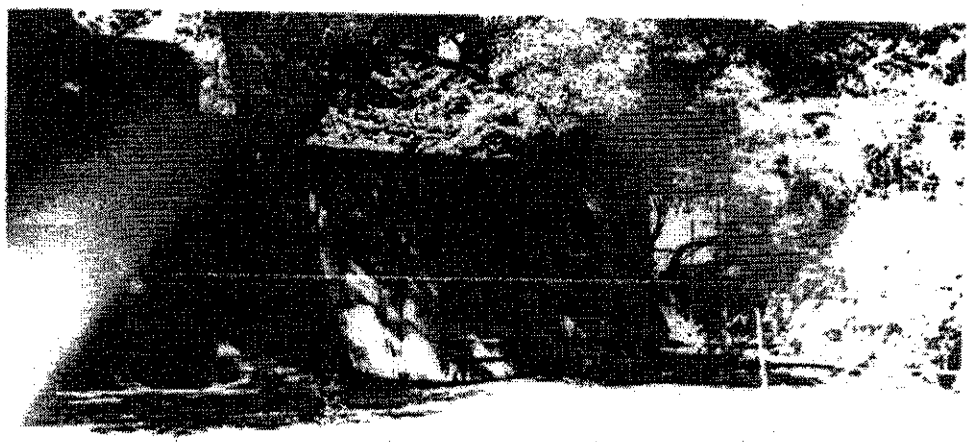
Building 'C'
This reinforced concrete reservoir features: a generally rectangular plan with rounded corners and a slightly battered wall, and an overhanging rim or cornice. The top level of the building is now wrapped in barbed wire. This building is a contributing element of the historic district.



Building A

CL #25 Photo continuation page

Cypress Lawn Memorial Park: 1690 Mission Street, currently Baca's Engines and Machine Shop



Building B

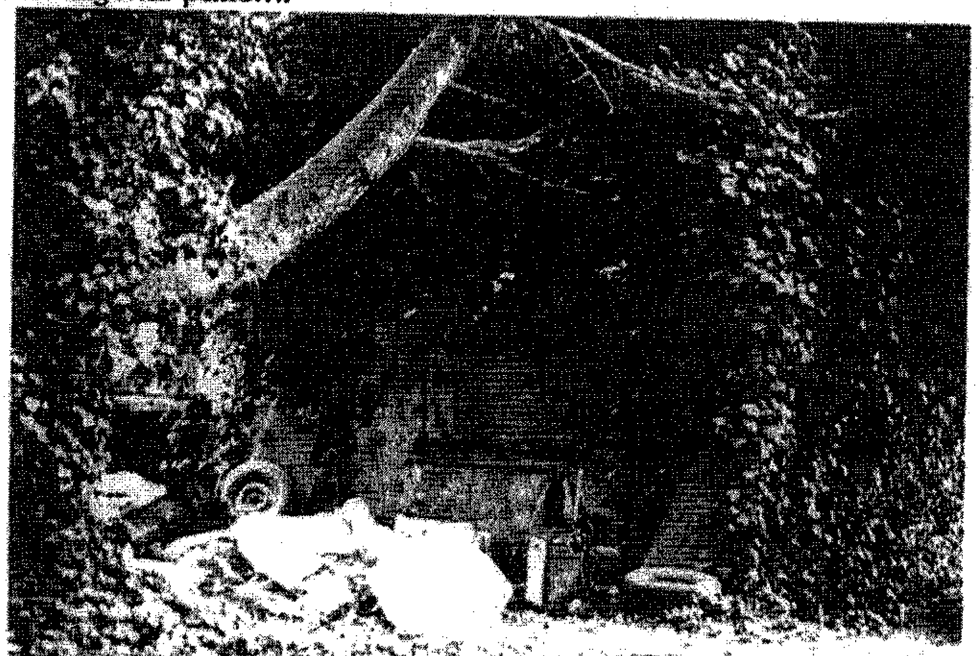
Building C

CL #25 continued
Cypress Lawn Memorial Park: 1690 Mission Street, currently Baca's Engines and Machine Shop

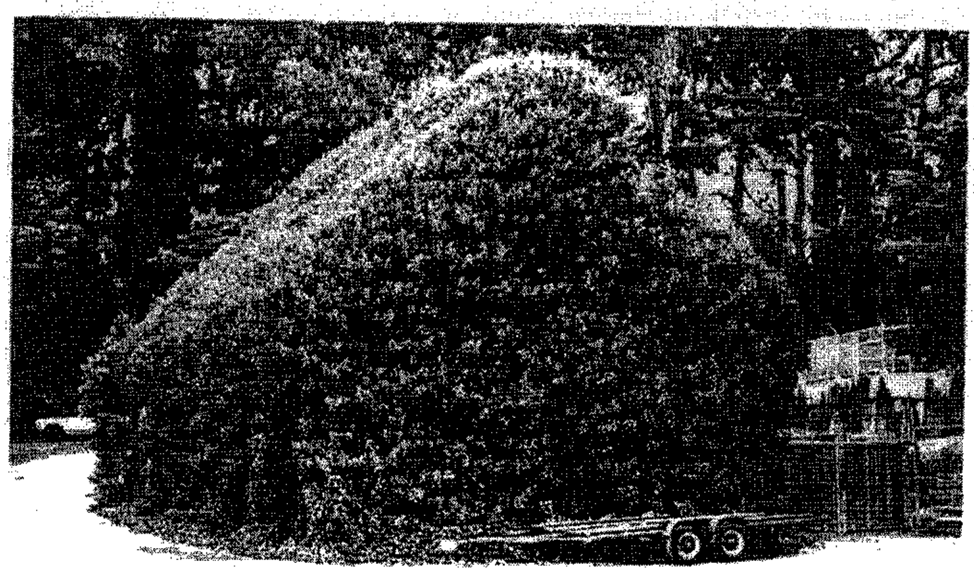
Building 'D'
This concrete over wood frame, rectangular, garage-like bulding features wood-panel doors, boarded-over windows and projecting corner piers. It appears to be used as a utility or storage building and is partially obscured by ivy.

Building 'E'

This wood-frame, stucco-clad building is largely overgrown with ivy and features a corrugated metal gable roof, boarded-over windows, a boxed eave, gable level louvered vent and two, sliding barn doors of chamfered, tongue and groove wood siding in a diagonal pattern.



Building D



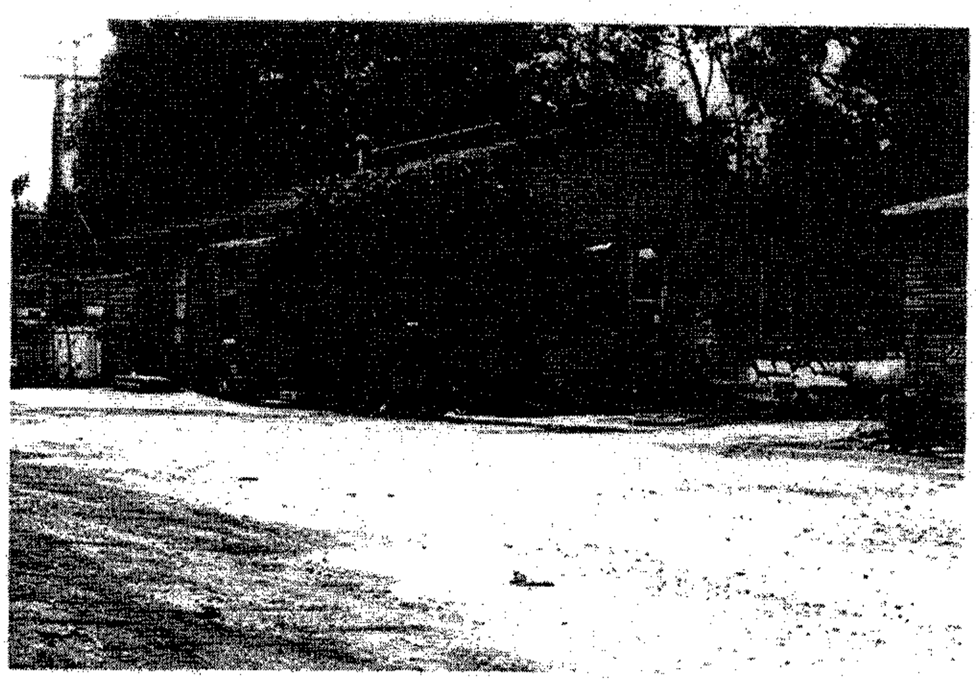
Building E

CL #26
Cypress Lawn Memorial Park: 1370 El Camino Real, Corporate Yard.

Building 'A'
This six-bay carport, featuring a sloping roof, is built of wood and is supported by metal posts. Probably built within the last 30 years, it does not contribute to the significance of the historic district.

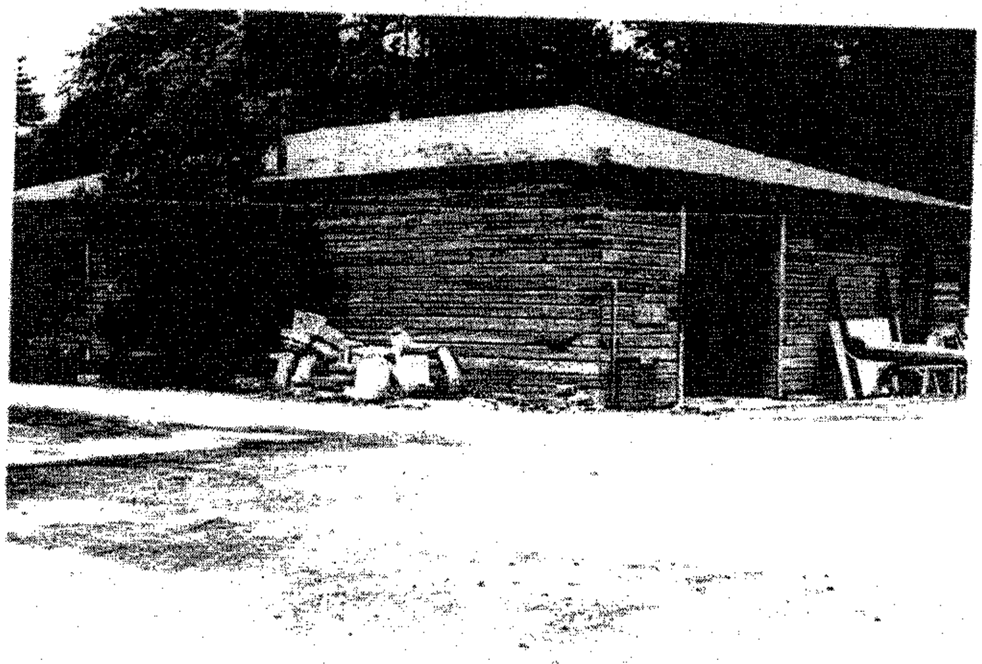
Building 'B'
This wood-frame utility building, resting on a concrete foundation, is covered with corrugated metal. The gable roof with ridge vent features wood beams topped with metal, exposed purlins and metal vents. Fenestration includes wood frame, one-over-one windows with wood surrounds; facing Mission, the windows are covered with metal chain link grating. The building features wood panel doors and a solid wood door and is painted green.

Building 'C'
This square, wood-frame building features a hip roof of composition shingle, exposed rafters and purlins. Painted green, the building is composed of chamfered-wood siding. Fenestration includes one-over-one double-hung wood sash and picture windows with simple wood surrounds. The two sets of doors into the structure are wooden and hinged, the pair parallel to Mission being contructed of chamfered drop-siding.



Building B

CL #26 Photo continuation page
Cypress Lawn Memorial Park: 1370 El Camino Real, Corporate Yard



Building C

CL #27
Cypress Lawn Memorial Park: Laurel Hill Memorial, underground vault by Albert R. Williams & Assoc., 1940-46. Obelisk monument by Vladimir Oslou, 1953?

This monument marks the mass grave of 35,000 people whose remains were transfered from Laurel Hill Cemetery, beginning in February 1940. The 57-acre cemetary on Lone Mountain, founded in May 1854, was closed by order of the San Francisco supervisors in 1902 as the city grew and land became scarce. The monument is made of concrete and comprised of an obelisk on a stepped base, and a wall bearing a commemorative bronze plaque on the front side and a white marble bas relief depicting Father Time on the back, probably a Victorian relic of Laurel Hill. The site also features mature conifers. West of the monument stands the Pioneer Memorial, consisting of a lifesize bronze figural group--father, mother and child--on a round concrete base. The bronze, dated 1955, is credited to F. M. Sedgwick and bears the following inscription: "Their visions/and/their dreams/came true." A curved concrete wall depicting a covered wagon, clippership, and stylized sunset, all in relief, forms a backdrop for the bronze. Due to age, these monuments would not be considered contributing elements of the historic district.

State of California -- The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

HISTORIC RESOURCES INVENTORY

Ser. No. 6
HABS____ HAER____ NR____ SHL____ Loc____
UTM: A ____ B ____
C ____ D ____

P-41-405

IDENTIFICATION

1. Common name: Holy Cross Cemetery
2. Historic name: Holy Cross Cemetery
3. Street or Rural Address: 1500 Mission Road
   City: Colma Zip Code: 94014 County: San Mateo
4. Parcel numbers: 011-370-080, 011-370-120
   Address: 1500 Mission Road
   Present Owner: Holy Cross Cemetery
   City: Colma Zip Code: 94014
5. Ownership is: ( ) Public (X) Private
6. Present Use: Cemetery Original Use: Cemetery

DESCRIPTION

7a. Architectural style: Traditional and rural (picturesque) cemetery

7b. Physical Condition: (Present condition of the site or structure and any major alterations from its original condition)

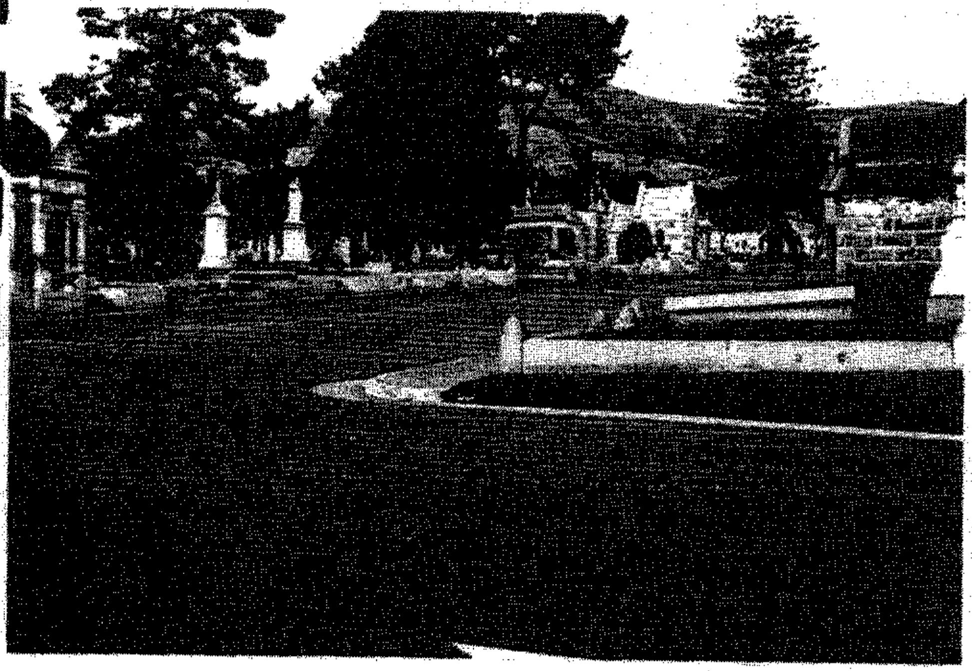
Holy Cross Cemetery is a large and verdant development that features a remarkable collection of elite as well as typical cemetery art. Although several buildings (particularly community mausolea) have been created at the site in the post-war period, the cemetery remains an excellent example of cemetery design from the late 1880s through 1945.

The cemetery is primarily laid out as a grid with a central axis running from the Gates on Mission Road to the large Mausoleum at the other end of the cemetery. Most of the cemetery occupies a rolling, sloping site, although the southern and eastern ends of the park tend to be a bit flatter. Several curvilinear streets help give the complex a more picturesque flavor; however, nearly all the gravemarkers are arranged in a rectilinear fashion. The major exception to this pattern are lines of family mausolea in Section E, and the gravemarkers and mausolea arrayed around the circles or roundabouts found on the main axis. The cemetery does not have one consistent appearance, as some areas are crowded with headstones and others are more spacious, with lawns and plantings of mature trees.

Unique among the cemeteries evaluated for this study are the areas reserved for clergy. Nuns can be found in Section (and priests are within the "Priest's Circle" on the central axis. Another unusual feature is the layout of burials in some of the older sections (e.g., D) that feature gravestones laid out back to back, with burials facing opposite directions. This allows for wide grassy avenues between the double rows of stones.

Holy Cross Cemetery displays the full range of gravemarkers dating from the mid-nineteenth century through the twentieth century, including lambs and cherubs (for children), tablets, flush markers, posts, columns, urns, benches, sarcophagi, pyramids, angels, rustic boulders and carved tree-stumps, obelisks, tablets, crosses, and Celtic crosses. Marble tends to be the preferred material of construction, with granite achieving predominance after World War I. The cemetery also features a great deal of fine figural sculpture reflecting the importance of the Holy Family and saints within Catholic theology. Completely paved family plots with subterranean vaults like those dominating the Italian cemetery can also be found. Several areas in the cemetery also feature the same types of curbs and bollards around family plots as seen in the Jewish cemetery. A very large children's burial section is located in the west side of th cemetery in Section C.

The grounds are nearly entirely covered in mown lawns and also feature a fine collection of trees and shrubs. Evergreens are especially well-represented, including deodar, pine, Monterey pine, Monterey cypress, cedar, Norfolk Island pine, and yew. Other trees include eucalyptus, palm, magnolia, olive, and oak. Holly bushes and box hedges ar also represented. A large plant nursery is located to the rear of the large mausoleum.



8. Construction date: Established 1886-1887
Estimated ( ) Factual: (X)

9. Architect: Numerous

10. Builder: Numerous

11. Approximate Property Size:
Acreage: 283 acres

12. Date(s) of Photograph(s):
September-October 1993

13. Condition: Excellent (X) Good ( ) Fair ( ) Deteriorated ( )

14. Alterations:

15. Surroundings: (Check more than one if necessary)
Open Land (X) Scattered Buildings (X) Densely Built-Up ( ) Residential ( )
Industrial ( ) Other: Cemeteries

16. Threats to site: None Known ( ) Private Development ( ) Zoning ( )
Vandalism ( ) Public Works Project (X)

17. Is the Structure: On Its Original Site? (X) Moved? ( ) Unknown? ( )

18. Related features:

SIGNIFICANCE

19. Historical and/or architectural importance (dates, events, and persons associated with the site):

Holy Cross Cemetery appears to qualify for the National Register as a state-level district. This cemetery, as was the case for the Home of Peace/Hills of Eternity district, represents a combination of the traditional and picturesque cemetery styles, illustrating the evolution of these styles. This district appears to qualify under criteria B and C. It contains the graves of persons exceptionally significant in California's economic and political history (Governor John G. Downey; A. P. Giannini of the Bank of America; Mayor and Senator James D. Phelan; "Silver King" and Senator James G. Fair) and is an excellent example of cemetery design for the period 1886-1945. It has a fine collection of historic buildings, gravemarkers, and mausolea. It illustrates both the influence of the traditional rectilinear cemetery design and the picturesque curvilinear design and natural landscaping of the more modern rural cemetery style. It therefore embodies the distinctive characteristics of design for both these types of cemeteries. This district also has excellent integrity of location, setting, design, workmanship, materials, feeling, and association. It is therefore an authentic historic property and in our opinion meets the special criteria consideration for the National Register.

20. Main theme of the historic resource (if more than one is checked, number in order of importance): importance.)

Architecture (X)	Arts & Leisure ( )
Economic/Industrial ( )	Government ( )
Exploration/Settlement ( )	Military ( )
Religion ( )	Social/Education ( )

21. Sources (list books, documents, surveys, personal interviews, and their dates):

Kent Seavey Inventory

Personal interview with James Gregoire, Native Son Florist, October 1993

Personal interviews with Christine Stinson, Office Supervisor, Holy Cross Cemetery, October 1993

San Francisco Monitor, March 15, 1902, p. 490 (gate and lodge)

22. Date form prepared: 11/17/93

By: Laurence H. Shoup, Mark Brack, Nancy Fee, Bruno Gilberti

Organization: Archaeological/Historical Consultants

Address: 609 Aileen Street

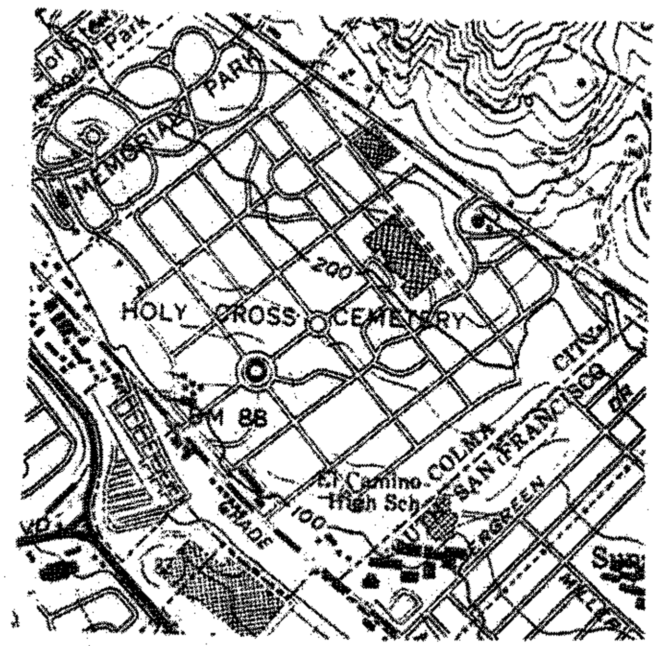
City: Oakland, California

Zip Code: 94609

Phone: 510-654-8635

Location Sketch Map (draw and label site and surrounding streets, roads, and prominent landmarks)

NORTH



General Description, Photo continuation page
Holy Cross Cemetery

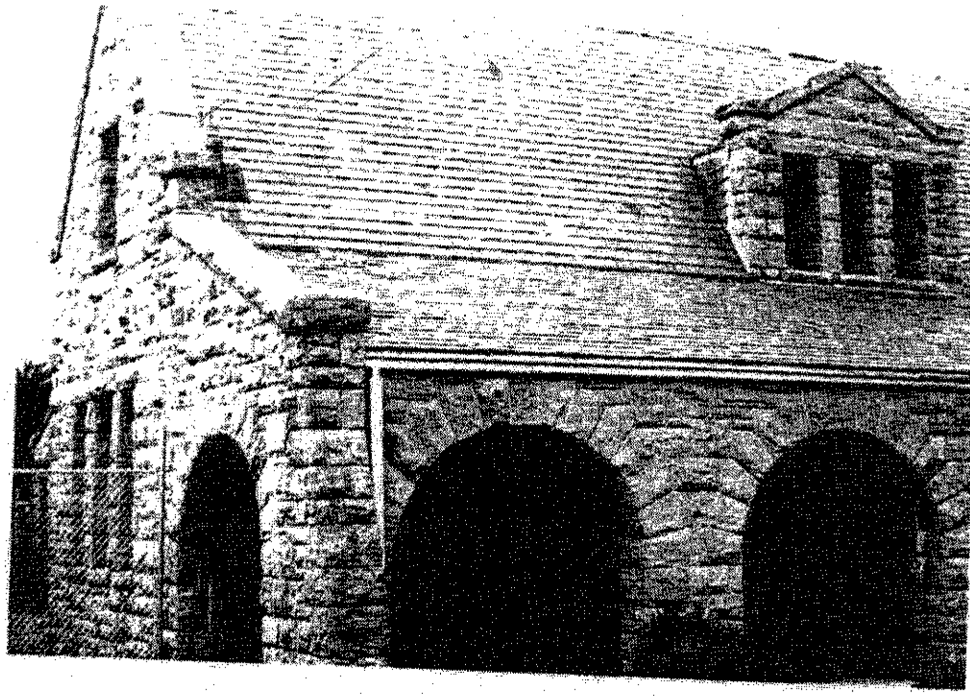
General Description, Photo continuation page
Holy Cross Cemetery

Children's section

HC #1
Holy Cross Cemetery: Old Lodge/ Office Building, 1902 (1595 Mission Road). Designers: Frank and William Shea, who also constructed the cemetery gates across Mission Road.

This handsome structure is built in the Richardsonian mode of the Romanesque revival. It features an irregular plan; walls of random-coursed, rock-faced sandstone and a roof clad in slate. The main body of the building features two, parallel, steeply-gabled sections facing the street, connected by another gable running perpendicular to the first two. Attached on the north side of this central section of the building is a circular wing with a conical roof. This last feature might have its origins in Richardson's library designs. On the east, west and south facades of the main structure can be found arcades with radiating voussoirs executed in the same rock-faced stone. Other details include: gabled wall dormers; buttresses; double-hung, wood-sash windows; tripartite windows; a stone chimney; and a stone coping at the eaves. The interior features molded door and window surrounds and paneled doors and wainscoting. The building was originally used for an office for the cemetery and as a passenger station for the railway and trolley lines that ran on either side of it. Caretaker's facilities were provided in the second story. A newspaper report of the period estimated the cost of the lodge at $15,000. This building is an excellent example of the Richardson Romanesque. In spite of the popularity of the style during the late-nineteenth century, relatively few examples survive in the state of California. Another Shea & Shea Romanesque revival building, St. Rose Catholic Church (1900) still survives in Santa Rosa, CA. The lodge is a contributing element of the historic district.

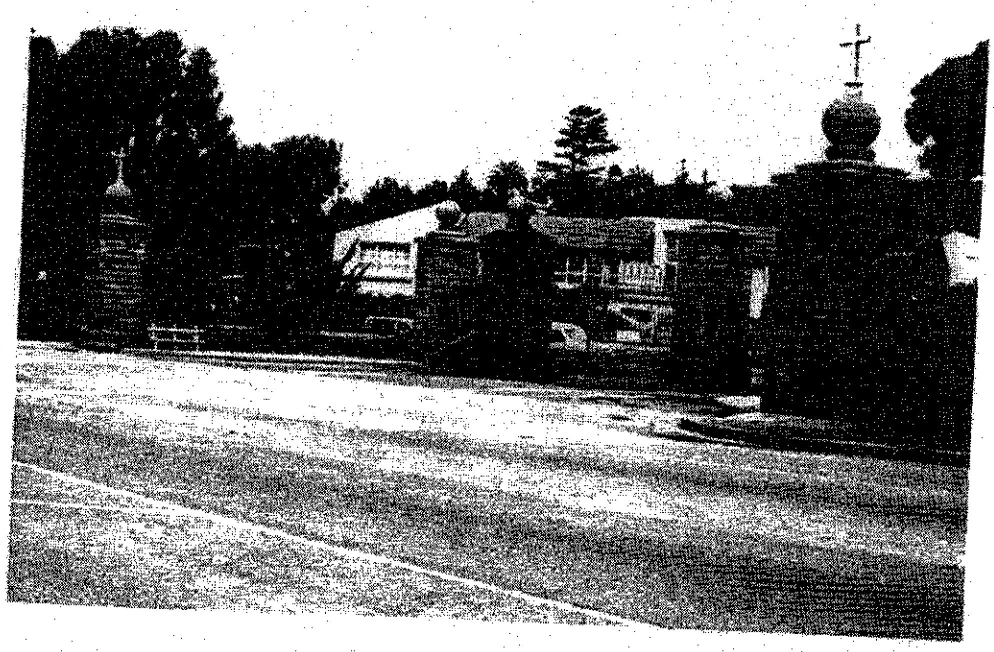
HC #1 Photo continuation page
Holy Cross Cemetery: Old Lodge/ Office Building



HC #2

Holy Cross Cemetery: Entrance Gates, 1902. Designers: Shea and Shea.

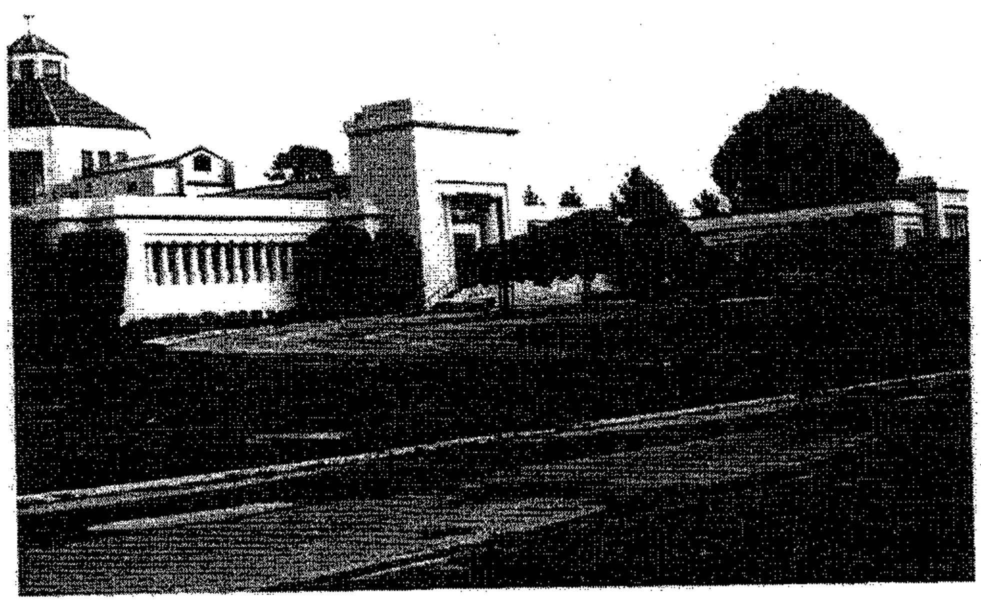
The firm of Shea and Shea executed this fine, stone gateway of the same grey, rock-faced, Colusa sandstone as the contemporary lodge building they erected on the other side of Mission Road. The most prominent features of the gate are six square piers, approximately 15 feet in height (original plans called for two piers to be substantially higher). The piers are of coursed, rusticated stone and capping each pier is a rusticated cornice and a large, smooth, ball-shaped finial. The finials on the two outer piers are surmounted by gilded crosses. The four inner piers support decorated metal gates. At the center of the composition is a large gate for vehicular traffica. Flanking it are smaller gates for pedestrians. The piers are placed in a semi-circular or exedra-like pattern. The outer piers are connected to the gateway piers by a low , curving wall. Walls also extend from the outer piers to the north and south along Mission Road. These walls are of uncoursed rusticated stone with a rustic copping. A rustic bench of concrete and iron imitating wood was probably added to the entrance in the first two decades of the twentieth century. Similarly articulated bollards are in front of the office across the street. The Holy Cross entrance gate is in a fine state of repair and is a contributing element of the historic district.



HC #3

Holy Cross Cemetery: Holy Cross mausoleum, 1921 (with numerous additions). (Built 1920, opened March 28, 1921). Designer: John McQuarrie

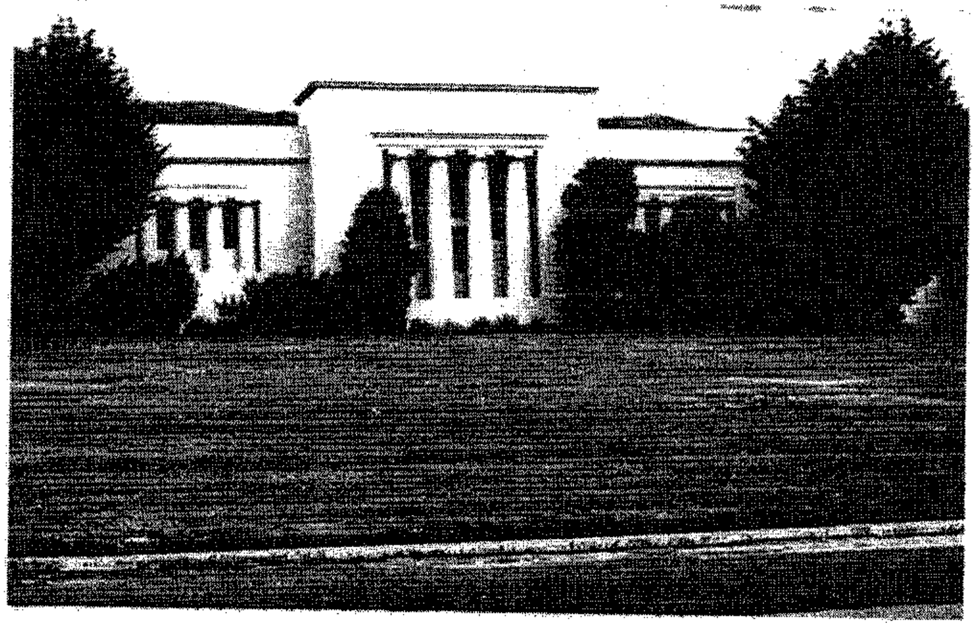
This impressive building covering more than four acres is probably the largest mausoleum in Colma. It is reported to have cost $500,000 at the time of its construction. (interview with Christine Stinson, Holy Cross Cemetery). The one-story, reinforced-concrete structure on a concrete foundation has a mostly flat roof, with the exception of the prominent octagonal dome, and a number of skylighted monitors. Most of the exterior walls are finished in pink-painted stucco scored as stone. The dome and its cupola are clad in flat clay tile. The building has the branching plan typical of such structures, but in contrast to other Colma mausoleums, it retains the interior symmetry suggested by the west front. This facade forms an imposing, symmetrical terminus to the cemetery's main axis, with three pylon gates projecting from the main block. The central pylon contains the main entry, a recessed porch with two Doric columns in antis, and double bronze doors with glass panels and bronze grills in the form of palm leaves, a biblical honorifica. A gilded and polychromed panel over the door depicts a figure of Christ in relief, with arms outstretched in welcome. The pylon's lintel bears the following inscription in large incised letters: "LOOKING FOR THE BLESSED HOPE AND/THE COMING OF THE GLORY OF THE GREAT/GOD & OUR SAVIOUR JESUS CHRIST/TITUS II.XII." A typical wall section consists of a basement level, a recessed and truncated Doric colonnade, bronze window grills in the form of palm branches, and a corbeled and stepped parapet. A rotunda at the heart of the building serves as a funeral chapel and a burial place for all of San Francisco's



HC #3 continued
Holy Cross Cemetery: Holy Cross mausoleum

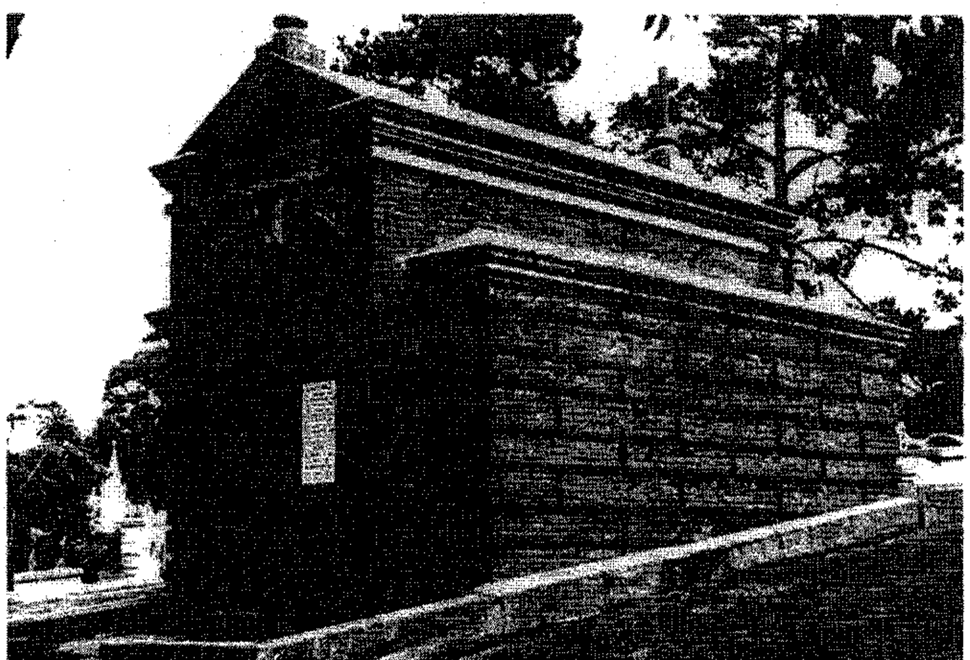
archbishops. This impressive space has stylized classical details, clerestory windows, a paneled ceiling, and lighted cupola. The four lofty galleries projecting from the rotunda form a cross at the center of the building. Furniture in these spaces includes a centralized altar on a raised platform, simple wood pews, and a Gothic Revival cathedra, or bishop's throne, in the south arm. This cathedra is believed to have been the throne of Archbishop Riordan and was previously located at Saint Patrick's Seminary. It dates from circa1898 to 1914, when it was believed to have been installed at Holy Cross. (personal interview, Christine Stinson, Holy Cross Cemetery). Interior finishes include marble and terrazzo of various colors at the floor and walls, and plaster at the ceiling and window surrounds. Other details include vaulted, stained-glass ceilings over the older galleries towards the front, and bronze urns in large galleries B and D. Predictably, the newer sections of the building have a simpler design than the older parts. The Gallery of the Ascension, on the east side, is a particularly egregious recent addition, while the expansion on the north side is more sympathetic to the original design. Stylistically, the building as a whole is an interesting and sophisticated combination of Egyptian and Early Christian forms and is a contributing element of the Holy Cross Cemetery historic district.

HC #3 Photo continuation page
Holy Cross Cemetery: Holy Cross mausoleum



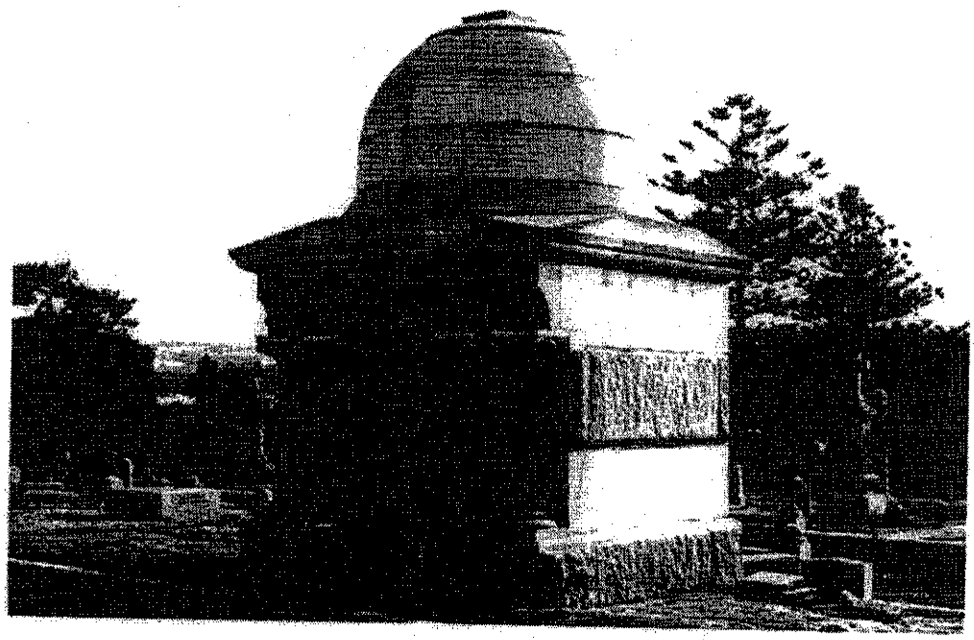
HC # 4
Holy Cross Cemetery: McGuire mausoleum.

This tomb appears to be the only extant brick mausoleum in Colma, at least the only one with brick on the exterior. Resting on a sloping, concrete foundation, the building has a rectangular plan and features a temple front with cornice returns. The gable roof is clad in cement stucco and bearing a cross on the North end. Lower, hip-roof wings on the east and west sides are clad in rusticated brick panels. The entry (now bricked in) features rusticated brick colonettes in a receding compound arch. Rusticated cement panels and keystone perform a decorative function above the arch. The earliest burial dates from 1870 (Thomas McGuire) and the latest dates from 1957 (Mahony). The mausoleum is bordered by open lawn on the east side and a plot marked for P. Carrity bearing no gravestone on its west side. The mausoleum is a contributing element of the historic district.



HC # 5
Holy Cross Cemetery: Kitterman mausoleum, 1892.

This mausoleum is square in plan, bears a heavy exposed eave and is capped with a dome of smooth, ashlar blocks. Floriated Byzantine or Romanesque capitals top pairs of columns set on bases with rusticated panels and contribute to the general Byzantine appearance of the structure. Broad bands of smooth and rusticated stone are visible on the sides of the building. A bronze gate with quatrefoils and vegetal motifs marks the entry into the mausoleum. Burials are visible on both sides of the mausoleum and the grave site itself is bordered by a concrete walls accented by bollards. The mausoleum is a contributing element of the historic district.

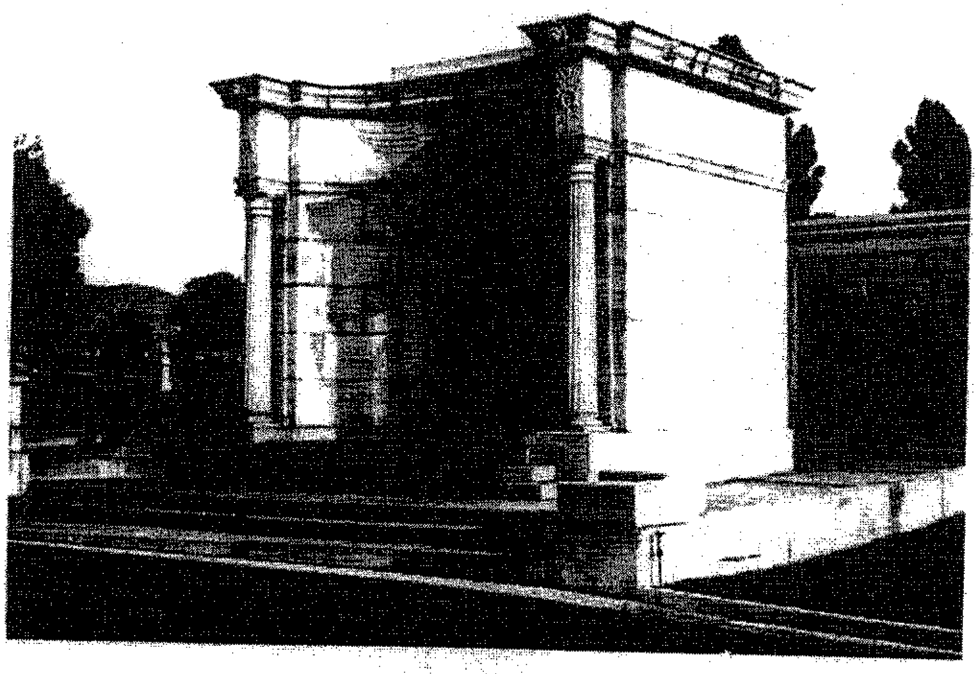


HC #6
Holy Cross Cemetery: Governor Downey monument, 1896.

This tomb bears the inscription, "Sacred to the memory of John G. Downey, Seventh Governor of California Born in Castle Sampton, County Roscommon, Ireland, June 27, 1827, Died in Los Angeles March 1, 1894." Downey is commemorated with a sloping, granite sarcophagus from which a cross emerges. His profile is shown in a bronze cameo with laurel leaves at its base. Above the portrait is displayed an open book and palm leaf, also in bronze. The base of the tomb area is tiled in black and white marble squares and its perimeter is marked by a wall approximately two feet in height accented with incised decorations and bollards. The mausoleum is a contributing element of the historic district.

HC #7
Holy Cross Cemetery: Fair Family Mausoleum.

This elegant and sophisticated tomb marks the burial of James G. Fair (1831-1894), Senator and founder of the Fairmont Hotel and one of the "Silver Kings" of the Comstock Lode. The tomb is constucted of smooth granite blocks and features a flat roof. Its curving front facade of granite blocks forms a kind of exedra. The steps at the base of the mausoleum curves with the bend in the road. A bronze door with geometric paneling, floral and vegetal motifs and perforated windows mark the entry into the mausoleum. Above the door to the crypt is carved the name FAIR and a winged angel in Greco-Roman costume with a downward looking gaze and an open book in her lap. Two, fluted columns flank the front facade and carry the projecting entablature in which is carved stone reliefs of a palm frond with the greek letters for alpha and omega. Small carved lion heads and and egg and dart molding accent the cornice. The interior features stained glass windows. The area immediately around the mausoleum is paved in concrete. The mausoleum is a contributing element of the historic district.

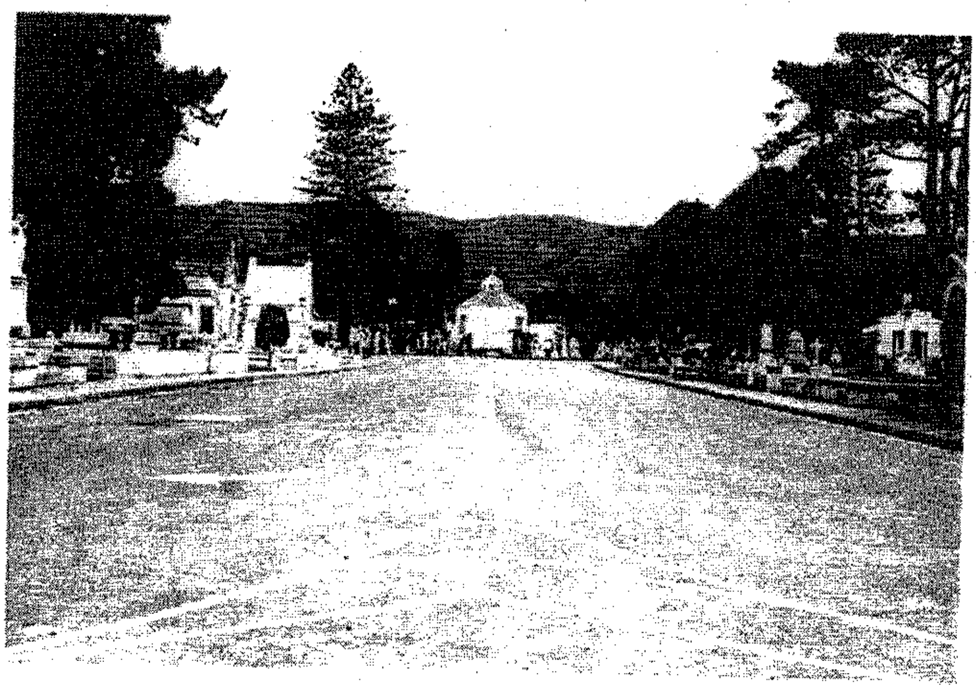


HC #8
Holy Cross Cemetery: Phelan Mausoleum.

This elaborate Victorian building contains the tombs of James D. Phelan and (1861-1930) and several other members of his family. Phelan was a prominent San Francisco businessman, the city's 22nd mayor, and a United States Senator. The grey-granite structure is square in plan, with battered walls of rusticated, coursed ashlar. The roof takes the form of four-sided dome capped by an oversized finial containing a huge ball of polished granite. The projecting porch has a simple carved pediment decorated with acroteria, a carved frieze, and paired columns with polished granite shafts resting on scrolled bases. A short flight of steps leads up to the arched entry itself, which has carved voussoirs and a lunette bearing the name "PHELAN" in raised letters. A pair of glazed bronze doors has bronze grills. Inside, the walls are finished in white marble, the floor formed of stone slabs. A pair of male and female busts (Phelan and his wife?) flank a stained-glass window in the center of the back wall, depicting Christ at Gethsemane. This tomb is fronted by a pair of mature yews, and raised above the level of the surrounding lawn behind concrete retaining walls imitating granite. The mausoleum is a contributing element of the historic district.

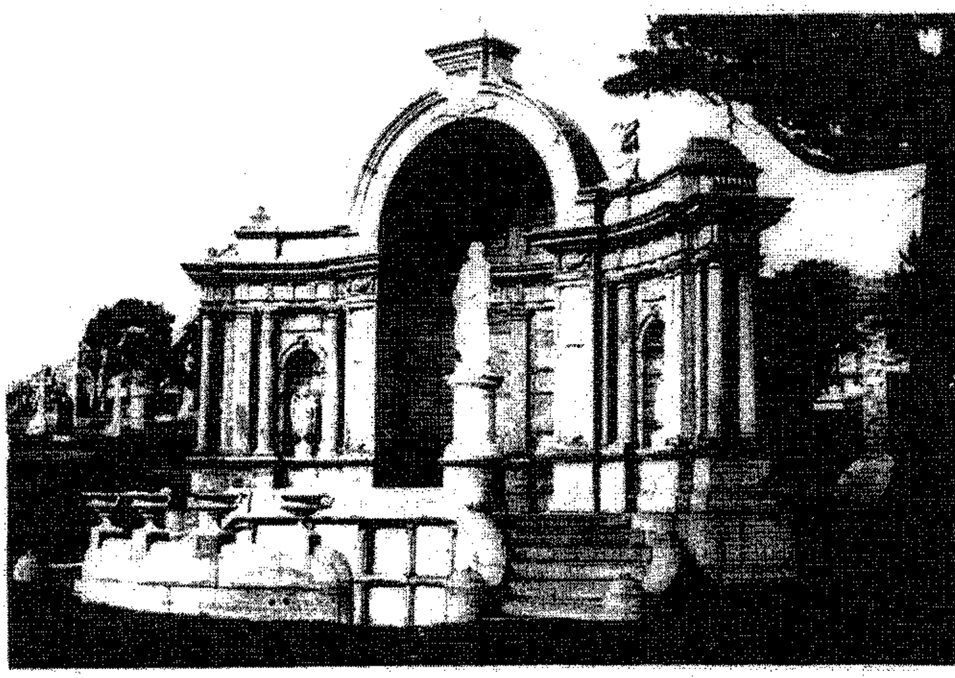
HC #9
Holy Cross Cemetery: Priest's Circle

A roundabout on the cemetery's main axis serves as the final resting place for many priests of the archdiocese and members of their family. All the grave markers are arranged in a circle, looking inward toward a copy of Leonardo Da Vinci's painting of The Last Supper, executed as a bas relief on a rectangular marble slab. The back of the slab bears the inscription, "YOU ARE A PRIEST FOREVER/IN MEMORY OF/ERWIN SANDSTROM/VAN DER WYX". The inscription refers to the rite of ordination. The design of individual markers vary, and includes tablets, slabs and crosses, both Celtic and rustic, in granite and marble. One black granite marker memorializes 50 priests whose remains were moved from Calvary Cemetery in 1939. This circle was apparently part of the cemetery from the beginning. The priest's circle is a contributing element of the historic district.



HC #10
Holy Cross Cemetery: Dunphy-Burnett Mausoleum, 1920.

This theatrical, Neo-Baroque structure in smooth-faced, grey granite has an oval plan and an unusual, split-level design. A pair of curving stairs leads to the lower level, an open-air vault containing six crypts, three of which are still faced in pink marble. The floors of the mausoleum are paved with matching pink marble mosaica. Four white marble urns stand on a low screen wall in front. A second pair of curving stairs lead to the upper level, where an elaborate screen wall with a domed apse serves as a backdrop for the entire tomb. The wall is decorated with an order of Tuscan columns, and accented by white marble sculpture -- two matching lamps in curved niches, two bas-relief panels depicting *putti* over torches mounted at the piers framing the apse, two guardian angels kneeling on either side of the dome, a head of Christ projecting from the keystone. The focus of the entire composition is another white marble sculpture of an unidentified figure bearing a crutch, which stands on a grey granite base in the center of the apse. The sculpture bears the following inscription: "PRO. P. COSTA FLORENCIA 1875". The dome appears to have been once surmounted by a cross, now broken. The mausoleum is a contributing element of the historic district.



HC #11
Holy Cross Cemetery: Caretaker's House, ca. 1900.

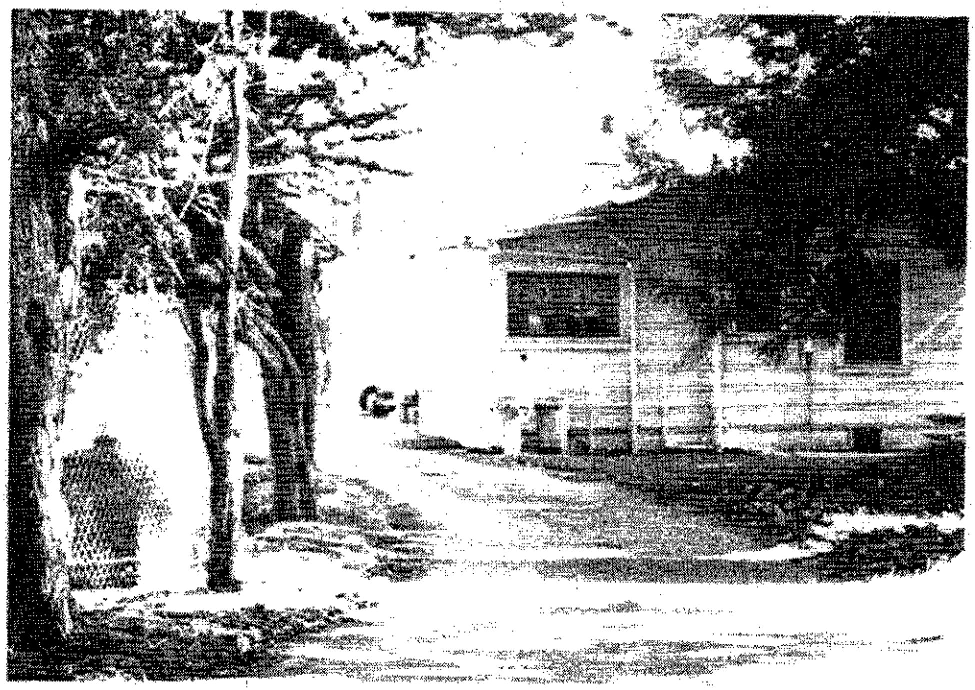
This Colonial Revival cottage next to El Camino Real is a one-story, wood-framed structure on a completely elevated basement. The original foundation is brick, replaced in some areas by reinforced concrete. The ridge of the gable roof is perpendicular to the front of the house, which is perpendicular to the street. The gable has an oval window and cornice return. Walls are clad in drop siding, the roof in composition shingle. The house is fronted by a projecting porch, with a flat roof supported by Tuscan-order, wood columns. The wood stair with metal pipe railings is recent. The front door is wood, paneled and glazed, with a transom and molded wood surround. Original windows are double-hung type with wood sash and molded wood surrounds, replaced in some places by sliding aluminum sash. The house has various rear additions, the earliest one gable-roofed, the others flat-roofed. The laundry or sun porch at the rear of the house has a large, mult-pane window with wood sash. Colors are green with green accents. Planting is mature and includes clipped yews and a juniper hedge.

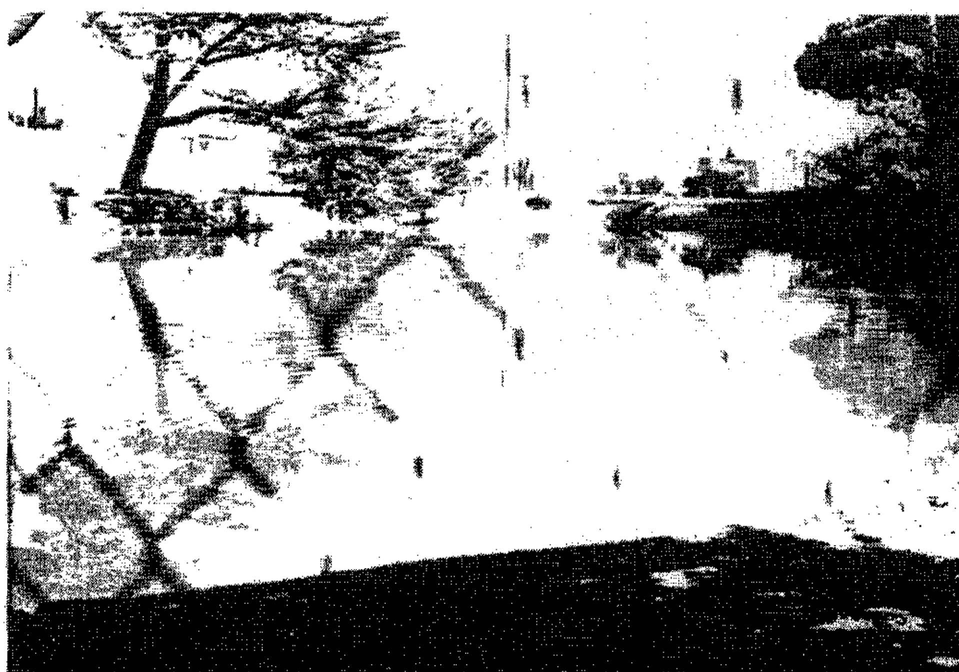
The caretaker's house is a contributing element of the historic district.

HC #12

Holy Cross Cemetery: Caretaker's House and Reservoirs, ca. 1910

The house is a one-story, wood-framed structure on a concrete foundation. The roof is gable in form, with an adjoining shed-roofed ell. Walls are clad in drop siding, alternating wide and narrow. The roof is clad in composition shingle. Windows are multi-pane, either fixed or double-hung types with wood sash. Doors and windows have simple surrounds with large lintels. Related features include three board-and-batten-clad sheds, ca. 1910-39. The two adjacent reservoirs are concrete-lined structures, one circular and the other racetrack in shape. The reservoirs, caretaker's house and its outbuildings are contributing elements of the historic district. To the west of the circular reservoir is a plywood-clad structure, ca. 1970, (probably a pumphouse), that is not a contributing element of the district.





HC #12 Photo continuation page
Holy Cross Cemetery: Caretaker's House and Reservoirs

HC #13

Holy Cross Cemetery: Native Son Florist, 1539 Mission Road (not part of Holy Cross property), 1935.

This one-story, wood-frame building was designed to complement the cemetery's original Richardsonian Romanesque office building next door. Three sides of the building are capped by a mansard roof clad in composition shingle. The south side has a simple parapet. Walls are clad in textured stucco grooved in imitation of coursed ashlar. Round and flat-arched openings contain wood doors and windows with wood sash. According to James Gregoire, the business was started in 1935 by his father Albert. The Florist is currently located on a separate parcel from the Holy Cross Cemetery. Due its long association with the development of the cemetery industry in Colma, this building is a contributing element of the Holy Cross Historic District.

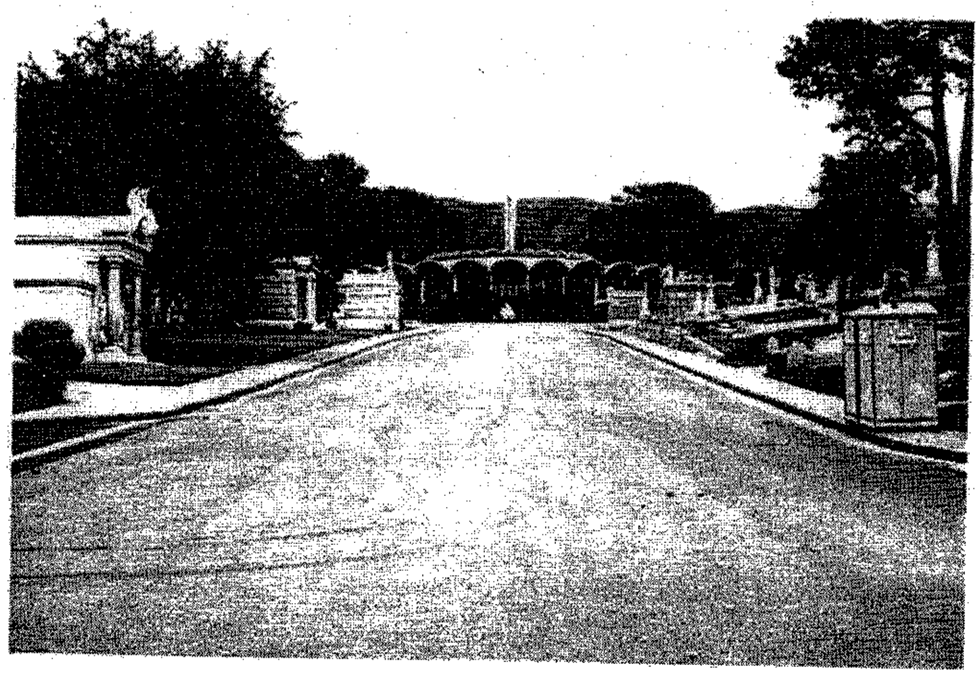
HOLY CROSS CEMETERY: NON-CONTRIBUTING BUILDINGS:

HC #14
Internment Chapel. Date of Construction: 1964. Designer: Frank Trabuco

This building, composed of reinforced concrete has a circular plan and is sited along the main axis of the cemetery. Cantilevered concrete stairs lead to the south entrance which is displays a marble Pietà. A thin, concrete, vaulted scalloped portico runs the circumference of the building and is supported by concrete posts. The building features aluminum windows and doors, concrete block walls and a cast concrete and glass block clerestory with a scalloped roof. The building is capped by a blue metal spire. The interior is composed of radiating chapels, each with murals. This structure is a non-contributing element of the historic district. This building replaced an earlier chapel.

HC #15
Main Office Building, 1500 El Camino Blvd., 1956.

This office building rests on a concrete foundation and is clad in beige stucco. The building has gabled and hip roofs which are tiled and feature metal vents and a boxed eave. A monumental concrete frame or gateway with curved piers creates a formal entry into the building. A concrete stoop and metal stair railing lead to the south entry. Two side wings with sloping roofs project off the structure's main body as does a narrow section raised and supported on concrete piers in the back (or north end). This back section is accessible via a staircase; the space under and to the west side of the back projection serves as a parking area. A west side entry



HOLY CROSS CEMETERY: NON-CONTRIBUTING BUILDINGS, HC #15 continued:

features a concrete stoop and simple metal railing. Fenestration includes: tilting and fixed aluminum, sliding windows situated within projecting stuccoed frames on the front facade of the building. This office does not contribute to the significance of the historic district.

HOLY CROSS CEMETERY: NON-CONTRIBUTING BUILDINGS:
HC #21
Post-War Utility Buildings.

Near the caretaker's house on El Camino Real is a utility area for the cemetery that includes open storage areas and three post-war buildings. These buildings include: a large quonset hut clad in corrugated metal (ca. 1950s) that appears to function as a workshop and for storage; an open, metal-frame, shed-roof vehicle shelter (ca. 1960); and a large, metal-clad building that contains offices and a barn-like work area. None of these buildings is a contributing element of the historic district.

HOLY CROSS CEMETERY: NON-CONTRIBUTING BUILDINGS:
HC #16, 17, 18, 19
Recent Mausolea

Four recent mausoleum complexes are found within the cemetery boundaries. The Garden Court Mausoleum (ca. 1962-68) is at the northern corner of the property and is an open-air complex of reinforced concrete faced in marble. Two other open air-mausolea are located near the entrance. One is called the Lady of Peace mausoleum (1985) and is near the children's burial in Section CA. The other (1956) is located behind the cemetery's office in Section D. All Saint's is an enclosed mausoleum at the southern corner of the cemetery (1982: architect: Dennis Shanager) and is finished in marble tile and marble slabs. None of these recent mausolea are contributing elements of the historic district.

HC #20
Rest Rooms, ca. 1956
The public rest rooms at Holy Cross are housed in a building of wood frame resting on a concrete base and clad in beige stucco with a brown wood eave. The sloping roof is of tar and gravel and features metal vents. A recessed porch features two glazed wood doors. Fenestration includes one-over-one wood-sash windows covered by metal grating. This building is a non-contributing element of the historic district.

HOLY CROSS CEMETERY: NON-CONTRIBUTING BUILDINGS:
HC # 22
1539 El Camino, Rose and Leona Flowers

This wood-frame building is irregular in plan and clad in stucco. It features a Spanish-tiled hip roof, an exterior brick chimney and arch windows with wooden sunburst mullions. A canvas awning draped over a metal frame and supported on metal posts graces the entryway. Double glazed doors with metal grating over the glass mark the entryway which is on a diagonal wall of the front facade. An addition to the original building consists of a metal frame utility section with corrugated metal walls painted pale blue and a shed roof. This section features sliding aluminum windows with metal grates on the exterior. A section of the original building's wall was removed when this building was added on so that the two buildings are connected internally.

OFFICE OF HISTORIC PRESERVATION
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March 21, 2016

Refer to HUD_2016_0216_001

Francisco Gomez, Jr.
HCD Specialist
County of San Mateo, Department of Housing
264 Harbor Boulevard, Building A
Belmont, CA 94002-4017

Re: Colma Veterans Village Development Project Located at 1670-1692 Mission Road, Colma, CA

Dear Mr. Gomez:

Thank you for forwarding the above referenced undertaking to our office for review and comment pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations found at 36 CFR Part 800. The regulations and advisory material can be found at www.achp.gov.

Undertaking
You have informed us that the County of San Mateo intends to use funding from the U.S. Department of Housing and Urban Development (HUD) to assist Mercy Housing with the construction of the Colma Veterans Village; a 66 unit affordable housing project fir veterans located at 1670-1692 Mission Road in Colma, CA.

Area of Potential Effects (APE)
The County has defined the APE for this undertaking as the project location and all adjacent properties from which the new development will be visible. After reviewing the boundary description and justification for the APE in the project submittal, our office does not object to the County's definition of the APE.

Identification of Historic Properties
Based on documentation and analysis provided by your consultants, Ward Hill & Denise Bradley, the County has determined that the Holy Cross Cemetery historic district and the Cypress Lawn Memorial Park historic district, that were each determined eligible by consensus for listing in the National Register of Historic Places at the state level of significance under Criteria AB&C during a 1994 consultation with our office for a BART extension project, retain integrity and are still eligible for listing. We agree that the Holy Cross Cemetery and Cypress Lawn Memorial Park historic districts are eligible for listing in the National Register and are considered historic properties for the purposes of this Section 106 consultation.

Assessment of Effects
While portions of the Holy Cross Cemetery pump house will be adaptively reused as part of the project, the County finds that the undertaking, as proposed, will result in an adverse effect to the historic property, the Holy Cross Cemetery. We look forward to continuing consultation with the County in your efforts to resolve those adverse effects. Please let us know how the County intends to resolve the adverse effects at your earliest convenience.

Your consideration of historic properties in the planning process is appreciated. We look forward to continuing our review of this undertaking in the near future. If you have any questions, please do not hesitate to contact Shannon Lauchner, State Historian II, with the Local Government & Environmental Compliance Unit at (916)445-7013 or by email at shannon.lauchner@parks.ca.gov.

Sincerely,

Lucinda Woodward for

Julianne Polanco
State Historic Preservation Officer

APPENDIX E GEOTECHNICAL INVESTIGATION

- **Rockridge Geotechnical, 2015 (March 24). Geotechnical Investigation, Proposed Residential Development, 1670-1692 Mission Road, Colma, California.**

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Prepared for **Mercy Housing California**

GEOTECHNICAL INVESTIGATION
PROPOSED RESIDENTIAL DEVELOPMENT
1670- 1692 MISSION ROAD
COLMA, CALIFORNIA

March 24, 2015
Project No. 15-846

270 Grand Avenue
Oakland, CA 94610

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510 652-3096 fax

ROCKRIDGE GEOTECHNICAL

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GEOTECHNICAL INVESTIGATION
PROPOSED RESIDENTIAL DEVELOPMENT
1670-1692 MISSION STREET
Colma, California

1.0 INTRODUCTION

This report presents the results of the geotechnical investigation performed by Rockridge Geotechnical, Inc. for the proposed proposed residential development to be constructed at 1670-1692 Mission Road in Colma. The site on the eastern side of Mission Road about 400 feet southeast of its intersection with El Camino Real, as shown on the Site Location Map, Figure 1.

The project site is a triangle-shaped parcel encompassing an area of about 2.23 acres. It is currently occupied by an auto engine and machine shop, vehicle parking and storage, and some vegetation and mature trees. Plans are to construct a residential development consisting of townhouses and flats contained in six 3-story buildings, as shown on the attached Site Plan (Figure 2), although we understand the building layout may change. Other proposed site improvements include an at-grade parking lot at the northwestern end of the site, a community building at the southeastern end, landscaping, concrete flatwork, and new utilities.

2.0 SCOPE OF WORK

Our investigation was performed in accordance with our proposal dated February 21, 2014. Our scope of work consisted of exploring subsurface conditions at the site by drilling three test borings and performing four cone penetration tests (CPTs), performing laboratory testing on selected soil samples, and performing engineering analyses to develop conclusions and recommendations regarding:

- the most appropriate foundation type(s) for the proposed buildings
- design criteria for the recommended foundation type(s), including vertical and lateral capacities for each of the foundation type(s)
- estimates of foundation settlement
- site grading and excavation, including criteria for fill quality and compaction

- subgrade preparation for interior and exterior concrete slabs-on-grade
- site seismicity and seismic hazards, including the potential for liquefaction and lateral spreading, and total and differential settlement resulting from liquefaction and/or cyclic densification
- 2013 California Building Code site class and design spectral response acceleration parameters
- corrosivity of the near-surface soil and the potential effects on buried concrete and metal structures and foundations
- construction considerations.

3.0 FIELD INVESTIGATION AND LABORATORY TESTING

Our field investigation consisted of drilling three test borings, performing four cone penetration tests (CPTs), and performing laboratory testing on selected soil samples. Prior to advancing the borings and CPTs, we obtained a drilling permit from San Mateo County Environmental Health Department (SCEHD) and contacted Underground Service Alert (USA) to notify them of our work, as required by law. Details of the field investigation and laboratory testing are described below.

3.1 Test Borings

Three borings, designated as Borings B-1 through B-3, were drilled on March 10, 2015 by Exploration GeoServices of San Jose, California, to depths of 30 to 31 feet below the existing ground surface (bgs). The approximate locations of the three borings are shown on Figure 2. The borings were drilled using a truck-mounted drill rig equipped with eight-inch-diameter hollow-stem augers. During drilling, our field engineer logged the soil encountered and obtained representative samples for visual classification and laboratory testing. Logs of the borings are presented on Figures A-1 through A-3 in Appendix A. The soil encountered in the borings was classified in accordance with the classification chart shown on Figure A-4.

Soil samples were obtained using the following samplers:

- Sprague and Henwood (S&H) split-barrel sampler with a 3.0-inch outside diameter and 2.5-inch inside diameter, lined with 2.43-inch inside diameter brass tubes.
- Standard Penetration Test (SPT) split-barrel sampler with a 2.0-inch outside and 1.5-inch inside diameter, without liners.

The samplers were driven with a 140-pound down-hole safety hammer falling about 30 inches per drop. The samplers were driven up to 18 inches and the hammer blows required to drive the samplers were recorded every six inches and are presented on the boring logs. A "blow count" is defined as the number of hammer blows per six inches of penetration or 50 blows for six inches or less of penetration. The blow counts required to drive the S&H and SPT sampler were converted to approximate Standard Penetration Test (SPT) N-values using factors of 0.7 and 1.2, respectively, to account for sampler type and approximate hammer energy. The blow counts used for this conversion were the last two blow counts. The converted SPT N-values are presented on the boring logs.

Upon completion of drilling, the boreholes were backfilled with neat cement grout following the guidelines of SCEHD. The soil cuttings generated by the borings were placed in landscape areas near the boreholes.

3.2 Cone Penetration Tests

The CPTs, designated CPT-1 through CPT-4, were performed to provide in-situ soil data at the approximate locations shown on Figure 2. Middle Earth Geo Testing, Inc. of Orange, California advanced the CPTs on March 6, 2015. The CPTs were each advanced to practical refusal in very dense clayey sand at depths of about 29.5 to 45 feet below the ground surface (bgs).

The CPTs was performed by hydraulically pushing a 1.4-inch-diameter cone-tipped probe with a projected area of 10 square centimeters into the ground. The cone-tipped probe measured tip resistance and the friction sleeve behind the cone tip measured frictional resistance. Electrical strain gauges within the cone continuously measured soil parameters for the entire depth advanced. Soil data, including tip resistance and frictional resistance, were recorded by a computer while the test was conducted. Accumulated data were processed by computer to provide engineering information such as the types and approximate strength characteristics of the soil encountered. The CPT logs, showing tip resistance and friction ratio by depth, as well as interpreted soil behavior type, is presented in Appendix A on Figure A-5 through A-8.

After the CPTs were completed, the CPT holes were backfilled with neat cement grout following the guidelines of SCEHD.

3.3 Laboratory Testing

We re-examined the soil samples obtained from our borings to confirm the field classifications and selected representative samples for laboratory testing. Soil samples were tested to measure moisture content, dry density, Atterberg limits, particle sized distribution, and corrosivity. The results of the laboratory tests are presented on the boring logs and in Appendix B.

4.0 SUBSURFACE CONDITIONS

The Regional Geologic Map (see Figure 3) prepared by Graymer et al. (1998) indicates the site is underlain by alluvial fan and fluvial deposits (Qhaf). Our borings and CPTs indicate the site is blanketed by 20 to 34 feet of sand, clayey sand, and silty sand interbedded with some thin zones of sandy clay and silt. The granular soil is primarily medium dense, although there are zones of both loose and dense sandy soil throughout the soil profile. The sandy clay and silt are primarily stiff with some thin zones of both medium stiff and very stiff material. Below a depth of 20 to 34 feet bgs, the soil consists of dense to very dense clayey and silty sand interbedded with thin layers of very stiff to hard sandy clay that extends to the maximum depth explored of 45 feet bgs/

Free groundwater was not encountered during drilling of the borings and no groundwater accumulated in boreholes left open several hours before grouting. Groundwater was reportedly measured at depths of about 16 to 25 feet bgs by the CPT crew in the CPT holes prior to grouting; however, these measurements likely do not represent a stabilized groundwater table because of the short duration between the time the CPTs were performed and the groundwater-level measurements were taken. Considering the lack of groundwater accumulation in the borings, we believe the current groundwater table is below a depth of 30 feet bgs, but there may perched groundwater as shallow as 16 feet in some areas of the site.

5.0 SEISMIC CONSIDERATIONS

5.1 Regional Seismicity

The site is located in the Coast Ranges geomorphic province of California that is characterized by northwest-trending valleys and ridges. These topographic features are controlled by folds and faults that resulted from the collision of the Farallon plate and North American plate and subsequent strike-slip faulting along the San Andreas Fault system. The San Andreas Fault is more than 600 miles long from Point Arena in the north to the Gulf of California in the south. The Coast Ranges province is bounded on the east by the Great Valley and on the west by the Pacific Ocean.

The major active faults in the area are the San Andreas, San Gregorio and Hayward faults. These and other faults in the region are shown on Figure 4. For these and other active faults within a 50-kilometer radius of the site, the distance from the site and estimated mean characteristic Moment magnitude[1] [2007 Working Group on California Earthquake Probabilities (WGCEP) (USGS 2008) and Cao et al. (2003)] are summarized in Table 1.

1 Moment magnitude is an energy-based scale and provides a physically meaningful measure of the size of a faulting event. Moment magnitude is directly related to average slip and fault rupture area.

TABLE 1
Regional Faults and Seismicity

Fault Segment	Approximate Distance from Site (km)	Direction from Site	Mean Characteristic Moment Magnitude
N. San Andreas - Peninsula	2	West	7.23
N. San Andreas (1906 event)	2	West	8.05
San Gregorio Connected	10	West	7.50
N. San Andreas - North Coast	17	Northwest	7.51
Total Hayward	27	Northeast	7.00
Total Hayward-Rodgers Creek	27	Northeast	7.33
Monte Vista-Shannon	32	Southeast	6.50
Total Calaveras	42	East	7.03
Mount Diablo Thrust	43	East	6.70
Point Reyes	45	Northwest	6.90
Rodgers Creek	46	North	7.07
Green Valley Connected	48	East	6.80

Since 1800, four major earthquakes have been recorded on the San Andreas Fault. In 1836, an earthquake with an estimated maximum intensity of VII on the Modified Mercalli (MM) scale occurred east of Monterey Bay on the San Andreas Fault (Toppozada and Borchardt 1998). The estimated Moment magnitude, M_w, for this earthquake is about 6.25. In 1838, an earthquake occurred with an estimated intensity of about VIII-IX (MM), corresponding to an M_w of about 7.5. The San Francisco Earthquake of 1906 caused the most significant damage in the history of the Bay Area in terms of loss of lives and property damage. This earthquake created a surface rupture along the San Andreas Fault from Shelter Cove to San Juan Bautista approximately 470 kilometers in length. It had a maximum intensity of XI (MM), an M_w of about 7.9, and was felt

560 kilometers away in Oregon, Nevada, and Los Angeles. The most recent earthquake to affect the Bay Area was the Loma Prieta Earthquake of 17 October 1989 with an M_w of 6.9. This earthquake occurred in the Santa Cruz Mountains about 87 kilometers south of the site.

In 1868, an earthquake with an estimated maximum intensity of X on the MM scale occurred on the southern segment (between San Leandro and Fremont) of the Hayward Fault. The estimated M_w for the earthquake is 7.0. In 1861, an earthquake of unknown magnitude (probably an M_w of about 6.5) was reported on the Calaveras Fault. The most recent significant earthquake on this fault was the 1984 Morgan Hill earthquake ($M_w = 6.2$).

The U.S. Geological Survey's (USGS) 2007 WGCEP has compiled the earthquake fault research for the San Francisco Bay area in order to estimate the probability of fault segment rupture. They have determined that the overall probability of moment magnitude 6.7 or greater earthquake occurring in the San Francisco Bay Region during the next thirty years is 63 percent. The highest probabilities are assigned to the Hayward/Rodgers Creek Fault and the northern segment of the San Andreas Fault. These probabilities are 31 and 21 percent, respectively (USGS 2008).

5.2 Geologic Hazards

Because the project site is in a seismically active region, we evaluated the potential for earthquake-induced geologic hazards including ground shaking, ground surface rupture, liquefaction,[2] lateral spreading,[3] and cyclic densification[4]. We used the results of the borings and CPT to evaluate the potential for these phenomena to occur at the project site.

---

[2] Liquefaction is a phenomenon where loose, saturated, cohesionless soil experiences temporary reduction in strength during cyclic loading such as that produced by earthquakes.

[3] Lateral spreading is a phenomenon in which surficial soil displaces along a shear zone that has formed within an underlying liquefied layer. Upon reaching mobilization, the surficial blocks are transported downslope or in the direction of a free face by earthquake and gravitational forces.

[4] Cyclic densification is a phenomenon in which non-saturated, cohesionless soil is compacted by earthquake vibrations, causing ground-surface settlement.

5.2.1 Ground Shaking

The ground shaking intensity felt at the project site will depend on: (1) the size of the earthquake (magnitude), (2) the distance from the site to the fault source, (3) the directivity (focusing of earthquake energy along the fault in the direction of the rupture), and (4) subsurface conditions. The site is about two kilometers from the San Andreas Fault. Therefore, the potential exists for a large earthquake to induce strong to very strong ground shaking at the site during the life of the project.

5.2.2 Ground Surface Rupture

Historically, ground surface displacements closely follow the trace of geologically young faults. The site is not within an Earthquake Fault Zone, as defined by the Alquist-Priolo Earthquake Fault Zoning Act, and no known active or potentially active faults exist on the site. We therefore conclude the risk of fault offset at the site from a known active fault is very low. In a seismically active area, the remote possibility exists for future faulting in areas where no faults previously existed; however, we conclude the risk of surface faulting and consequent secondary ground failure from previously unknown faults is also very low.

5.2.3 Cyclic Densification

Seismically induced compaction or cyclic densification of non-saturated sand (sand above the groundwater table) caused by earthquake vibrations may result in differential settlement. Based on the subsurface data from our field investigation, we conclude the soil above the groundwater table generally has sufficient cohesion or is sufficiently dense to resist cyclic densification; however, there are thin zones of relatively clean sand that may densify during a major earthquake. We estimate cyclic densification during a major earthquake could cause up to approximately 1/2 inch of settlement of the ground surface and improvements supported on or near the ground surface. We estimate differential settlement resulting from cyclic densification may be up to 1/2 inch in 30 feet due to the heterogeneous nature of the sandy soil underlying the site.

5.2.4 Liquefaction and Associated Hazards

Liquefaction is a phenomenon in which saturated soil temporarily loses strength from the build-up of excess pore water pressure, especially during earthquake-induced cyclic loading. Soil susceptible to liquefaction includes loose to medium dense sand and gravel, low-plasticity silt, and some low-plasticity clay deposits. Flow failure, lateral spreading, differential settlement, loss of bearing strength, ground fissures and sand boils are evidence of excess pore pressure generation and liquefaction.

The site is located within a zone of liquefaction potential as shown on the map titled *State of California, Maps of Quaternary Deposits and Liquefaction Susceptibility in the Central San Francisco Bay Region*, prepared by the U.S Geological Survey (USGS), dated 2006 (see Figure 5). CGS has provided recommendations for procedures and report content for site investigations performed within seismic hazard zones in Special Publication 117 (SP-117), titled *Guidelines for Evaluating and Mitigating Seismic Hazard Zones in California*, dated September 11, 2008. SP-117 recommends subsurface investigations in mapped liquefaction hazard zones be performed using rotary-wash borings and/or CPTs.

We evaluated the liquefaction potential of soil encountered at the site using data collected from our borings and CPTs. Our liquefaction analyses using the CPT data were performed using the methodology proposed by P.K. Robertson (2009). We also used the relationship proposed by Zhang, Robertson, and Brachman (2002) to estimate post-liquefaction volumetric strains and corresponding ground surface settlement; a relationship that is an extension of the work by Ishihara and Yoshimine (1992).

Our analyses were performed using the approximate in-situ groundwater depths measured in our CPTs and a conservative "during earthquake" groundwater depth of 16 feet bgs. In accordance with the 2013 CBC, we used a peak ground acceleration of 0.63 times gravity (g) in our liquefaction evaluation; this peak ground acceleration is consistent with the Maximum Considered Earthquake Geometric Mean (MCE_G) peak ground acceleration adjusted for site effects (PGA_M). We also used a moment magnitude 8.05 earthquake, which is consistent with the mean characteristic moment magnitude for the San Andreas Fault, as presented in Table 1.

Our liquefaction analyses indicate there are thin layers of potentially liquefiable soil between depths of 16 and 34 feet bgs. The potentially liquefiable layers are less than two feet thick. We estimate liquefaction-induced total and differential settlement (referred to as post-liquefaction reconsolidation) after a major event on a nearby fault will be up to one inch and 1/2 inch across a horizontal distance of 30 feet, respectively.

Our analysis indicates the non-liquefiable soil overlying the potentially liquefiable soil layers is sufficiently thick and the potentially liquefiable layers are sufficiently thin such that the potential for surface manifestations from liquefaction, such as sand boils, and loss of bearing capacity for shallow foundations are low.

Lateral spreading occurs when a continuous layer of soil liquefies at depth and the soil layers above move toward an unsupported face, such as a shoreline slope, or in the direction of a regional slope or gradient. Based on the lack of controlling boundary conditions, we conclude the potential for lateral spreading to occur at the project site is very low.

6.0 DISCUSSIONS AND CONCLUSIONS

From a geotechnical standpoint, we conclude the site can be developed as planned, provided the recommendations presented in this report are incorporated into the project plans and specifications and implemented during construction. The primary geotechnical concerns at the site are: (1) the presence of loose to medium dense sand underlying the site, some of which is susceptible to cyclic densification or liquefaction during a major earthquake; and (2) providing adequate foundation support for the proposed buildings taking into account the potential for up to about one inch of seismically induced differential settlement over a horizontal distance of 30 feet. These and other issues are discussed in this section.

6.1 Foundation Support and Settlement

The soil underlying the site is capable of supporting moderate foundation loads without excessive settlement. Considering the potential for up to one inch of seismically induced settlement from a combination of cyclic densification and liquefaction, we conclude conventional spread footings are not feasible. Based on our experience, we conclude the most appropriate foundation system for the proposed buildings consists of reinforced concrete mat that will limit distortion of the superstructures to a tolerable amount. Some minor

Our settlement analyses indicate total settlement of a mat foundation designed using the allowable bearing pressures presented in Section 7.2 of this report will be less than 1/2 inch and differential settlement will be on the order of 1/4 inch over a 30-foot horizontal distance. In addition to the static settlement, the mat foundation should be designed to resist up to one inch of seismically induced differential settlement.

6.2 Construction Considerations

The soil to be excavated consists primarily of sand with varying silt and clay content, which can be excavated with conventional earth-moving equipment such as loaders and backhoes. If site grading is performed during the rainy season, repeated loads by heavy equipment will reduce the strength of the surficial soil and decrease its ability to resist deformation; this phenomenon could result in severe rutting and pumping of the exposed subgrade. To reduce the potential for this behavior, heavy rubber-tired equipment as well as vibratory rollers, should be avoided.

6.3 Soil Corrosivity

Corrosivity testing was performed by Sunland Analytical of Rancho Cordova, California on samples of soil obtained during our field investigation from Boring B-1 at depth of 2 feet bgs, respectively. The result of the test is presented in Appendix B of this report. Based on the resistivity test result, the sample is classified as mildly corrosive to buried steel. Accordingly, buried iron, steel, cast iron, galvanized steel, and dielectric-coated steel or iron should be properly protected against corrosion. The chloride, sulfide, and sulfate ion concentrations and pH of the soil do not present corrosion problems for buried iron, steel, mortar-coated steel and reinforced concrete structures.

7.0 RECOMMENDATIONS

Our recommendations for site preparation and grading, design of foundations, seismic design, and other geotechnical aspects of the project are presented in this section.

7.1 Site Preparation and Grading

Site clearing should include removal of all existing foundations, slabs, pavements, and underground utilities within the areas to receive improvements (i.e., building pads, parking lots, and concrete flatwork areas). Any vegetation and the upper 3 to 4 inches of organic topsoil should be stripped in areas to receive improvements. Tree roots with a diameter greater than 1/2 inch within three feet of subgrade should also be removed. Removed asphalt concrete and concrete should be taken to a recycling facility.

In general, abandoned underground utilities should be removed to the property line or service connections and properly capped or plugged with concrete. Where existing utility lines are outside of the proposed building footprints and will not interfere with the proposed construction, they may be abandoned in-place provided the lines are filled with lean concrete or cement grout to the property line. Voids resulting from demolition activities should be properly backfilled with compacted fill following the recommendations provided later in this section.

After site clearing is completed, the proposed building pads should be excavated to a depth of at least two feet below existing site grades and at least one foot below the bottom of the proposed mat foundataion, whichever is deeper. The excavations should extend at least five feet beyond the perimeters of the proposed buildings, except where constrained by property lines or existing utilities. The exposed subgrade at the base of the excavations should be scarified to a depth of at least eight inches, moisture-conditioned to above optimum moisture content, and compacted to at least 92 percent relative compaction[5]. The excavated material and imported select fill, if needed, should then be placed in lifts not exceeding eight inches in loose thickness, moisture-conditioned to above optimum moisture content, and compacted to at least 92 percent relative compaction.

Subgrade soil or general fill consisting of clean sand or gravel (defined as soil with less than 10 percent fines by weight) should be compacted to at least 95 percent relative compaction. Soil subgrade for vehicular pavements should be compacted to at least 95 percent relative compaction and be non-yielding. The soil subgrade should be kept moist until it is covered by fill for improvements.

7.1.1 Fill Quality

Material excavated at the site will primarily consist of sand and silty sand that may be reused as fill, provided it is free or organic matter and contain no rocks or lumps greater than three inches in greatest dimension. If imported fill (select fill) is required, it should be free of organic matter, contain no rocks or lumps larger than three inches in greatest dimension, have a liquid limit less than 40 and plasticity index less than 12, and be approved by the Geotechnical Engineer. Samples of proposed select fill material should be submitted to the Geotechnical Engineer at least three business days prior to use at the site. The grading contractor should provide analytical test results or other suitable environmental documentation indicating the imported fill is free of hazardous materials at least three days before use at the site. If this data is not available, up to two weeks should be allowed to perform analytical testing on the proposed imported material.

7.1.2 Utility Trenches

Excavations for utility trenches can be readily made with a backhoe. All trenches should conform to the current CAL-OSHA requirements. We anticipate trench walls may not stand vertically because of the presence of relatively clean sand beneath the site.

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5 Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density of the same material, as determined by the ASTM D1557 laboratory compaction procedure.

Backfill for utility trenches and other excavations is also considered fill, and it should be compacted according to the recommendations presented in Section 7.1. Jetting of trench backfill should not be permitted. Special care should be taken when backfilling utility trenches in pavement areas. Poor compaction may cause excessive settlements, resulting in damage to the pavement section.

To provide uniform support, pipes or conduits should be bedded on a minimum of four inches of sand or fine gravel. After the pipes and conduits are tested, inspected (if required) and approved, they should be covered to a depth of six inches with sand or fine gravel, which should be mechanically tamped.

Foundations for the proposed buildings should be bottomed below an imaginary line extending up at a 1.5:1 (horizontal to vertical) inclination from the base of utility trenches. Alternatively, the portion of the utility trench (excluding bedding) that is below the 1.5:1 line can be backfilled with controlled low-strength material (CLSM) with a 28-day unconfined compressive strength of at least 100 pounds per square inch (psi).

7.1.3 Exterior Concrete Flatwork

Exterior concrete flatwork that will not receive vehicular traffic (i.e. sidewalk) should be underlain by at least four inches of Class 2 aggregate base compacted to at least 90 percent relative compaction. Prior to placement of the aggregate base, the upper eight inches of the subgrade soil should be scarified, moisture-conditioned to near optimum moisture content, and compacted to at least 90 percent relative compaction.

7.1.4 Surface Drainage

Positive surface drainage should be provided around the buildings to direct surface water away from the foundations. To reduce the potential for water ponding adjacent to the buildings, we recommend the ground surface within a horizontal distance of five feet from the buildings slope down away from the buildings with a surface gradient of at least two percent in unpaved areas and one percent in paved areas. In addition, roof downspouts should be discharged into controlled drainage facilities to keep the water away from the foundations. Bioretention/treatment areas within five feet of the buildings should be lined with an impermeable membrane at least 10 mils thick, such as Stegowrap, and provided with a subdrain.

7.2 Mat Foundations

The proposed buildings may be supported on mat foundations bottomed on properly compacted soil. The outside edges of the mat foundations should be bottomed at least nine inches below the lowest adjacent outside grade. We recommend the mat foundations be designed using allowable bearing capacities of 2,500 pounds per square foot (psf) for dead-plus-live loads and 3,330 psf for total loads (including wind and seismic loads). To evaluate the pressure distribution beneath the mat foundation, we recommend a modulus of vertical subgrade reaction (k_{v1}) of 80 pounds per cubic inch (pci) be used. This modulus value (k_s) should be scaled to account for foundation width (B) using the following equation:

$$k_s=[k_{v1}][(B+1)/(2*B)]^2$$

Where: B = width of loaded area
k_{v1} = modulus of vertical subgrade reaction for one-foot-square plate

To ensure adequate mat stiffness to resist the estimated seismically induced differential settlement, the mat foundations should be designed to distribute the superimposed structural loads assuming an unsupported area of 15 feet in diameter at any location within the mat and a cantilever of three feet around the perimeter, limiting the maximum deflections to 1/360th of the span.

Lateral loads may be resisted by a combination of friction along the base of the mat and passive resistance against the vertical faces of the mat foundation. To compute lateral resistance, we recommend using an equivalent fluid weight of 280 pounds per cubic foot (pcf); the upper foot of soil should be ignored unless confined by a slab or pavement. Frictional resistance should be computed using a base friction coefficient of 0.35 where the mat is in contact with soil. Where a vapor retarder is placed beneath the mat, a base friction coefficient of 0.20 should be used. The passive pressure and frictional resistance values include a factor of safety of at least 1.5.

The mat foundation should be bearing on compacted soil subgrade prepared as recommended in Section 7.1. We should check the mat subgrade prior to placement of the vapor retarder and/or reinforcing steel.

7.3 Vapor Retarder

If water vapor moving through the mat foundations is considered detrimental, we recommend installing a water vapor retarder beneath the mats. As a minimum, we recommend a vapor retarder be placed beneath the mat foundations in all living spaces, storage areas, and any areas that will receive a floor covering. The vapor retarder should meet the requirements for Class A vapor retarders stated in ASTM E1745. The vapor retarder should be placed in accordance with the requirements of ASTM E1643. These requirements include overlapping seams by six inches, taping seams, and sealing penetrations in the vapor retarder.

If required by the structural engineer, the vapor retarder may be covered with two inches of sand to aid in curing the concrete and to protect the vapor retarder during mat construction. The sand overlying the vapor retarder should be moist at the time concrete is placed. However, excess water trapped in the sand could eventually be transmitted as vapor through the mat. Therefore, if rain is forecast prior to pouring the slab, the sand should be covered with plastic sheeting to avoid wetting. If the sand becomes wet, concrete should not be placed until the sand has been dried or replaced.

Concrete mixes with high water/cement (w/c) ratios result in excess water in the concrete, which increases the cure time and results in excessive vapor transmission through the mat. Therefore, the concrete for the mat foundations should have a low w/c ratio - less than 0.50. If the concrete is poured directly over the vapor retarder, we recommend the w/c ratio of the concrete not exceed 0.45. In either case, water should not be added to the concrete mix in the field. If necessary, workability should be increased by adding plasticizers. In addition, the mat foundations should be properly cured. Before the floor covering is placed, the contractor should check that the concrete surface and the moisture emission levels (if emission testing is required) meet the manufacturer's requirements.

7.4 Seismic Design

The latitude and longitude of the site are 37.8564° and -122.2884°, respectively. Section 1613A of the 2013 California Building Code (CBC) and Section 20.3.1 of ASCE 7-10 indicate if liquefiable soil is present at a site, it is classified as Site Class F and a site-specific response study is required; however, if the period of the structure is less than 0.5 second, the site class can be determined from Section 20.3 of ASCE 7-10. If the period of the proposed buildings will be less than 0.5 second, we recommend Site Class D be used. Hence, in accordance with the 2013 CBC, we recommend the following:

- S_S = 2.369g, S_1 = 1.137g
- S_{MS} = 2.369g, S_{M1} = 1.706g
- S_{DS} = 1.579g, S_{D1} = 1.137g
- Seismic Design Category E for Risk Categories I, II, and III.

8.0 ADDITIONAL GEOTECHNICAL SERVICES

Prior to construction, Rockridge Geotechnical should review the project plans and specifications to verify that they conform to the intent of our recommendations. During construction, our field engineer should provide on-site observation and testing during site preparation, placement and compaction of fill, and installation of building foundations. These observations will allow us to compare actual with anticipated subsurface conditions and to verify that the contractor's work conforms to the geotechnical aspects of the plans and specifications.

9.0 LIMITATIONS

This geotechnical investigation has been conducted in accordance with the standard of care commonly used as state-of-practice in the profession. No other warranties are either expressed or implied. The recommendations made in this report are based on the assumption that the subsurface conditions do not deviate appreciably from those disclosed in the borings and CPT. If any variations or undesirable conditions are encountered during construction, we should be notified so that additional recommendations can be made. The foundation recommendations presented in this report are developed exclusively for the proposed development described in this report and are not valid for other locations and construction in the project vicinity.

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ROCKRIDGE GEOTECHNICAL

FIGURES

Base map: The Thomas Guide
San Mateo County
1999

0 1/4 1/2 Mile

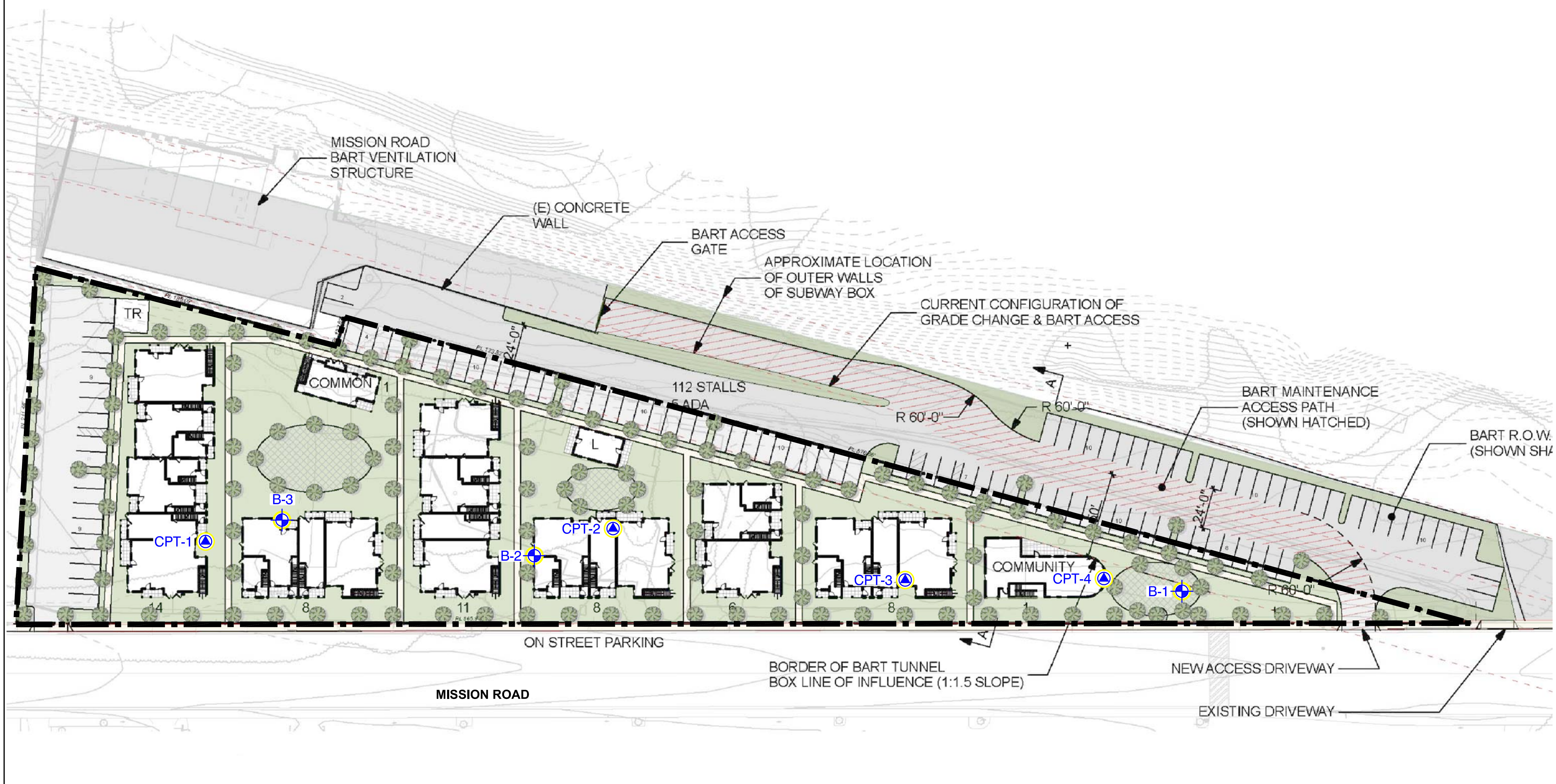
Approximate scale

1670-1692 MISSION ROAD
Colma, California

ROCKRIDGE GEOTECHNICAL

SITE LOCATION MAP

Date 03/22/15	Project No. 15-846	Figure 1



EXPLANATION

B-1 — Approximate location of test boring by Rockridge Geotechnical, Inc., March 2015

CPT-1 — Approximate location of cone penetration test by Rockridge Geotechnical, Inc., March 2015

Proposed project border

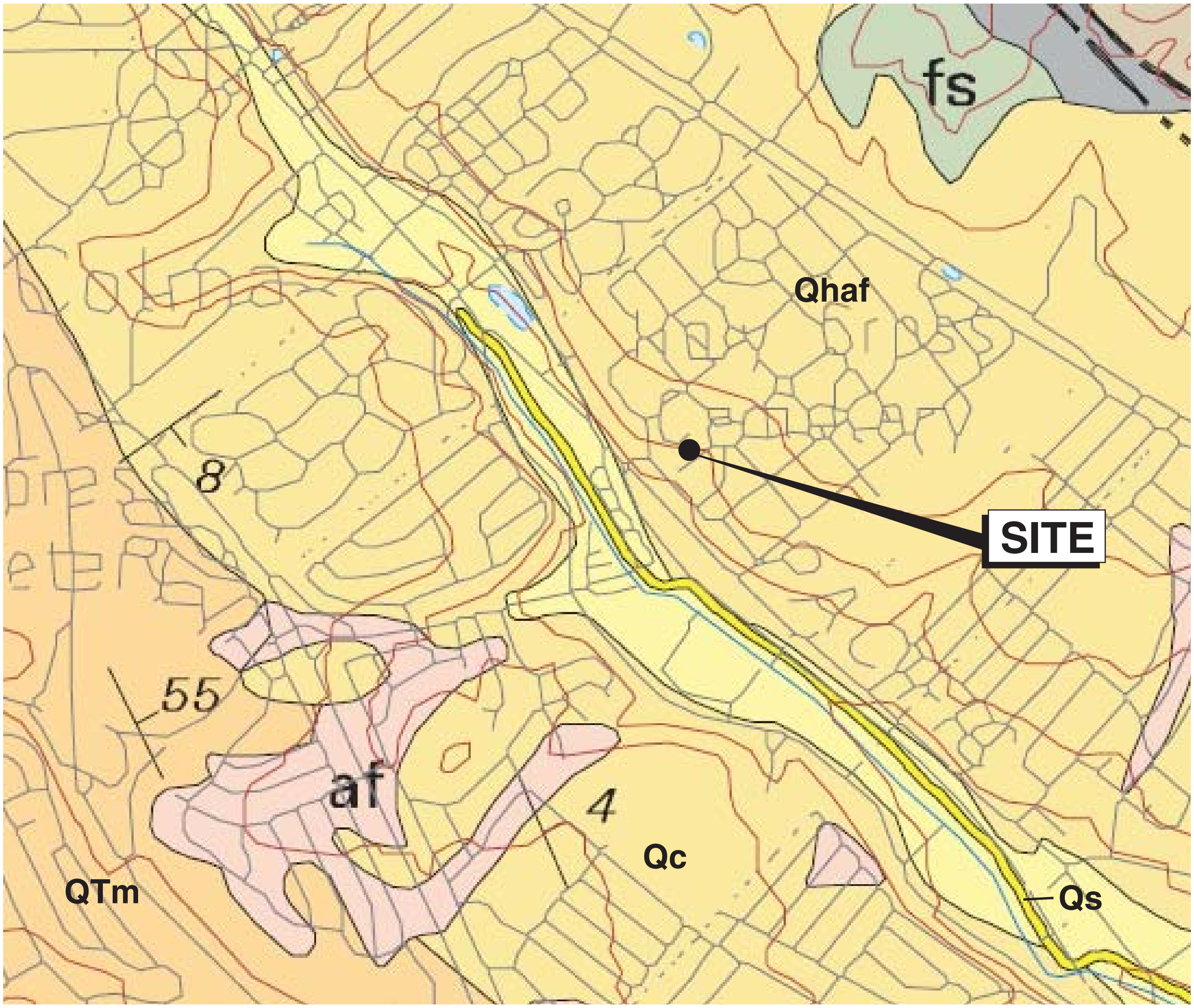
Reference: Base map from a drawing titled "1670-1692 Mission Road/A1 Site Plan: Townhouses Over Flats", by Van Meter Williams Pollack, LLP, dated 01-27-2015.

1670-1692 MISSION ROAD
Colma, California

SITE PLAN

Date 03/22/15	Project No. 15-846	Figure 2

ROCKRIDGE GEOTECHNICAL



Base map: Geology of the Onshore Part of San Mateo County, California: Derived from the Digital Database Open-File 98-137.

DESCRIPTION OF MAP UNITS

af	**Artificial fill (Historic)**
Qhaf	**Alluvial fan and fluvial deposits (Holocene)**
Qs	**Sand dune and beach deposits (Holocene)**
Qc	**Colma Formation (Pleistocene)**
QTm	**Merced Formation (lower Pleistocene and upper Pliocene)**
fs	**Sandstone**

Contact—Depositional or intrusive contact, dashed where approximately located, dotted where concealed

Fault—Dashed where approximately located, small dashes where inferred, dotted where concealed, queried where location is uncertain.

-1147 **Borehole that did not reach basement (Franciscan Complex)**

Anticline—Shows fold axis, dotted where concealed

Syncline

35 **Strike and dip of bedding**

-358 Borehole to basement - showing elevation of top of basement (Franciscan Complex). Datum is mean sea level

N

0 750 1,500 Feet

Approximate scale

1670-1692 MISSION ROAD
Colma, California

ROCKRIDGE GEOTECHNICAL

REGIONAL GEOLOGIC MAP

Date 03/22/15 | Project No. 15-846 | Figure 3

Base Map: U.S. Geological Survey, National Seismic Hazards Maps - Fault Sources, 2014.

EXPLANATION

Strike slip

Thrust (Reverse)

Normal

0 5 10 Miles

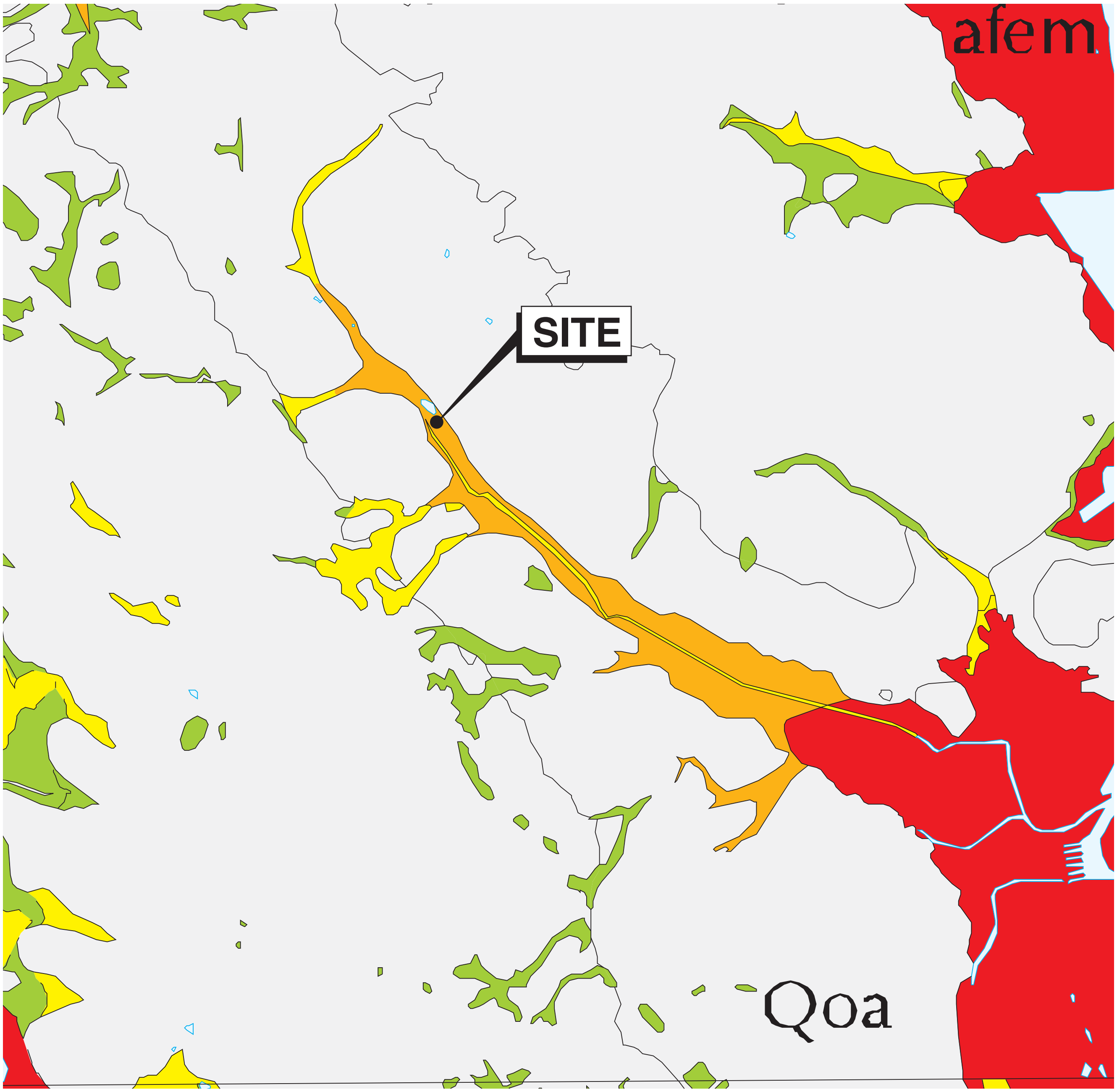
Approximate scale

1670-1692 MISSION ROAD
Colma, California

ROCKRIDGE GEOTECHNICAL

REGIONAL FAULT MAP

Date 03/07/15	Project No. 15-846	Figure 4



LIQUEFACTION SUSCEPTIBILITY

VERY HIGH

HIGH

MODERATE

LOW

VERY LOW

Lines

Contact, dashed where location uncertainty is greater than about +- 100 m.

0 .75 1.5 Miles

Approximate scale

Reference:
Maps of Quaternary Deposits and Liquefaction Susceptibility in the Central San Francisco Bay Region, California, 2006

1670-1692 MISSION ROAD
Colma, California

ROCKRIDGE GEOTECHNICAL

LIQUEFACTION SUSCEPTIBILITY MAP

Date 03/22/15	Project No. 15-846	Figure 5

ROCKRIDGE GEOTECHNICAL

APPENDIX A

Logs of Test Borings and Cone Penetration Tests

PROJECT:	**1670-1692 MISSION ROAD** Colma, California	**Log of Boring B-1** PAGE 1 OF 1

Boring location:	See Site Plan, Figure 2
Date started:	3/10/15
Date finished:	3/10/15
Drilling method:	Hollow Stem Auger
Hammer weight/drop:	140 lbs./30 inches
Hammer type:	
Sampler:	Sprague & Henwood (S&H), Standard Penetration Test (SPT)
Logged by:	O. Gouthier

DEPTH (feet)	SAMPLES: Sampler Type	Sample	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
0–1	S&H		15, 19, 25	31	SP	SAND (SP) brown, dense, moist						
4	SPT		5, 6, 7	16	SP	medium dense						
9	SPT		3, 4, 6	12	SP	dark brown					15.3	
10					SM	SILTY SAND (SM) brown to yellow-brown, dense, moist						
14	SPT		9, 11, 15	31	SM							
19	SPT		10, 13, 15	34	SM	dark olive-gray, wet				30		
23	SPT		5, 7, 11	22	SC	CLAYEY SAND (SC) olive-gray, medium dense, moist						
29	SPT		11, 13, 23	43	SC	olive-gray, dense, moist						
30–32												

Boring terminated at a depth of 30 feet below ground surface.
Boring backfilled with cement grout.
Groundwater encountered at a depth of 30 feet during drilling.

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using a factor of 0.7 and 1.2, respectively, to account for sampler type and hammer energy.

ROCKRIDGE GEOTECHNICAL

Project No.: 15-846

Figure: A-1

ROCKRIDGE 15-846.GPJ TR.GDT 3/24/15

PROJECT:	1670-1692 MISSION ROAD Colma, California	Log of Boring B-2 PAGE 1 OF 1

Boring location:	See Site Plan, Figure 2
Date started:	3/10/15
Date finished:	3/10/15
Drilling method:	Hollow Stem Auger
Hammer weight/drop:	140 lbs./30 inches
Hammer type:	
Sampler:	Sprague & Henwood (S&H), Standard Penetration Test (SPT)
Logged by:	O. Gouthier

LABORATORY TEST DATA

DEPTH (feet)	Sampler Type	Blows/ 6"	SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
0–7.5				SP	SAND (SP) brown, loose, moist						
1	S&H	5 6 7	9								
4	SPT	5 7 9	19								
7.5–10				SP	SAND (SP) yellow-brown, medium dense, moist, trace fines						
8	SPT	3 4 7	13								
10–29				SM	SILTY SAND (SM) olive-gray, medium dense, wet						
15	SPT	5 7 10	20		Atterberg Limits Test - Non-plastic medium dense, less fines content					27.8	
21	SPT	5 7 8	18		gray				19		
29–31				SC	CLAYEY SAND (SC) yellow brown to red brown, very dense, moist COLMA?						
30	SPT	15 19 28	56								

Boring terminated at a depth of 31 feet below ground surface.
Boring backfilled with cement grout.
Groundwater encountered at a depth of 30 feet during drilling.

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using a factor of 0.7 and 1.2, respectively, to account for sampler type and hammer energy.

ROCKRIDGE GEOTECHNICAL

Project No.: 15-846

Figure: A-2

PROJECT: **1670-1692 MISSION ROAD**
Colma, California

Log of Boring B-3

Boring location:	See Site Plan, Figure 2
Date started:	3/10/15
Date finished:	3/10/15
Drilling method:	Hollow Stem Auger
Hammer weight/drop:	140 lbs./30 inches
Hammer type:	
Sampler:	Sprague & Henwood (S&H), Standard Penetration Test (SPT)
Logged by:	O. Gouthier

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
0				SP	SAND (SP) yellow-brown, medium dense, moist						
1	S&H	11 13 16	20								
5	SPT	4 7 8	18								
8				SM	SILTY SAND (SM) olive-gray, medium dense, moist						
10	SPT	3 7 9	19		Atterberg Limits Test - Non-plastic					20.5	
15	SPT	3 3 5	10		Atterberg Limits Test - Non-plastic color changed to dark gray, medium dense, moist				14	21.5	
18.5	SPT	3 4 6	12		dark olive-brown				20		
25	SPT	4 5 5	12								
25				SC	CLAYEY SAND (SC) yellow-brown to red-brown, medium dense, moist						
30	SPT	34 36 39	90		reddish yellow-brown, moist, very dense						
31.5											

LABORATORY TEST DATA: Type of Strength Test; Confining Pressure Lbs/Sq Ft; Shear Strength Lbs/Sq Ft; Fines %; Natural Moisture Content, %; Dry Density Lbs/Cu Ft

Boring terminated at a depth of 31.5 feet below ground surface.
Boring backfilled with cement grout.
Groundwater encountered at a depth of 30 feet during drilling.

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using a factor of 0.7 and 1.2, respectively, to account for sampler type and hammer energy.

ROCKRIDGE GEOTECHNICAL

Project No.: 15-846
Figure: A-3

UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions		Symbols	Typical Names
Coarse-Grained Soils (more than half of soil > no. 200 sieve size	Gravels (More than half of coarse fraction > no. 4 sieve size)	GW	Well-graded gravels or gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels or gravel-sand mixtures, little or no fines
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	Sands (More than half of coarse fraction < no. 4 sieve size)	SW	Well-graded sands or gravelly sands, little or no fines
		SP	Poorly-graded sands or gravelly sands, little or no fines
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
Fine -Grained Soils (more than half of soil < no. 200 sieve size)	Silts and Clays LL = < 50	ML	Inorganic silts and clayey silts of low plasticity, sandy silts, gravelly silts
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
		OL	Organic silts and organic silt-clays of low plasticity
	Silts and Clays LL = > 50	MH	Inorganic silts of high plasticity
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic silts and clays of high plasticity
Highly Organic Soils		PT	Peat and other highly organic soils

GRAIN SIZE CHART

Classification	Range of Grain Sizes	
	U.S. Standard Sieve Size	Grain Size in Millimeters
Boulders	Above 12"	Above 305
Cobbles	12" to 3"	305 to 76.2
Gravel	3" to No. 4	76.2 to 4.76
coarse	3" to 3/4"	76.2 to 19.1
fine	3/4" to No. 4	19.1 to 4.76
Sand	No. 4 to No. 200	4.76 to 0.075
coarse	No. 4 to No. 10	4.76 to 2.00
medium	No. 10 to No. 40	2.00 to 0.420
fine	No. 40 to No. 200	0.420 to 0.075
Silt and Clay	Below No. 200	Below 0.075

Unstabilized groundwater level

Stabilized groundwater level

SAMPLE DESIGNATIONS/SYMBOLS

Sample taken with Sprague & Henwood split-barrel sampler with a 3.0-inch outside diameter and a 2.43-inch inside diameter. Darkened area indicates soil recovered

Classification sample taken with Standard Penetration Test sampler

Undisturbed sample taken with thin-walled tube

Disturbed sample

Sampling attempted with no recovery

Core sample

Analytical laboratory sample

Sample taken with Direct Push sampler

Sonic

SAMPLER TYPE

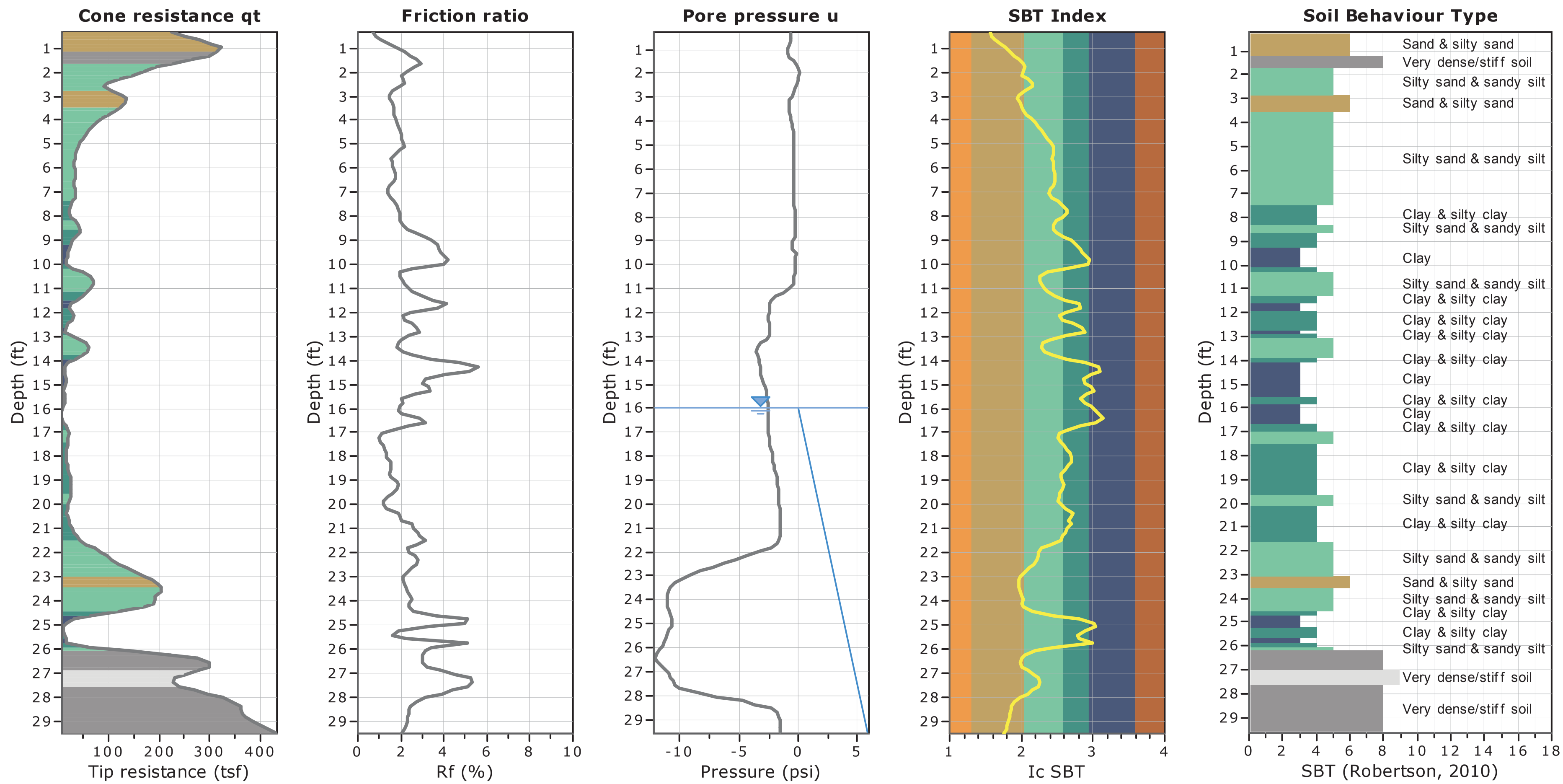
C	Core barrel
CA	California split-barrel sampler with 2.5-inch outside diameter and a 1.93-inch inside diameter
D&M	Dames & Moore piston sampler using 2.5-inch outside diameter, thin-walled tube
O	Osterberg piston sampler using 3.0-inch outside diameter, thin-walled Shelby tube
PT	Pitcher tube sampler using 3.0-inch outside diameter, thin-walled Shelby tube
S&H	Sprague & Henwood split-barrel sampler with a 3.0-inch outside diameter and a 2.43-inch inside diameter
SPT	Standard Penetration Test (SPT) split-barrel sampler with a 2.0-inch outside diameter and a 1.5-inch inside diameter
ST	Shelby Tube (3.0-inch outside diameter, thin-walled tube) advanced with hydraulic pressure

1670-1692 MISSION ROAD
Colma, California

ROCKRIDGE GEOTECHNICAL

CLASSIFICATION CHART

Date 03/22/15 | Project No. 15-846 | Figure A-4



Total depth: 29.53 ft, Date: 03/06/2014
Measured Groundwater Depth: 16 feet
Cone Operator: Middle Earth Geo Services

SBT legend

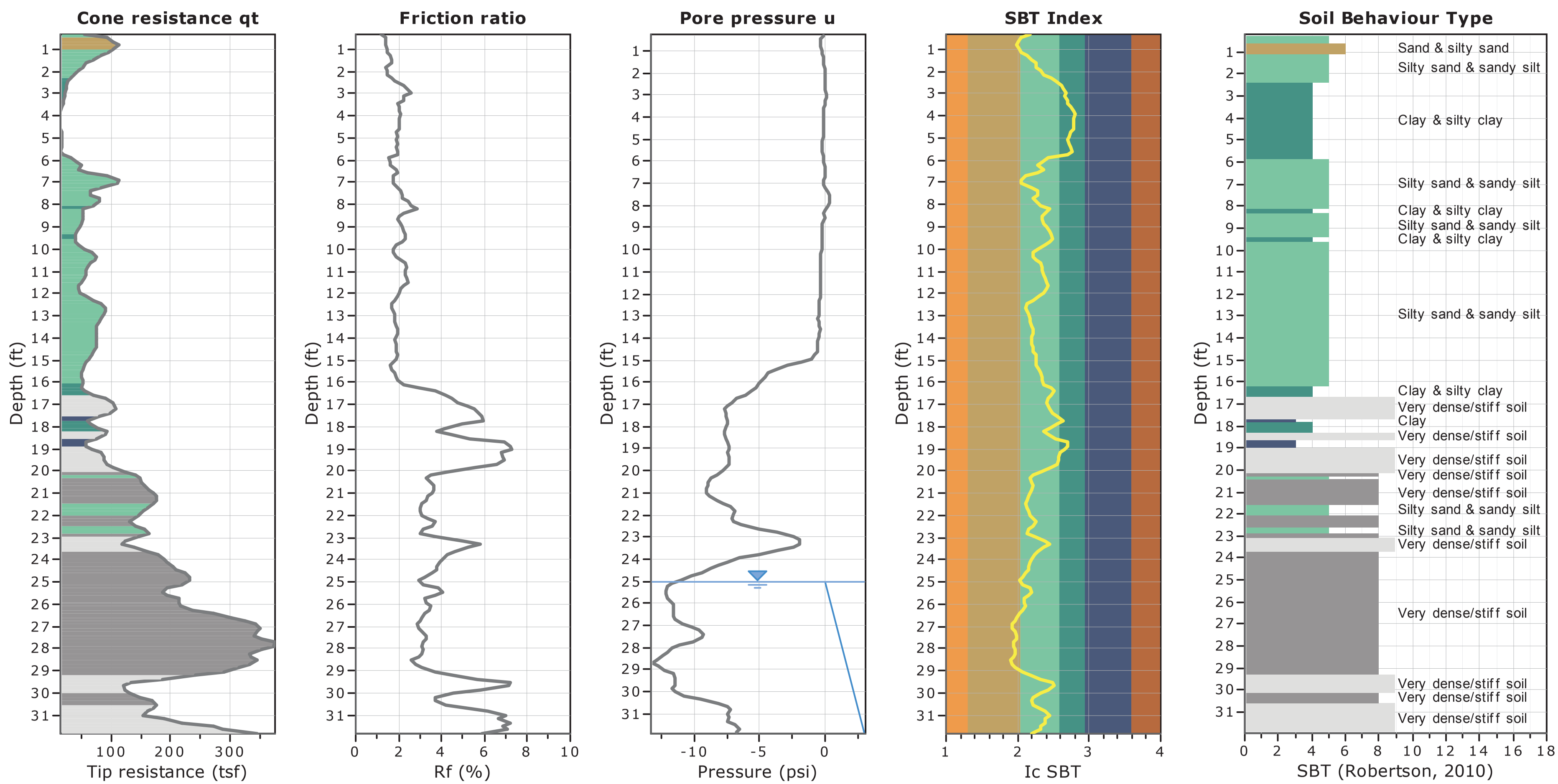
1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

1670-1692 MISSION ROAD
South San Francisco, California

ROCKRIDGE GEOTECHNICAL

CONE PENETRATION TEST RESULTS
CPT-1

Date 03/22/15	Project No. 15-846	Figure A-5



Total depth: 31.83 ft, Date: 03/06/2014
Measured Groundwater Depth: 25 feet
Cone Operator: Middle Earth Geo Services

SBT legend

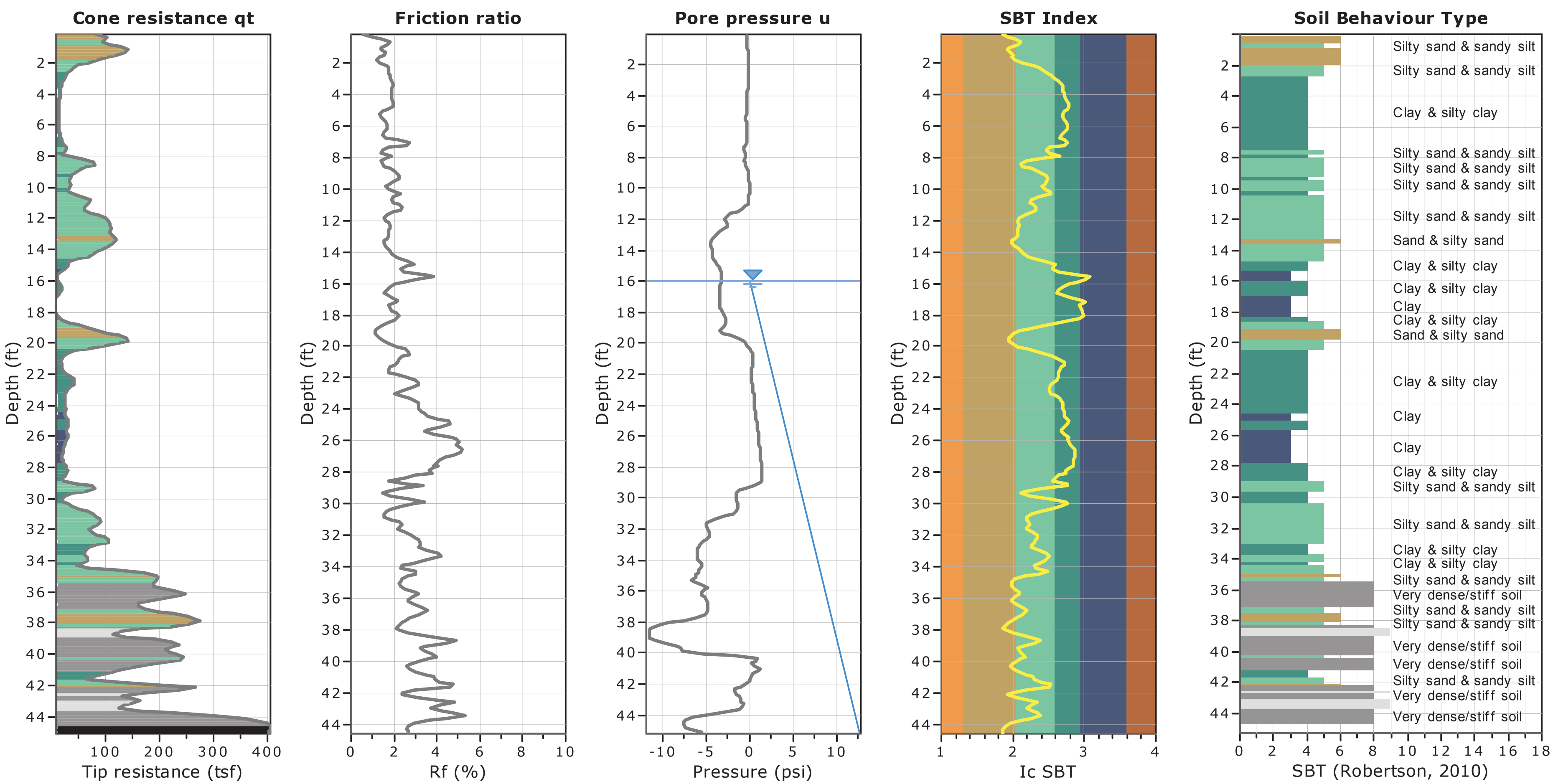
1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

1670-1692 MISSION ROAD
South San Francisco, California

ROCKRIDGE GEOTECHNICAL

CONE PENETRATION TEST RESULTS
CPT-2

Date 03/22/15	Project No. 15-846	Figure A-6



Total depth: 41.11 ft, Date: 03/06/2014
Measured Groundwater Depth: 16 feet
Cone Operator: Middle Earth Geo Services

SBT legend

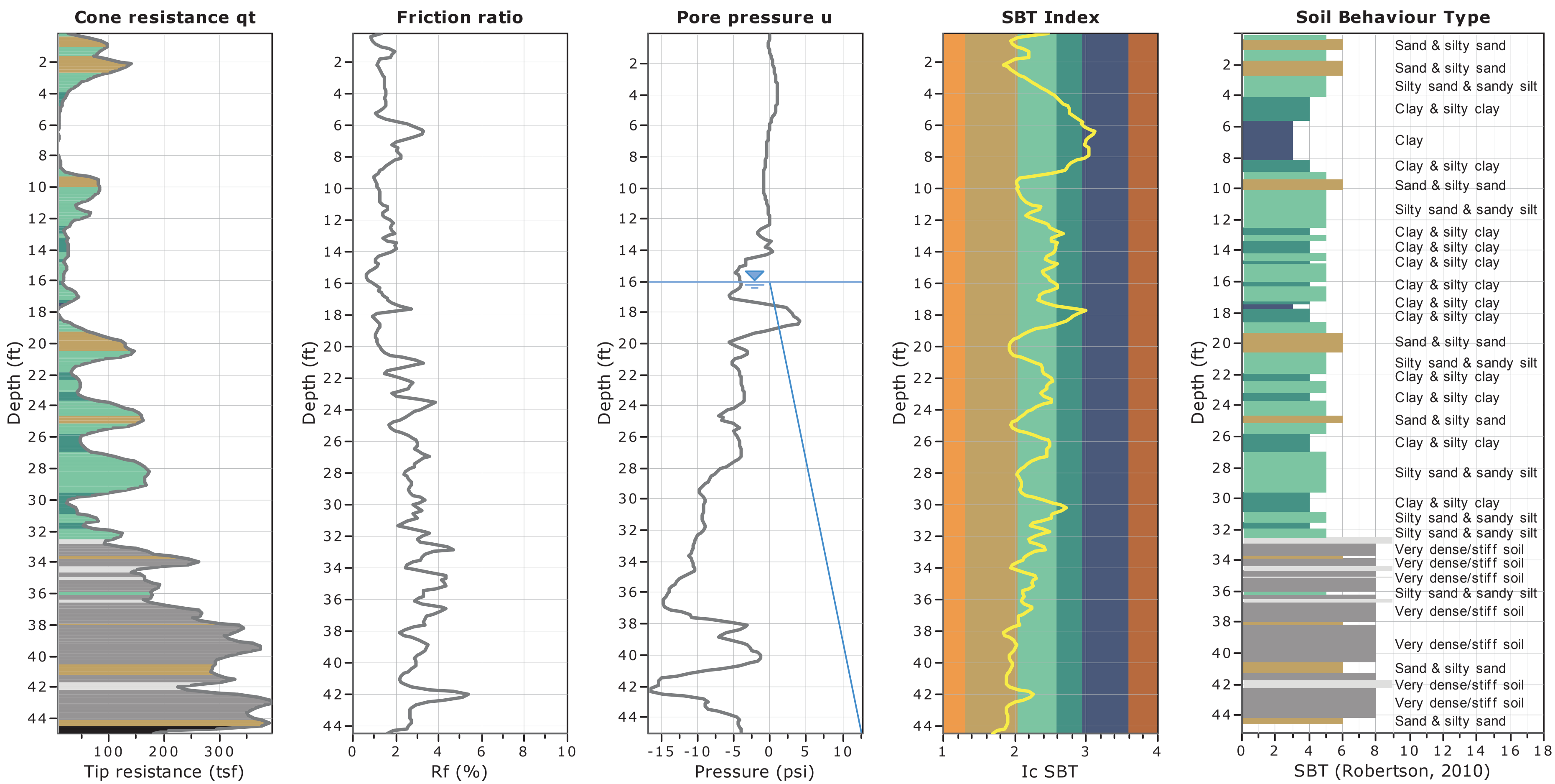
1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

1670-1692 MISSION ROAD
South San Francisco, California

ROCKRIDGE GEOTECHNICAL

CONE PENETRATION TEST RESULTS
CPT-3

Date 03/22/15 | Project No. 15-846 | Figure A-7



Total depth: 44.95 ft, Date: 03/06/2014
Measured Groundwater Depth: 16 feet
Cone Operator: Middle Earth Geo Services

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

Approximate Ground Surface Elevation: ___ Feet

1670-1692 MISSION ROAD
South San Francisco, California

ROCKRIDGE GEOTECHNICAL

CONE PENETRATION TEST RESULTS
CPT-4

Date 03/22/15	Project No. 15-846	Figure A-8

ROCKRIDGE GEOTECHNICAL

APPENDIX B

Laboratory Test Data

Sunland Analytical
11419 Sunrise Gold Cir.#10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 03/20/15
Date Submitted 03/17/15

To: Osksan Gouthier
Rockridge Geotechnical, Inc.
4379 Piedmont Ave
Oakland, CA, 94611

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following:
Location : 15-846 Site ID: B-1 AT 1.5-2FT
Thank you for your business.

* For future reference to this analysis please use SUN # 69003 - 143388

EVALUATION FOR SOIL CORROSION

Soil pH	7.30		
Moisture	5.30 %		
Minimum Resistivity	9.38	ohm-cm (x1000)	
Chloride	8.7 ppm		0.0009 %
Sulfate-S	5.6 ppm		0.0006 %
Redox Potential	(+) 201.00 mv		
Sulfate Reducing Bacteria	No Test		

METHODS:
pH and Min.Resistivity CA DOT Test #643 Mod.(Sm.Cell)
Sulfate CA DOT Test #417, Chloride CA DOT Test #422
Redox Potential ASTM D1498m, Sulfate Reducing Bacteria AWWA C105-72

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APPENDIX F HAZARDOUS MATERIALS REPORTS

- **Langan Treadwell Rollo, 2014 (December 3). Phase I Environmental Site Assessment, 1670-1692 Mission Road, Colma, California.**
- **SCA Environmental, Inc., 2016 (May 3). Summary Report of Limited Hazardous Materials Surveys, 1670-1690 Mission Road, Colma, CA, SCA Project No.: F12039.**

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PHASE I ENVIRONMENTAL SITE ASSESSMENT
1670-1692 Mission Road
Colma, California

Prepared For:

Mercy Housing California
San Francisco, California

Prepared By:

Langan Treadwell Rollo
555 Montgomery Street, Suite 1300
San Francisco, California 94111

Robert N. Milano
Senior Staff Scientist

Peter J. Cusack
Senior Associate

3 December 2014
770620301

LANGAN TREADWELL ROLLO

Technical Excellence
Practical Experience
Client Responsiveness

23 January 2014

Ms. Sheela Jivan
Mercy Housing California
1360 Mission Street, Suite 300
San Francisco, California 94103

Subject: Phase I Environmental Site Assessment
1670-1692 Mission Road
Colma, California
Langan Project: 770620301

Dear Ms. Jivan:

Langan Treadwell Rollo is pleased to submit this Phase I Environmental Site Assessment (ESA), for the property located at 1670-1692 Mission Road, in Colma, California.

In performing this Phase I ESA, we have endeavored to observe the degree of care and skill generally exercised by other consultants undertaking similar studies at the same time, under similar circumstances and conditions, and in the same geographical area.

We appreciate the opportunity to assist you with this project. If you have any questions or need any information clarified, please call Mr. Peter J. Cusack at (415) 955-5200.

Sincerely yours,
Langan Treadwell Rollo

Robert N. Milano
Senior Staff Scientist

Peter J. Cusack
Senior Associate

770620301.02 PJC

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(Continued)

PHASE I
ENVIRONMENTAL SITE ASSESSMENT
1670-1692 Mission Road
Colma, California

1.0 SUMMARY

Langan Treadwell Rollo (Langan) has performed a Phase I Environmental Site Assessment (ESA) for the property located at 1670-1692 Mission Road (Site) in Colma, California (Figure 1). The ESA was performed on behalf of Mercy Housing California (Client) to assist them with their due diligence for the Site. The Site is irregularily-shaped and consists of vacant land, two unpaved parking areas, a concrete water storage tank and pump, and three one-story concrete buildings.

This ESA was performed in substantial conformance with guidelines of the American Society for Testing and Materials (ASTM) E 1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* and with the U.S. Environmental Protection Agency's Rule for 40 CFR 312, *Standards and Practices for All Appropriate Inquiry*, as published in the Federal Register, Volume 70, Number 210, on 1 November 2005.

The purpose of the Phase I ESA is to evaluate the possible presence of recognized environmental conditions at the Site. A recognized environmental condition is the presence or likely presence of hazardous substances or petroleum products in, on, or at a property: (1) due to a release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of future release to the environment (ASTM, 2013).

Based on our review of regulatory files, the Site history, and Site reconnaissance, this assessment revealed no evidence of a recognized adverse environmental condition in connection with the subject property.

2.0 INTRODUCTION

This report presents the results of the Phase I ESA performed by Langan, for the property at 1670-1692 Mission Road (Site) in Colma, California (Figure 1). This ESA was performed in substantial conformance with guidelines of the American Society for Testing and Materials

(ASTM) E 1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, November 2013. The ESA was performed on behalf of Mercy Housing California (Client), to assist them with their due diligence for the Site.

2.1 Purpose

The purpose of this ESA is to identify recognized environmental conditions at the Site. A recognized environmental condition is the presence or likely presence of hazardous substances or petroleum products in, on, or at a property: (1) due to a release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of future release to the environment (ASTM, 2013).

2.2 Detailed Scope of Services

The scope of work for this ESA included:

- Review historical aerial photographs, historical Sanborn Fire Insurance maps, historical business directories, chain of title report (if provided) and/or United States Geological Survey (USGS) historical topographic maps for the Site, as appropriate;

- Perform a reconnaissance survey of the Site and interview the current Site owner/tenant or representative, and observe the adjacent properties, as accessible, to make visual observations of existing property conditions, activities, types of land use, and businesses within the search area;

- Review relevant documents and maps regarding local geologic and hydrogeologic conditions;

- Review local, state, and federal records provided by a commercial database search firm for government databases pertinent to a Phase I ESA;

- Conduct inquires by telephone, visit, online databases, and /or written correspondence to the following regulatory agencies regarding building or environmental permits, environmental violations, incidents and/or status of enforcement actions at the subject Site; and

    – California Regional Water Quality Control Board (RWQCB);

    – Department of Toxic Substances Control (DTSC);

    – San Mateo County Environmental Health (SMCEH); and

    – Colma Fire Department (CFD).

- Preparation of this report documenting the research performed and identifying recognized environmental conditions.

Our assessment did not include:

- Testing of soil, air or water;
- Testing for the presence of polychlorinated biphenyls (PCBs) in transformers or other electrical equipment, or naturally-occurring environmental hazards (e.g., radon);
- Survey for asbestos-containing building materials and lead-based paints.

2.3 Significant Assumptions

There are no significant assumptions for this Phase I ESA report.

2.4 Limitations and Exceptions

This ESA did not include a survey for the presence or condition of radon or other naturally occurring materials at the Site.

Reasonable effort has been made to check that the information obtained is factual and from reliable sources, but no responsibility is assumed for its accuracy. If no hazardous substances or conditions are reported to be on the Site, it should not be interpreted as a guarantee that they do not exist. Langan assumes no responsibility or liability for errors in the information used or statements from sources other than those of Langan. All conclusions and recommendations in this report concerning the Site are those professional opinions of the Langan personnel involved with the project, and this report should not be considered a legal interpretation of existing environmental regulations. Opinions presented herein apply to Site conditions existing at the time of our assessment, and cannot necessarily be taken to apply to Site changes or conditions of which Langan is not aware and has not had the opportunity to evaluate.

2.5 Special Terms and Conditions

There are no special terms or conditions regarding this Phase I ESA in the contract between Langan and the Client.

2.6 User Reliance

This Phase I ESA was prepared for the Client and may be relied on solely by the Client, subject to the terms and limitations of the agreement between Langan and the Client. The findings contained within the report shall not, in whole or in part, be disseminated or conveyed to any other party, nor be used by any other party, in whole or in part without written prior consent of the Client and Langan.

3.0 SITE DESCRIPTION

The following sections describe the location and description of the Site; general characteristics of the Site; descriptions of structures, roads, and other improvements to the Site; and the current uses of adjoining properties.

3.1 Location and Description of the Site

The Site is located at 1670-1692 Mission Road in Colma, California and covers an area of approximately 3.3 acres. The Site is irregularly-shaped and consists of vacant land, two unpaved parking areas, a concrete water storage tank and pump, and three one-story concrete buildings (Figure 2).

3.2 General Characteristics of the Site and Surrounding Areas

The Site consists of vacant land, two unpaved parking areas, a concrete water storage tank and pump, and three one-story concrete buildings and is located in an area of Colma which is currently comprised of residences, commercial and light industrial properties, and cemeteries.

3.3 Current Use of the Site

Currently, the Site is used as vacant land, two unpaved parking areas, a concrete water storage tank and pump, and three one-story concrete buildings.

3.4 Descriptions of Structures, Roads, Other Improvements on the Site

Currently, the Site consists of vacant land, an unpaved parking area, a concrete water storage tank and pump, and a one-story concrete building. A detailed description of current uses of the Site observed during the Site reconnaissance is discussed in Section 7.0. The Site is bound by a maintenance yard on the northwest, a driveway and BART easement on the northeast, Mission Road on the southwest, and Holy Cross Cemetery on the southeast.

3.5 Current Uses of the Adjoining Properties

The current uses of the adjoining properties include:

- Northwest of the Site: Maintenance yard for adjacent cemetery;
- Northeast of the Site: A driveway and BART easement;
- Southwest of the Site: Mission Road and auto repair shops;
- Southeast of the Site: Holy Cross Cemetery.

4.0 CLIENT-PROVIDED INFORMATION

Client provided information is summarized below.

4.1 Title Record

The Title Report for the Site indicated the Site is owned by The Roman Catholic Archdiocese of San Francisco, A Sole Corporation.

4.2 Environmental Liens or Activity and Use Limitation

The Client is unaware of any environmental liens or activity and use limitations regarding the Site.

4.3 Specialized Knowledge

No specialized knowledge of the Site is held by either the Client or Langan.

4.4 Valuation Reduction for Environmental Issues

The Client did not have any knowledge of any valuation reductions for environmental issues at the Site.

4.5 Owner Information

The Site is currently owned by The Roman Catholic Archdiocese of San Francisco, A Sole Corporation. Every reasonable effort was made to obtain information for the Site and a request for documents/information from the Site manager/owner's representative. Documents received are included in Appendix A.

4.6 Reason for Performing a Phase I ESA

The reason for performing the Phase I ESA is to assist the Client with their due diligence of the Site.

5.0 RECORDS REVIEW

The records review included a search for Standard Environmental Record Sources and Physical Setting Sources.

5.1 Standard Environmental Record Sources

A review of environmental regulatory agency lists and records was performed for the Site and vicinity to identify potential sources of or activities involving hazardous substances or petroleum products that might affect the soil and groundwater quality at the Site. The lists identify properties where underground storage tank (UST) leaks, chemical spills, or contamination of soil and/or groundwater have been reported and confirmed. The regulatory lists also include properties where above-ground or underground storage tanks are present, hazardous materials are generated and/or stored, and whether or not there has been an unauthorized release.

A search of environmental regulatory agency databases for the Site and vicinity was prepared for Langan by Environmental Data Resources Inc. (EDR). The *EDR Radius Map Report* of the results of this search and database acronyms are provided in Appendix B. Where appropriate, additional information was obtained from telephone interviews, online databases, or file reviews at the respective regulatory agencies. A summary of our findings is discussed below.

<u>5.1.1 Site – 1670-1692 Mission Road</u>

Of the addresses searched by EDR for the 1670-1692 Mission Road property, 1690 Mission Road was the only address listed in the EDR database. Online databases operated by the California Department of Toxic Substances Control (DTSC) and California Regional Water Quality Control Board (RWQCB) were researched for the Site. In addition, inquiries were made in regard to files held at the San Mateo County Environmental Health (SMCEH) and the City of Colma Fire Department (CFD). Files related to hazardous materials for 1690 Mission Road were available at the SMCEH and reviewed for this report.

1690 Mission Road was listed on the EDR US Historic Auto Station[1] database and identified as Baca's Racing Engines & Machine Shop for the years 2007, 2008, and 2011. Files reviewed at the SMCEH indicate that the hazardous materials have been stored at the Site: Cutting oil, iron shavings, cleaning solvent, honing oil, waste oil, degreaser, alkaline cleaner, and metal sludge. No records of a release of hazardous materials at 1690 Mission Road were found during the agency file reviews.

5.1.2 Off-Site Database Listings

Langan focused on off-site facilities with known contamination in soil and groundwater that were most likely to represent potential environmental concerns at the Site. These areas include nearby properties or locations that were in the near vicinity and/or hydraulically upgradient of the Site. The estimated direction of groundwater flow is to the south within the immediate Site vicinity. Based on our review of the off-site database, all of the nearby listings had no violations, were closed by the regulatory agency, were hydrologically cross gradient or down gradient, or were determined to be a significant distance (greater than a 1/4 mile) from the Site.

5.2 Physical Setting Sources

The physical setting at the Site is based on the *Physical Setting Source Addendum* to the *EDR Radius Map with GeoCheck* report (Appendix B), topographic maps (Appendix C), and subsurface investigations previously conducted in the vicinity.

The Site elevation is approximately 102 feet above sea level. Geotechnical borings drilled in the vicinity of the Site indicate that the subsurface material likely consists of very loose to medium-dense fill. The borings drilled in the vicinity of the Site indicated that the fill varied in thickness from 7 feet to 10 feet. The fill in the borings drilled was generally underlain by interbedded layers of loose to dense sand, silty sand, and clayey sand to the maximum depth explored of 36.5 feet below the ground surface (bgs).

---

1 **EDR US Historic Auto Station:** EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Groundwater was measured in one of the borings at approximately six feet bgs. Groundwater flow direction is anticipated to be to the south.

No former coal gasification sites exist within a half mile radius of the Site. There are no oil & gas pipelines, active landfill sites, Department of Defense sites, or Indian Reservations within one mile of the Site. (EDR, 2014).

6.0 SITE HISTORY

The summary of land-use history of the Site was developed by searching Sanborn Fire Insurance Maps, historical topographic maps, aerial photographs, City Directories, regulatory records, and conducting personal interviews.

Historical topographic maps were reviewed for the years 1899, 1915, 1947, 1950, 1956, 1968, 1973, 1980, 1993, and 1995. Historical aerial photographs of the Site were reviewed for the years 1943, 1946, 1956, 1968, 1974, 1982, 1993, 1998, 2005, 2006, 2009, 2010, and 2012. City Directories were reviewed for the years 1970 to 2013. Sanborn maps for the Site and vicinity were not available for review. Historical research documentation is provided in Appendix C. Based on the available sources, the following chronology of the Site was developed.

In the 1943, 1946, and 1956 aerial photographs, at least five structures are visible at the Site. The remainder of the Site appears to be vacant and comprised of vegetation. The property to the northeast appears to be used for agricultural purposes, with a cemetery beyond. A cemetery is located to the north and northwest of the Site. Residential properties and farmland are observed to the southwest.

In the 1968 aerial photographs, the majority of the Site appears vacant, with the exception of three structures located near the center of the property. Residential and commercial properties comprise the land to the southwest of the Site.

In the 1974, 1982, 1993, and 1998 aerial photographs, the Site appears relatively unchanged from previous documentation. The surrounding properties to the southwest of the Site have been developed with more residential, commercial, and light industrial properties.

In the 2005, 2006, 2009, 2010, and 2012 aerial photographs, the southeastern portion of the Site appears to have been graded and cleared. The northwestern portion of the Site is used as a parking lot. The remainder of the Site and the surrounding properties appear relatively unchanged from previous documentation.

7.0 SITE RECONNAISSANCE

Mr. Robert Milano and Mr. Peter Cusack of Langan performed a Site and vicinity reconnaissance on 4 and 7 November 2014, and 22 January 2015. Mr. John Bermudez, Operations Manager of the Holy Cross Catholic Cemetery and Mr. Steve Michaelis of Baca Machine Shop provided information regarding Site use and history. The objective of the reconnaissance was to look for visual evidence of past or present use or storage of hazardous materials that could potentially affect the soil and groundwater quality at the Site. Photographs taken at the time of our reconnaissance are presented at the end of this report in Appendix D.

The northwestern portion of the Site is comprised of an unpaved area used by Image Auto Body for storage of vehicles. A concrete building is located southeast of the parking lot and is used for storage by a local florist. Access to the building was not available at the time of the reconnaissance. An unused concrete water storage tank and pump are located southeast of the concrete building.

A concrete building which is currently occupied by a machine shop is located near the center of the Site. An additional concrete building located northwest of the machine shop is used for storage of various parts and supplies related to the machine shop. An electrical transformer on a concrete pad was observed to the west of the machine shop.

The area southeast of the machine shop is used for vehicle and equipment storage for an auto repair shop located across Mission Road to the southwest. The southeastern portion of the Site is a vacant, vegetated area.

The concrete building at 1690 Mission Road is currently occupied by Baca Machine Shop who repairs and customizes automotive parts. Mr. Michaelis stated that he has permits with San Mateo County and generates hazardous waste with solvents used to clean automotive parts. The machine shop drill presses, acetylene tanks, cutting oils and waste oils, solvent tank areas used to clean automotive parts. Mr. Michaelis stated that an off-site company comes and recycles any hazardous waste generated.

No visual evidence of the following features was observed during the Site reconnaissance: ponds; stressed vegetation or stained soil; or mining, oil, and gas exploration, production, or distribution. At the time of our inspection, the Site showed no evidence of any significant staining, spillage, and/or ponded liquids or uncontained solids.

7.1 Nearby Area

A reconnaissance of the adjoining properties was conducted from the Site and public right-of-ways. The Site is located in an area of Colma which is currently comprised of residences, commercial and light industrial properties, and cemeteries. The current uses of the adjoining properties include:

- Northwest of the Site: Maintenance yard for adjacent cemetery;
- Northeast of the Site: A driveway and BART easement;
- Southwest of the Site: Mission Road and auto repair shops;
- Southeast of the Site: Holy Cross Cemetery.

No apparent signs of chemical releases or leaks were noted at any of the nearby facilities.

8.0 FINDINGS AND DISCUSSION

This Phase I ESA has been performed by Langan for the property located at 1670-1692 Mission Road (Site) in Colma, California. The Site is irregularily-shaped, covers an area of approximately 3.3 acres, and consists of vacant land, two unpaved parking areas, a concrete water storage tank and pump, and three one-story concrete buildings.

Historical land use at the Site is well documented and indicates that the property has been occupied by various structures and vacant land since the early 1940s.

The potential of the documented nearby off-site sources of chemical constituents to affect environmental conditions at the Site is judged to be unlikely. The chief transport mechanism for the migration of off-site chemical impacts to the on-site environment would likely be near-surface groundwater flow. Langan identified no sites in the EDR report as having had an adverse environmental impact on the Site.

The Site elevation is approximately 102 feet above sea level. Geotechnical borings drilled in the vicinity of the Site indicate that the subsurface material likely consists of very loose to medium-dense fill. The borings drilled in the vicinity of the Site indicated that the fill varied in thickness from 7 feet to 10 feet. The fill in the borings drilled was generally underlain by interbedded layers of loose to dense sand, silty sand, and clayey sand to the maximum depth explored of 36.5 feet below the ground surface (bgs).

Groundwater was measured in one of the borings at approximately six feet bgs. Groundwater flow direction is anticipated to be to the south.

9.0 CONCLUSIONS

Langan has performed a Phase I Environmental Site Assessment (ESA) in general conformance with the scope and limitations of ASTM Practice E 1527-13 and U.S. Environmental Protection Agency's Rule for 40 CFR 312 for the property located at 1670-1692 Mission Road in Colma, California.

Based on our review of regulatory files, the Site history, and Site reconnaissance, this assessment revealed no evidence of a recognized adverse environmental condition in connection with the subject property.

10.0 ADDITIONAL SERVICES

No additional services were contracted for between the Client and Langan, beyond the scope of E 1527-13.

11.0 EXCEPTIONS

Per Section 2.4, the exceptions to the ASTM standards for this Phase I ESA include not assessing the Site history on five-year intervals from its initial development to its current land use. The format of this report also varies from the format presented in the ASTM standard for Phase I ESAs. It is Langan's opinion that neither of these variations from the ASTM standard significantly affects the results of this Phase I ESA or the ability to assess the presence of a recognized environmental condition at the Site because land use did not change frequently enough to warrant a five year interval Site history evaluation.

12.0 SIGNATURE OF ENVIRONMENTAL PROFESSIONAL

The signatures of the environmental professionals responsible for this Phase I ESA are provided on the submittal letter.

13.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONAL

The qualifications of the environmental professional that conducted this ESA are provided in the resume in Appendix D. Langan declares that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in #312.10 of 40 CFR 312. Langan has the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. Langan has developed and performed all of the appropriate inquiries in general conformance with the standards and practices set forth in 40 CFR Part 312.

REFERENCES

Bonilla, M. G., 1961. United States Geological Survey Geologic Map of the San Francisco North Quadrangle, San Francisco and Marin Counties, California.

American Society for Testing and Materials (ASTM, 2013), Designation: E 1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

Environmental Data Resources, Inc. (EDR), *The EDR Radius Map with GeoCheck®: 1500 Mission Road, Daly City, CA 94014*. Dated 29 October 2014.

EDR, *The EDR Historical Topographic Map Report: 1500 Mission Road, Daly City, CA 94014*. Dated 28 October 2014.

EDR, *The EDR-City Directory Abstract: 1500 Mission Road, Daly City, CA 94014*. Dated 28 October 2014.

EDR, *The EDR Aerial Photo Decade Package: 1500 Mission Road, Daly City, CA 94014*. Dated 29 October 2014.

EDR, *The Sanborn® Map Report: 1500 Mission Road, Daly City, CA 94014*. Dated 28 October 2014.

Treadwell & Rollo, *Geotechnical Investigation, 1160 El Camino Real, Colma, California,* dated 4 October 1996.

San Mateo County Environmental Health Services Division, *Hazardous Material Inventory, Baca's Machine Shop, 1690 Old Mission Road, Colma, California.*

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ENVIRONMENTAL, INC.

May 3, 2016

Mr. Michael Kaplan
Real Estate Developer
1360 Mission Street #300
San Francisco, CA 94103

RE: Summary Report of Limited Hazardous Materials Surveys
1670-1690 Mission Road, Colma, CA
SCA Project No.: F12039

Dear Mr. Kaplan:

This letter summarizes the results of a limited hazardous materials investigation for the five (5) structures located at 1670-1690 Mission Road, Colma, CA. Sampling was conducted by SCA Environmental, Inc. (SCA) on April 22, 2016 by Dan Leung, CIH, CAC, CDPH under the direct supervision of Christina Codemo CAC, CHMM, REPA and Chuck Siu, CIH, CAC, PE. The investigation included the following:

- An inspection and survey of the five structures.
- Non-destructive sampling and testing for lead-containing coatings, polychlorinated biphenyls (PCBs) in building materials, asbestos-containing materials (ACMs), and asbestos-containing construction materials (ACCMs).
- Visual quantification of potential PCB-containing lighting ballasts and mercury-containing fluorescent lighting fixtures.

The non-destructive survey was limited interior and exterior areas of the following structures, as depicted on Figures #1-3: Sample Location Drawings in Appendix B.

- Pump Building-Former pump house currently used for auto repair
- Shed #1
- Shed #2
- Shed #3
- Above ground water tank

Other buildings, storage structures, etc. located at the site were not included in this survey.

The following summarizes our findings.

Asbestos Hazards

Summary of Standards

Certain existing building components or materials, which may be impacted by the proposed renovations or demolitions, are assumed to contain or sample results have indicated the presence of asbestos.

Asbestos-containing material (ACM) is defined by EPA regulations as those substances containing greater than 1% asbestos. The Bay Area Air Quality Management District (BAAQMD) and the Cal/EPA provide local enforcement of these regulations. Friable ACM with greater than 1% asbestos must be abated prior to demolition or renovation, and is required to be disposed of as asbestos waste. Prior to renovation or demolition, the BAAQMD requires abatement of friable ACM, as well as non-friable ACM that may become friable during renovation (practically, this means all non-friable ACM). Federal Occupational Safety and Health Administrations (OSHA) regulations, locally enforced by CAL/OSHA, define ACM as substances that contain greater than 1% asbestos.

Methodology
Sampling activities were conducted per industry standards and the Federal AHERA regulations (40 CFR Part 763), and sample locations were documented on field diagrams (Attachment B). Under these procedures, the first sample is analyzed. If it tests positive for asbestos (>1%), the analysis is suspended for further samples of that material. If the first sample tests negative, however, the second and third samples are analyzed sequentially, in order to determine the possible presence of asbestos. If all three samples test negative, the material is considered as non-asbestos. Certain materials, such as plasters and gypsum board systems, are frequently non-homogeneous in content. For such materials, multiple samples were gathered at various points in the buildings, with all samples analyzed to determine the possible presence of asbestos.

All building material, concrete slab, and asphalt samples collected were submitted to Reservoirs Environmental Inc. (REI) Laboratory in Denver, Colorado for analysis by polarized light microscopy with dispersion staining (DS/PLM).

Results
SCA has entered the sampling data from the above-referenced structure into **Appendix A: Material Matrix Report (MMR)**. Printouts which show detailed sample results, locations, and quantity estimates are included in Attachment A of this report. Materials designated as AAA are assumed to contain asbestos and require destructive testing to confirm asbestos content. Sample locations are included on the sample location diagrams in Attachment B.

1. The MMR (Table 1 in Attachment A) lists positive, assumed and negative materials, the locations where each material is present, and the quantity estimates in each location. The following items were found to be positive for asbestos:

    - Black roofing mastic on metal roofing panels on Pump Building roof

2. As the buildings are still in use, SCA did not perform destructive sampling to inspect wall cavities, above ceilings, etc. in areas where this sampling would affect the use of the room. Quantities listed in the matrices are for visible quantities only. SCA makes no warranties or representations regarding materials or quantities that may be present behind wall cavities, above ceilings, etc.

3. Any material not sampled is listed as assumed (AAA) in the MMRs. The following items are assumed asbestos, pending additional “destructive testing”:

    Pump Building
    - Insulation on water supply pipes and fittings below the ground in shop of Pump Building (inaccessible due to machinery and vehicle parts), SCA ID: PI-AAA.
    - Waterproofing membrane and associated tars below concrete slab in the pump building SCA ID: VAPOR-AAA.
    - Naturally occurring asbestos in surcharged fill soils and base rock beneath all structures and placed during construction, SCA ID: SOIL-AAA & BASEROCK-AAA.

Shed #1

- Window putty on the exterior of Shed 1, which was concealed by vegetation and boards, SCA ID:, PUTTY-AAA
- Roofing material overgrown with brush on Shed 1, SCA ID: ROOF-AAA
- Naturally occurring asbestos in surcharged fill soils and base rock beneath all structures and placed during construction, SCA ID: SOIL-AAA & BASEROCK-AAA.

Water Tank

- Gaskets between flanges of water pipes on exterior of water tank, SCA ID: GASKET-AAA
- Naturally occurring asbestos in surcharged fill soils and base rock beneath all structures and placed during construction, SCA ID: SOIL-AAA & BASEROCK-AAA.

Shed #2

- Electrical wiring in the interior of Shed 2, SCA ID: EL-AAA
- Naturally occurring asbestos in surcharged fill soils and base rock beneath all structures and placed during construction, SCA ID: SOIL-AAA & BASEROCK-AAA.

SCA has listed these materials as assumed asbestos-containing items in the attached MMR. Mercy Housing should be aware that these materials are required to be tested prior demolition of the buildings. SCA recommends that the destructive testing and testing of inaccessible/assumed materials be performed prior to preparation of abatement specifications, if possible, or that the specifications be prepared with line items for all inclusive unit costs for abatement in the event the materials are found to contain asbestos.

Please note the following with respect to the assumed materials:

- It is not uncommon for structures to have a waterproofing membrane assembly under the concrete foundation slab. Given the construction date of the Pump Building, this waterproofing system, if present, could consist of a tar-like substance with waterproofing membrane that often contains asbestos. As destructive testing was excluded from the scope of work, SCA has assumed that a waterproofing membrane and underlying baserock and surcharged fill material placed during construction may be present under the Pump Building's concrete slab. If impacts to the subslab are required, a coring contractor should be retained prior to demolition of the structure to obtain a continuous core through this area to verify the presence of a membrane system. If present, the material should be tested to verify asbestos content. If the material is found to contain asbestos, the abatement contractor should possess asbestos-registration and proper training, and such concrete should not be recycled.

SCA assumes that in the future, this survey report may be referenced by Abatement Contractors providing bids for abatement of materials at the surveyed site. SCA requests that this text portion of the report be provided to bidding contractors for review. Bidding Contractors are hereby notified that the quantities included herein are estimates only, and all quantities should be field verified by the Contractor for any budgeting, planning or bidding decisions.

Lead Hazards

Summary of Standards

Certain existing painted or coated surfaces to be impacted by the proposed renovation or demolition of the facility are known to contain lead.

Since elemental lead is a suspect carcinogen and known teratogen and neurotoxic in high doses, lead-containing materials need to be identified prior to the on-set of demolition activities. Using combinations of engineering controls and personal protective equipment, lead-containing materials can be removed safely. Several sources of applicable standards are listed as follows:

1. Lead exposures in the workplace are regulated by Cal/OSHA, which has certain regulatory requirements for identifying and controlling potential lead exposures. Currently applicable regulations for the construction industry have been adopted by Cal/OSHA (8 CCR 1532.1) from the Federal OSHA regulations. The current OSHA 8-hour Permissible Exposure Level (PEL) for lead is 50 µg/m^3.

2. Current EPA and Cal/EPA regulations do not require LBP to be removed prior to demolition, unless loose and peeling. Provided that the paints are securely adhered to the substrates (i.e., non-flaking or non-peeling), disposal of intact demolition debris can generally be handled in California as non-hazardous and non-RCRA waste. Disposal requirements are as follows:

Classification and Disposal of Inorganic Lead Wastes in California								
Standards	**TTLC**	**Leachable Lead**						
Concentations	**1000 mg/kg**	**5 mg/L**						
	Test Methods & Results			**Classifications**				
Condition	**Total Pb (mg/kg)**	**STLC Pb (mg/L)**	**TCLP Pb (mg/L)**	**Non-haz waste**	**CalHaz (Non-RCRA)**	**Fed Haz (RCRA)**	**Stabilization Required**	**Landfill Class**
1a	<50 (a1)	NA		Yes	no	no	no	III
1b	<100 (a2)		NA	Yes	no	no	no	III
2a		<5	<5	Yes (c)	no	no	no	III or II (d)
2b	50 to <1000	>5	<5	no	Yes	no	no	I
2c		>5	>5	no	Yes	Yes	Yes	I
2d (b)		<5	>5	no	no	Yes	Yes	I
3a		<5	<5	No	Yes	No	no	I
3b	>1000	>5	<5	no	Yes	no	no	I
3c		>5	>5	no	Yes	Yes	Yes	I
3d (b)		<5	>5	no	no	Yes	Yes	I
4	any	any	>5	no	no	Yes	Yes	I

(a1) 50 = 10 x 5 (STLC for Pb). Per WET method, impossible to exceed STLC even if 100% soluble.
(a2) 100 = 20 x 5 (TCLP for Pb). Per TCLP method, impossible to exceed STLC even if 100% soluble.
(b) Physically impossible due to the stronger acid used in WET than TCLP.
(c) Landfills will likely require documentation that TCLP is <5, even though TCLP is almost always less than WET.
(d) Landfill dependent, function of permit, landfill liner, or landfill policy

In California, loose and peeling LBP or other wastes require characterization and testing for leachability to determine if the materials would be classified as a RCRA or California hazardous waste.

3. The major definitions of LBP or lead-coated surfaces are listed as follows:

   - HUD defines LBP as paint that contains either ≥0.5% by weight of lead, or ≥1 mg/cm^2.

- Consumer Product Safety Commission (CPSC) prohibits the manufacturing of paint that contains more than 90 ppm of lead.

4. Lead is on the "Proposition 65" list, based on its potential to cause reproductive harm.

5. The California Department of Public Health (CDPH) requires the use of Certified Lead Workers and Supervisors for lead abatement projects at public buildings with a greater than 20 years expected life or whenever work is completed specifically to abate Lead-Based paints as defined by HUD. The CDPH certification requirements do not apply to industrial sites; however, dust controls and personnel protection are still required under 17 CCR Section 35001 through 36100.

Methodology
SCA collected a number of bulk samples for analysis to determine the lead content of these materials. Materials included lead paints and coatings, as well as vinyl flooring.

Lead samples collected were submitted to McCampbell Analytical in Pittsburg, CA for analysis for total lead content by Inductively Coupled Plasma Mass Spectrometry (ICP).

Results
The MMR shows detailed lead sample results and locations of the sampled materials. Sample locations are included on the sample location diagrams in Attachment B.

1. Lead concentrations for paints ranged from 23 milligrams per kilogram (mg/kg) to 74,000 mg/kg.
2. Lead was detected in ceramic floor tile at 14 mg/kg.

As lead was identified in some paints and a detailed inventory of paints was not performed for the project, for the purpose of complying with the Cal/OSHA lead in construction regulation (8 CCR 1532.1), all coated surfaces shall be considered to contain some lead and require demolition dust control procedures for compliance with Cal/OSHA's Construction Lead Standard under 8 CCR 1532.1. The aforementioned regulation contains requirements for lead air monitoring, work practices, respiratory protection, etc., that are triggered by the presence of even very low levels of lead.

In addition, based on the California Total Threshold Level Concentration (TTLC) hazardous waste standard, the paints may be classified as hazardous wastes. Additional sampling and analysis for leachable lead content by the Contractor or Consultant during demolition will be required for waste characterization.

None of the applicable regulations require removal of lead paint prior to renovation if the paints are securely adhered to the substrates (i.e., non-flaking or non-peeling). Disposal of the demolition debris in this case can be handled as non-hazardous and non-RCRA waste after the loose and flaking paint have been removed, as long as demolition practices do not compromise worker safety and waste stream characterization testing has been performed for verification.

Conventional demolition techniques should be employed for all painted surfaces and removal of vinyl flooring with the Contractor complying with applicable OSHA and Cal/OSHA statutes regarding:

- Worker awareness training;
- Exposure monitoring, as needed;

- Medical examinations, which may include blood lead level testing; and
- Establishing a written respiratory protection program.

Polychlorinated Biphenyls (PCBs) & Mercury-Containing Items

Methodology
SCA visually inspected for any caulking or putties associated with the structures, which are suspected to contain PCBs. These items are usually found around windows or doors, around the glass plains of windows, or at joints between walls. SCA located window putty in the Pump Building and sampled this material. Suspect PCB-containing materials were not identified in the other structures.

SCA also quantified lighting ballasts that were observed in conjunction with mercury-containing, fluorescent lighting fixtures in various locations throughout the building.

Results
Quantities of fluorescent tubes in various locations are included in Table 1 in Attachment A. Note the following regarding PCBs and mercury-containing items:

1. Various lighting ballasts were identified throughout the buildings. These ballasts should be inspected for a "No PCBs" label. These items would therefore be considered non PCB-containing and would not require disposal as PCB wastes. If there are not any "No PCBs" labels, the ballasts will require disposal as PCB waste.
2. The window putty in the Pump Building was found to contain 0.39 ppm of PCBs, SCA ID:, PUTTY-17.
3. Window putty on the exterior of Shed 1, which was concealed by vegetation and boards, was not accessible for sampling but is assumed to be >50 ppm pending sampling to confirm PCB content and determine the appropriate waste stream, SCA ID:, PUTTY-AAA.
4. Mercury-containing fluorescent tubes were identified only in the Pump Building. Fluorescent light tubes are required to be either disposed of as hazardous material, or recycled for their mercury contents. Note that costs for fluorescent tube disposal do not tend to be significant compared to overall abatement costs.

If you have any questions, please contact us.

Sincerely,
SCA ENVIRONMENTAL, INC.

Tucker Kalman, CAC (#15-5384), CDPH (#25870)

Reviewed by:

Christina Codemo, CHMM, REPA, CAC
Sr. Consultant415-867-9540

Appendices:

Appendix A:	Materials Matrix Report
Appendix B:	Sample Location Drawings
Appendix C:	Asbestos Laboratory Results
Appendix D:	Lead and PCB Laboratory Results

Appendix A

Materials Matrix Report

Materials Matrix Report: Mercy Housing 1670-1690 Mission Road Pre-demolition Hazmat Survey

				Pump Building				Shed 1			Water Tank		Shed 2			Shed 3			
Material ID	Material Description	Asbestos Positive? Yes. No. Trace. Assumed	UNITS (LF, SF, EA)	Shop	Office	Exterior	Roof	Interior	Exterior	Roof	Interior (Inaccessible, Filled w/water)	Exterior	Interior	Exterior	Roof	Interior	Exterior	Roof	TOTAL (+/-15%)
ASBESTOS																			
RFMAS-14	Black roofing mastic on metal roofing panels	**Positive**	SF				120												120
ASSUMED ASBESTOS (Destructive Testing Required to Confirm)																			
PI-AAA	Insulation on water supply pipes and fittings below ground (inaccessible for sampling due to machinery or vehicle parts)		LF	150															150
PUTTY-AAA	Window putty (boarded up on interior & overgrown with brush on exterior)		LF						50										50
ROOF-AAA	Roofing (overgrown with brush-not accessible)		SF							225									225
GASKET-AAA	Gaskets between flanges of water pipes (not visible but assumed to be present within)	**Assumed**	EA									25							25
EL-AAA	Electrical wiring		LF										50						50
VAPBAR-AAA	Waterproofing membrane w/assoc tars/mastic below concrete slab and room finishes		SF			6,500													6500
SOIL-AAA	Naturally occurring asbestos in surcharged & fill soils beneath structures		CY			PNQ			PNQ			PNQ		PNQ			PNQ		PNQ
BASEROCK-AAA	Base rock beneath structures		CY			PNQ			PNQ			PNQ		PNQ			PNQ		PNQ
NON-ASBESTOS																			
WL-NNN	Wood walls		SF	300	600											4500			5400
CL-NNN	Wood ceiling		SF		300														
PI-NNN	Uninsulated copper domestic hot water (DHW) pipes and fittings		LF	120															120
CAULK-NNN	Light gray caulking around seams of flue on hot dip tank		LF	50															50
HDUTP-NNN	Silver foil tape around seams of gas heater exhaust		LF	50															50
PI-NNN	Uninsulated black gas pipes		LF	250															250
RF-NNN	Red-painted metal/wood roofing panels		SF															1600	1600
RF-NNN	Corrugated metal roofing panels		SF															1700	1700
CONC-1	Gray concrete slab		SF	6500															6500
CONC-2	Gray concrete raised floor		SF		300														300
CONC-3	Off-white painted concrete columns		SF	1200															1200
CONC-4	Gray concrete ceiling deck		SF				6500												6500
CONC-5	Gray concrete equipment pad		SF	150															150
GASKET-6	Black gasket between pipe flanges on abandoned emergency pumps		EA	15															15
EL-7	Black canvas electrical wiring (abandoned)		LF	500															500
GASKET-8	Red gasket between pipe flanges in below ground chases		EA	20															20
FLCER-9	3"x3"/Hexagon-shaped beige/blue ceramic floor tiles w/off-white grout and gray mortar		SF	200															200
WL-10	Off-white residual ceramic wall tile mortar (ceramic wall tile demolished)		SF	200															200
RFAG-11	Tar and gravel roofing		SF				6300												6300
RFROLL-12	Gray rolled roofing felts w/black tars/mastic on parapets		SF				1500												1500
PAINT-13	Gray elastomeric paint on black roofing mastic	**Negative**	SF				2500												2500
WL-15	Gray cement wall plaster on concrete		SF			10000													10000
CONC-16	Gray concrete perimeter wall		SF			10000													10000
PUTTY-17	Off-white exterior window putty		LF			1700													1700
ASPHALT-18	Black asphalt remnants on driveway area		SF			500													500
CONC-20	Gray concrete slab		SF					225											225
WL-21	Gray cement wall plaster on concrete		SF						1000										1000
CONC-22	Gray concrete perimeter wall		SF						1000										1000
CONC-23	Gray concrete ceiling deck		SF							225									225
EL-24	Tan canvas electrical wiring sheath		LF					50											50
WL-30	Gray cement wall plaster on concrete		SF									2500							2500
CONC-31	Gray concrete perimeter wall		SF									2500							2500
CONC-40	Gray concrete slab		SF										225						225
WL-41	Gray cement wall plaster on concrete		SF										1000						1000
CONC-42	Gray concrete perimeter wall and ceiling deck		SF											1225					1225
RFROLL-43	Tan rolled roofing felts w/black tars/mastic		SF												30				30
RFAG-44	Tar and gravel roofing		SF												225				225
RFSH-45	Tan roofing shingles (residual)														20				20
CONC-50	Gray concrete slab		SF													1500			1500
STUCCO-51	Gray exterior stucco		SF														4500		4500
CONC-52	Gray concrete remnants		SF														100		100
PCBs		**PPM**	**PPM**																
PUTTY-17	Off-white exterior window putty	0.39	0.39			1700													1700
PUTTY-AAA	Window putty (boarded up on interior & overgrown with brush on exterior), assumed >50 ppm	>50	>50						50										50
LEAD		**PPM**																	
OW-1	Off-white paint on concrete walls and ceilings	410		PNQ	PNQ														PNQ
GY-2	Gray paint on wood window assemblies	67,000		PNQ	PNQ														PNQ
RD-3	Red paint on metal roofing panels	72,000					PNQ												PNQ
GY-4	Gray paint on concrete walls	23					PNQ												PNQ
BR-5	Brown paint on concrete walls	8,200						PNQ											PNQ
GR-6	Green paint on wood doors and windows	63,000							PNQ										PNQ
BL-7	Blue paint on metal pumps and pipes	1,900										150							150
YW-8	Yellow paint on wood doors and frames	70,000											PNQ						PNQ
WH-9	Off-white paint on wood walls, beams and columns	780														PNQ			PNQ
GR-10	Green paint on wood doors/windows and frames	74,000															PNQ		PNQ
FLCER-9	3"x3"/Hexagon shaped ceramic floor tile w/off-white grout and gray mortar	14		200															200
Lead in paints	Lead Containing Paints / Coatings (assumed >600ppm)	>600		PNQ	PNQ	PNQ	PNQ	PNQ	PNQ		PNQ	PNQ	PNQ	PNQ		PNQ	PNQ	PNQ	PNQ
Lead on steel	Lead Containing Coatings on Structural Steel	>600		PNQ		PNQ	PNQ												PNQ
Other Hazardous Materials																			
Mercury	Fluorescent Light Tubes	**Present**		4	66														70
PCBs	PCB-Ballasts	**Present**		2	31														33

Notes:

PNQ = Present, not quantified

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Appendix B

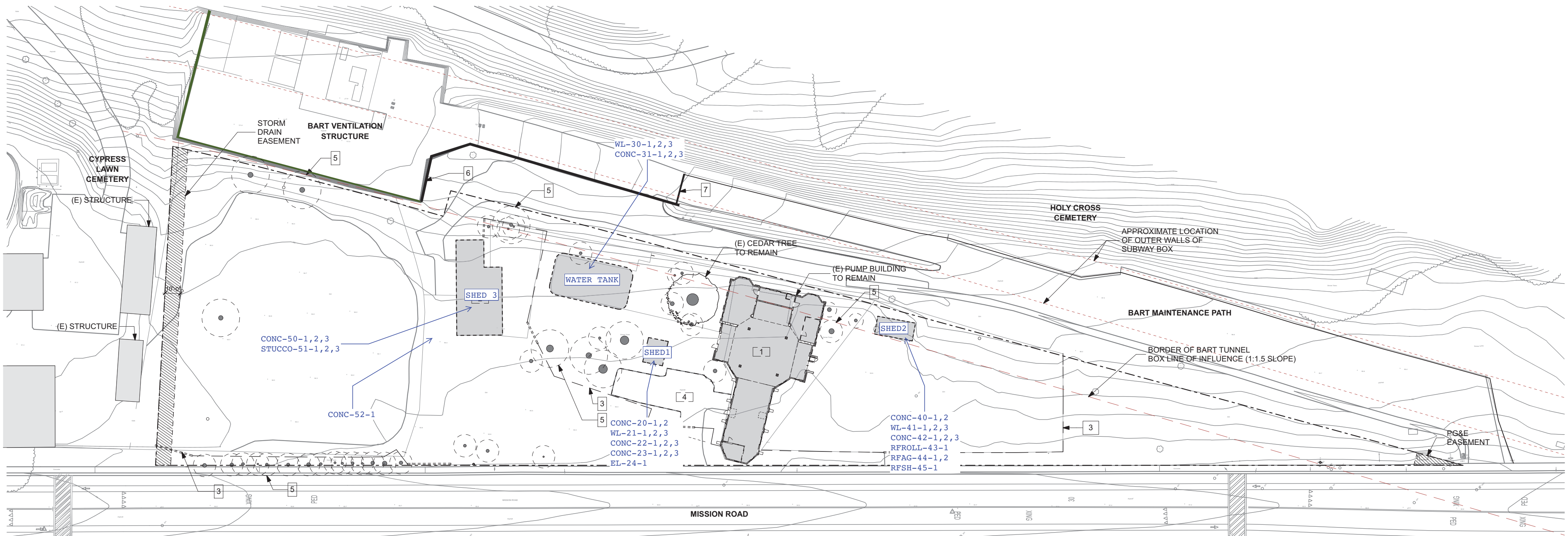
Sample Location Drawings

SHEET NOTES

1. (E) PUMP BUILDING TO REMAIN
2. (E) STRUCTURES TO BE DEMOLISHED
3. (E) FENCES & GATES TO BE DEMOLISHED
4. ASPHALT PARKING AREA TO BE DEMOLISHED
5. ALL TREES TO BE DEMOLISHED UNLESS OTHERWISE NOTED
6. (E) CONCRETE WALL
7. (E) BART MAINTENANCE ACCESS GATE

LEGEND

- PROPERTY LINE
- BART TUNNEL LINE OF INFLUENCE
- OUTER WALLS OF SUBWAY BOX
- (E) TREE TO BE REMOVED
- (E) TREE TO REMAIN, S.L.D.
- EASEMENT, SEE SURVEY



1 A-1.1 EXISTING/DEMO SITE PLAN

SCALE: 1" = 30'

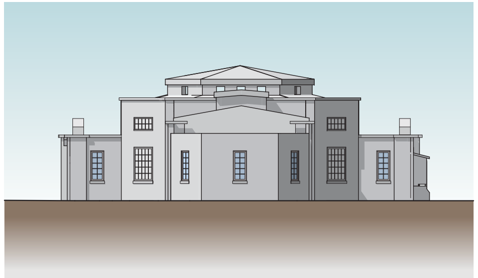
0 15' 30' 60'

VETERANS VILLAGE | A-1.1 EXISTING/DEMO SITE PLAN

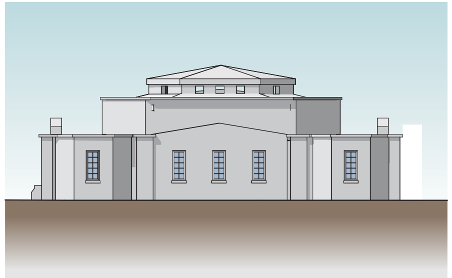
COLMA, CA | 2/22/16 | MERCY HOUSING | #1502

SCA ENVIRONMENTAL, INC.

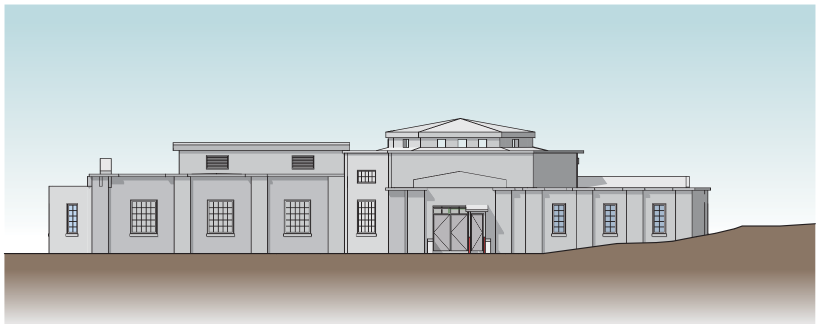
Figure 1. Sample Location Diagram
Mercy Housing
1670 - 1690 Mission Road, Colma
SCA Proj.#: F-12039
April 2016



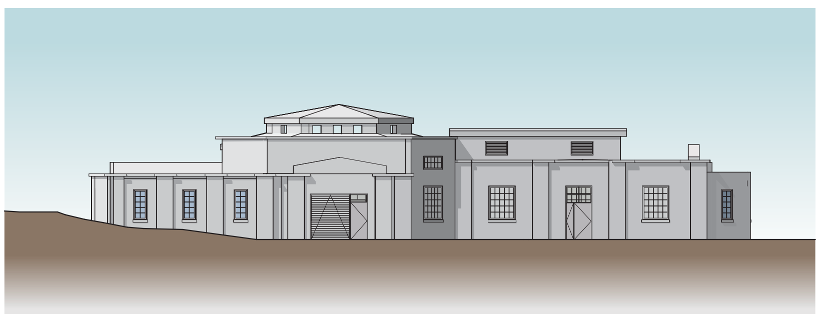
2 A-3.0 **EXISTING WEST ELEVATION**
MISSION ROAD SCALE: 3/32" = 1'-0"



3 A-3.0 **EXISTING EAST ELEVATION**
SCALE: 3/32" = 1'-0"



4 A-3.0 **EXISTING SOUTH ELEVATION**
SCALE: 3/32" = 1'-0"



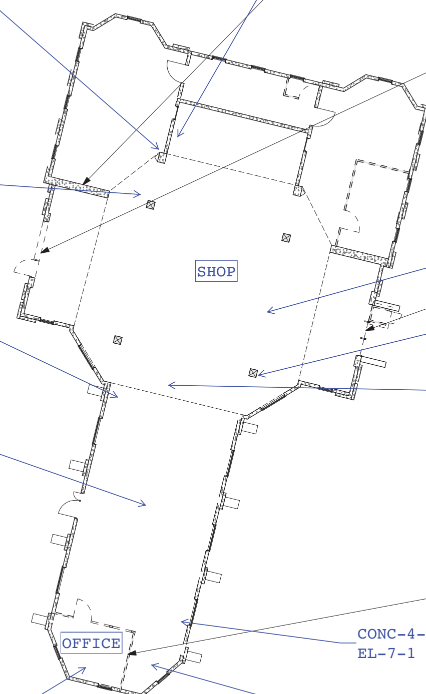
5 A-3.0 **EXISTING NORTH ELEVATION**
SCALE: 3/32" = 1'-0"

0 5.33' 10.67' 21.33'

GENERAL NOTES
1. WINDOWS TO BE REPLACED AS DEEMED NECESSARY BASED ON EXISTING CONDITION

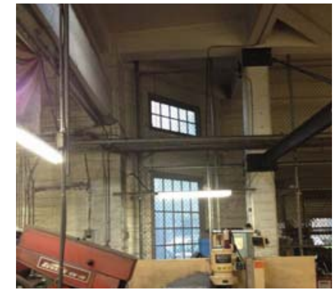
2. VOLUNTARY STRUCTURAL IMPROVEMENTS TO BE BASED ON SEISMIC ANALYSIS.

3. CONCRETE FLOOR TO BE RESURFACED TO MEET ACCESSIBILITY REQUIREMENTS



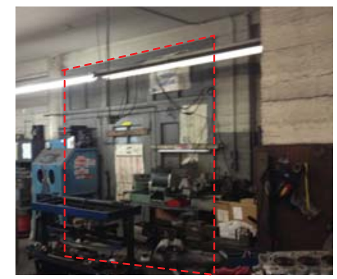
1 A-3.0 **DEMOLITION PLAN**
SCALE: 3/32" = 1'-0"

EXISTING CONCRETE STRUCTURE INCLUDING WALLS, COLUMNS, AND BEAMS TO REMAIN

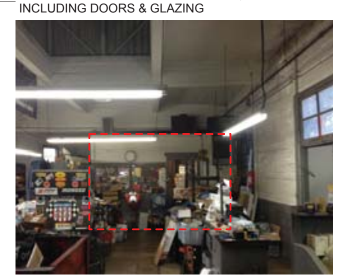


REMOVE EXISTING ROLL UP DOOR AND SWING DOOR

REMOVE EXISTING DOORS AND STORAGE SHED



REMOVE ALL WOOD FRAMED WALLS, INCLUDING DOORS & GLAZING

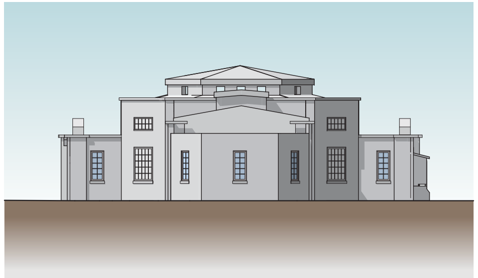


COLMA VETERANS VILLAGE | A-3.0 EXISTING PUMP BUILDING

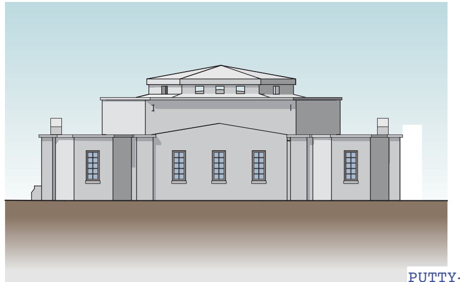
COLMA, CA | 12/21/15 | MERCY HOUSING | #1502

SCA ENVIRONMENTAL, INC.

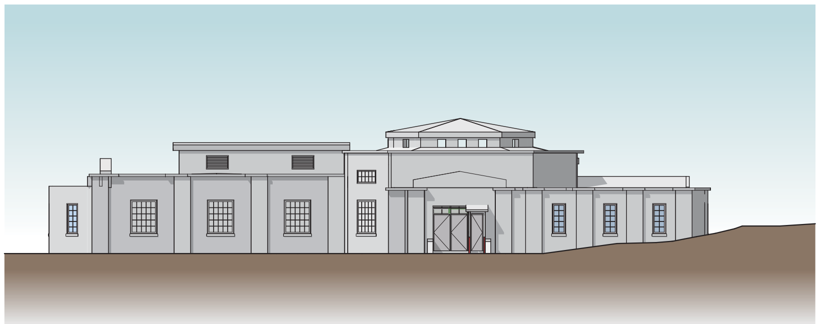
Figure 2. Sample Location Diagram
Mercy Housing
1670 - 1690 Mission Road, Colma
SCA Proj.#: F-12039
April 2016



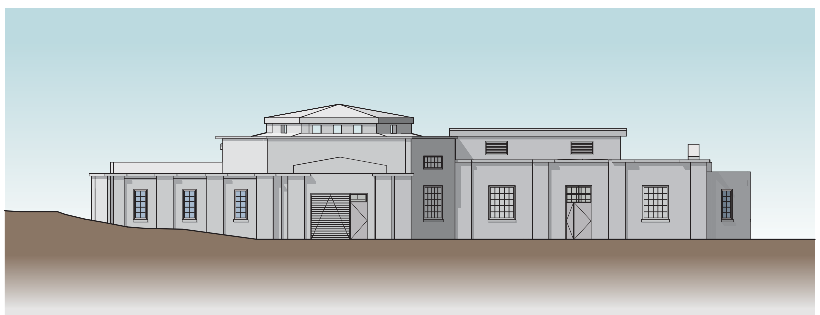
2 A-3.0 **EXISTING WEST ELEVATION**
MISSION ROAD SCALE: 3/32" = 1'-0"



3 A-3.0 **EXISTING EAST ELEVATION**
SCALE: 3/32" = 1'-0"



4 A-3.0 **EXISTING SOUTH ELEVATION**
SCALE: 3/32" = 1'-0"

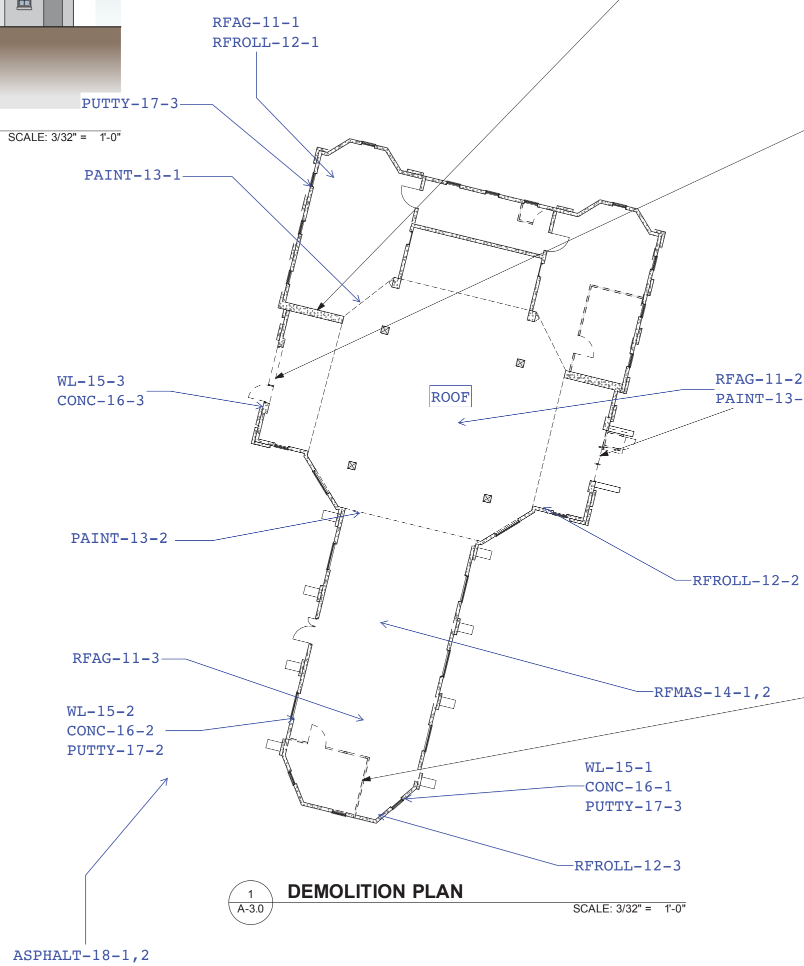


5 A-3.0 **EXISTING NORTH ELEVATION**
SCALE: 3/32" = 1'-0"

GENERAL NOTES
1. WINDOWS TO BE REPLACED AS DEEMED NECESSARY BASED ON EXISTING CONDITION

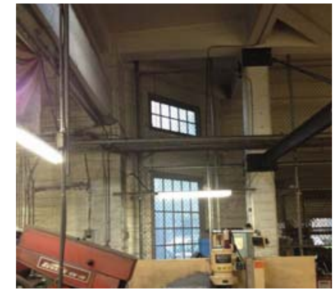
2. VOLUNTARY STRUCTURAL IMPROVEMENTS TO BE BASED ON SEISMIC ANALYSIS.

3. CONCRETE FLOOR TO BE RESURFACED TO MEET ACCESSIBILITY REQUIREMENTS



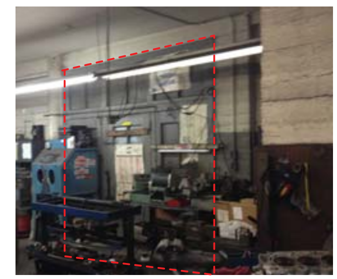
1 A-3.0 **DEMOLITION PLAN**
SCALE: 3/32" = 1'-0"

EXISTING CONCRETE STRUCTURE INCLUDING WALLS, COLUMNS, AND BEAMS TO REMAIN

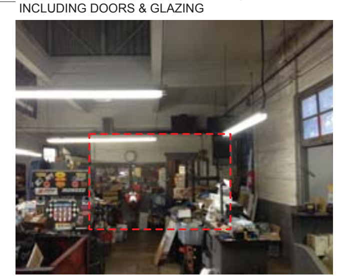


REMOVE EXISTING ROLL UP DOOR AND SWING DOOR

REMOVE EXISTING DOORS AND STORAGE SHED



REMOVE ALL WOOD FRAMED WALLS, INCLUDING DOORS & GLAZING



0 5.33' 10.67' 21.33'

COLMA VETERANS VILLAGE | A-3.0 EXISTING PUMP BUILDING

COLMA, CA | 12/21/15 | MERCY HOUSING | #1502

SCA ENVIRONMENTAL, INC.

Figure 3. Sample Location Diagram
Mercy Housing
1670 - 1690 Mission Road, Colma
SCA Proj.#: F-12039
April 2016

Appendix C

Asbestos Laboratory Results

REI LAB **Reservoirs Environmental, Inc.**

April 28, 2016

Subcontract Number:	**NA**
Laboratory Report:	**RES 348548-1**
Project # / P.O. #	**F12039**
Project Description:	**1670-1690 Mission Rd., Colma**

SCA Environmental, Inc.
650 Delancey St. Ste. 222
San Fransisco CA 94107

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 348548-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Nichole Mari
Nichole Mari for

Jeanne Spencer
President

RESERVOIRS ENVIRONMENTAL INC.

NVLAP Lab Code 101896-0

TABLE: PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME

RES Job Number:	**RES 348548-1**
Client:	**SCA Environmental, Inc.**
Client Project Number / P.O.:	**F12039**
Client Project Description:	**1670-1690 Mission Rd., Colma**
Date Samples Received:	**April 25, 2016**
Method:	**EPA 600/R-93/116 - Short Report, Bulk**
Turnaround:	**3 Day**
Date Samples Analyzed:	**April 28, 2016**

ND=None Detected
TR=Trace, <1% Visual Estimate
Trem/Act=Tremolite/Actinolite

Client Sample Number	Lab ID Number	LAYER	Physical Description	Sub Part (%)	Asbestos Content: Mineral	Asbestos Content: Visual Estimate (%)	Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
CONC-1-1	EM 1616951	A	Gray/tan granular cementitious material	100		**ND**	0	100
CONC-1-2	EM 1616952	A	Gray/multi-colored granular cementitious material w/ brown debris	100		**ND**	TR	100
CONC-1-3	EM 1616953	A	Gray granular cementitious material w/ brown debris	100		**ND**	TR	100
CONC-2-1	EM 1616954	A	Gray granular cementitious material w/ brown debris	100		**ND**	TR	100
CONC-2-2	EM 1616955	A	Gray granular cementitious material w/ brown debris	100		**ND**	TR	100
CONC-3-1	EM 1616956	A	Off white granular cementitious material	100		**ND**	0	100
CONC-3-2	EM 1616957	A	Gray granular material w/ off white/multi-colored paint	20		**ND**	0	100
		B	Off white granular plaster	80		**ND**	0	100
CONC-4-1	EM 1616958	A	Gray granular material w/ off white/multi-colored paint	25		**ND**	0	100
		B	Tan granular plaster	75		**ND**	0	100
CONC-4-2	EM 1616959	A	Gray granular cementitious material w/ white granular cementitious material	100		**ND**	TR	100

TEM Analysis recommended for organically bound material (i.e. floor tile) if PLM results are <1%.

RESERVOIRS ENVIRONMENTAL INC.

NVLAP Lab Code 101896-0

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Client Sample Number	Lab ID Number	LAYER	Physical Description	Sub Part (%)	Asbestos Content: Mineral	Asbestos Content: Visual Estimate (%)	Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
CONC-4-3	EM 1616960	A	White paint w/ white compound	5		**ND**	0	100
		B	Gray granular cementitious material	95		**ND**	0	100
CONC-5-1	EM 1616961	A	Gray granular cementitious material w/ brownish black paint	100		**ND**	0	100
CONC-5-2	EM 1616962	A	Gray granular cementitious material w/ brownish black paint	100		**ND**	0	100
GASKET-6-1	EM 1616963	A	Black resinous material w/ gray paint & brown fibrous debris	100		**ND**	20	80
EL-7-1	EM 1616964	A	Black/white wire insulation	100		**ND**	70	30
GASKET-8-1	EM 1616965	A	Brownish orange resinous material	100		**ND**	0	100
FLCER-9-1	EM 1616966	A	Off white grout	4		**ND**	0	100
		B	Gray granular cementitious material	6		**ND**	0	100
		C	White ceramic material	90		**ND**	0	100

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Client Sample Number	Lab ID Number	LAYER	Physical Description	Sub Part (%)	Asbestos Content: Mineral	Asbestos Content: Visual Estimate (%)	Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
WL-10-1	EM 1616967	A	White granular material w/ tan granular debris	100		**ND**	0	100
RFAG-11-1	EM 1616968	A	Black tar w/ black fibrous tar	100		**ND**	20	80
RFAG-11-2	EM 1616969	A	Tan granular material	15		**ND**	0	100
		B	Multi-layered black tar w/ black fibrous tar	85		**ND**	20	80
RFAG-11-3	EM 1616970	A	Black tar w/ tan debris	7		**ND**	0	100
		B	Black fibrous tar w/ black tar	93		**ND**	25	75
RFROLL-12-1	EM 1616971	A	Black fibrous tar	20		**ND**	35	65
		B	Black resinous tar w/ silver paint & white resinous coating	25		**ND**	8	92
		C	Multi-layered black tar w/ black fibrous tar & tan granular material	55		**ND**	25	75
RFROLL-12-2	EM 1616972	A	White resinous coating w/ silver paint	20		**ND**	0	100
		B	Black fibrous tar	35		**ND**	20	80
		C	Black resinous tar w/ black fibrous tar	45		**ND**	35	65

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Client Sample Number	Lab ID Number	LAYER	Physical Description	Sub Part (%)	Asbestos Content: Mineral	Asbestos Content: Visual Estimate (%)	Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
RFROLL-12-3	EM 1616973	A	Black resinous tar w/ tan granular material	50		**ND**	0	100
		B	Black tar w/ black fibrous tar	50		**ND**	20	80
PAINT-13-1	EM 1616974	A	White resinous material w/ black tar	100		**ND**	TR	100
PAINT-13-2	EM 1616975	A	Black tar w/ white resinous material	100		**ND**	TR	100
PAINT-13-3	EM 1616976	A	Black tar w/ white resinous material	100		**ND**	TR	100
RFMAS-14-1	EM 1616977	A	Black fibrous tar	100	**Chrysotile**	**15**	TR	85
RFMAS-14-2	EM 1616978		Not Analyzed per Client Request.					
WL-15-1	EM 1616979	A	Gray granular cementitious material	100		**ND**	0	100
WL-15-2	EM 1616980	A	Gray granular cementitious material	100		**ND**	0	100
WL-15-3	EM 1616981	A	Gray granular cementitious material	100		**ND**	0	100
CONC-16-1	EM 1616982	A	Gray granular cementitious material	100		**ND**	0	100
CONC-16-2	EM 1616983	A	Gray granular cementitious material	100		**ND**	0	100
CONC-16-3	EM 1616984	A	Gray granular cementitious material	100		**ND**	0	100
PUTTY-17-1	EM 1616985	A	White glazing w/ green paint	100		**ND**	0	100

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Client Sample Number	Lab ID Number	LAYER	Physical Description	Sub Part (%)	Asbestos Content: Mineral	Asbestos Content: Visual Estimate (%)	Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
PUTTY-17-2	EM 1616986	A	White glazing w/ gray/green paint	100		**ND**	0	100
PUTTY-17-3	EM 1616987	A	White glazing w/ gray/green paint	100		**ND**	0	100
ASPHALT-18-1	EM 1616988	A	Black resinous granular material	100		**ND**	0	100
ASPHALT-18-2	EM 1616989	A	Black/brown resinous granular material	100		**ND**	0	100
CONC-20-1	EM 1616990	A	Gray granular cementitious material w/ black resinous material	100		**ND**	TR	100
CONC-20-2	EM 1616991	A	Gray granular cementitious material	100		**ND**	0	100
WL-21-1	EM 1616992	A	Gray granular cementitious material	100		**ND**	0	100
WL-21-2	EM 1616993	A	Gray granular cementitious material	100		**ND**	0	100
WL-21-3	EM 1616994	A	Gray granular cementitious material	100		**ND**	0	100
CONC-22-1	EM 1616995	A	Gray granular cementitious material	100		**ND**	0	100
CONC-22-2	EM 1616996	A	Gray granular cementitious material	100		**ND**	0	100
CONC-22-3	EM 1616997	A	Gray granular cementitious material	100		**ND**	0	100
CONC-23-1	EM 1616998	A	Gray granular cementitious material	100		**ND**	0	100

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Client Sample Number	Lab ID Number	LAYER	Physical Description	Sub Part (%)	Asbestos Content: Mineral	Asbestos Content: Visual Estimate (%)	Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
CONC-23-2	EM 1616999	A	Gray granular cementitious material	100		**ND**	0	100
CONC-23-3	EM 1617000	A	Gray granular cementitious material	100		**ND**	0	100
EL-24-1	EM 1617001	A	Beige fibrous woven material	40		**ND**	95	5
		B	Brown resinous material	60		**ND**	0	100
WL-30-1	EM 1617002	A	Gray granular cementitious material	100		**ND**	0	100
WL-30-2	EM 1617003	A	Gray granular cementitious material	100		**ND**	0	100
WL-30-3	EM 1617004	A	Gray granular cementitious material	100		**ND**	0	100
CONC-31-1	EM 1617005	A	Gray granular cementitious material	100		**ND**	0	100
CONC-31-2	EM 1617006	A	Gray granular cementitious material	100		**ND**	0	100
CONC-31-3	EM 1617007	A	Gray granular cementitious material	100		**ND**	0	100
CONC-40-1	EM 1617008	A	Gray granular cementitious material	100		**ND**	0	100
CONC-40-2	EM 1617009	A	Gray granular cementitious material	100		**ND**	0	100
WL-41-1	EM 1617010	A	Gray granular cementitious material	100		**ND**	0	100
WL-41-2	EM 1617011	A	Gray granular cementitious material	100		**ND**	0	100

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RESERVOIRS ENVIRONMENTAL INC.

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Client Sample Number	**Lab ID Number**	LAYER	Physical Description	Sub Part (%)	**Asbestos Content**		Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
					Mineral	**Visual Estimate (%)**		
WL-41-3	EM 1617012	A	Gray granular cementitious material	100		**ND**	0	100
CONC-42-1	EM 1617013	A	Gray granular cementitious material	100		**ND**	0	100
CONC-42-2	EM 1617014	A	Gray granular cementitious material	100		**ND**	0	100
CONC-42-3	EM 1617015	A	Gray granular cementitious material	100		**ND**	0	100
RFROLL-43-1	EM 1617016	A	Black/tan shingle w/ silver paint	100		**ND**	40	60
RFAG-44-1	EM 1617017	A	Black fibrous tar	100		**ND**	40	60
RFAG-44-2	EM 1617018	A	Black fibrous tar w/ black tar	100		**ND**	35	65
RFSH-45-1	EM 1617019	A	Black/tan shingle	100		**ND**	30	70
CONC-50-1	EM 1617020	A	Gray granular cementitious material	100		**ND**	0	100
CONC-50-2	EM 1617021	A	Gray granular cementitious material	100		**ND**	0	100
CONC-50-3	EM 1617022	A	Gray granular cementitious material	100		**ND**	0	100
STUCCO-51-1	EM 1617023	A	Gray granular cementitious material	100		**ND**	0	100
STUCCO-51-2	EM 1617024	A	Gray granular cementitious material	100		**ND**	0	100
STUCCO-51-3	EM 1617025	A	Gray granular cementitious material	100		**ND**	0	100

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RESERVOIRS ENVIRONMENTAL INC.

NVLAP Lab Code 101896-0

TABLE: PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME

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Client Sample Number	Lab ID Number	LAYER	Physical Description	Sub Part (%)	Asbestos Content: Mineral	Asbestos Content: Visual Estimate (%)	Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
CONC-52-1	EM 1617026	A	Gray granular cementitious material	100		**ND**	0	100
WL-10-2 (Not on Original COC)	EM 1617027	A	Off white granular plaster	100		**ND**	TR	100

TEM Analysis recommended for organically bound material (i.e. floor tile) if PLM results are <1%.

Chris Werre
Analyst

Brett S. Colbert
Analyst / Data QA

Due Date: 4-29-52
Due Time: 12:10p

Reservoirs Environmental, Inc.

REI LAB

5801 Logan St. Denver, CO 80216 • Ph: 303 964-1986 • Fax 303-477-4275 • Toll Free :866 RESI-ENV

After Hours Cell Phone: 720-339-9228

RES 348548

Page 1 of 4

SUBMITTED BY:

Company:	SCA Environmental, Inc.
Address:	650 Delancey St. Ste. 222
	San Fransisco CO 94107
Project Number and/or P.O. #:	F12039
Project Description/Location:	1670-1690 Mission Rd., Colma

INVOICE TO: (IF DIFFERENT)

Company:
Address:

CONTACT INFORMATION:

Contact:	Contact:
Phone:	Phone:
Fax:	Fax:
Cell/pager:	Cell/pager:

Final Data Deliverable Email Address:
ccodemo@sca-enviro.com & dleung@sca-enviro.com

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm & Sat. 8am - 5pm

PLM / PCM / TEM ____ RUSH (Same Day) ___ PRIORITY (Next Day) X STANDARD (5 Day) 3day
(Rush PCM = 2hr, TEM = 6hr.)

CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm

Metal(s) / Dust** ___ RUSH ___ 24 hr. ~~X~~ 3-5 Day
RCRA 8 / Metals & Welding Fume Scan / TCLP** __RUSH (3 Day) __5 Day ✓ 10 Day
Organics ___ 24 hr. ___ 3 day ___5 Day

Prior notification is required for RUSH turnarounds.

MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm

E.coli and/or Coliforms* ___ 24-48 Hour **Other:** ____________
Pathogens* ___ 24-48 Hour
Microbial Growth* ___ 5-10 Day
Legionella ___ 10 Day
Mold ___ RUSH ___24 Hr ___48 Hr ___3 Day ___5 Day

TAT dependent on speed of microbial growth.

Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.

Special Instructions: Positive stop

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Paint = P
Soil = S	Wipe = W
Swab = SW	F = Food
Drinking Water = DW	Waste Water = WW
O = Other	

ASTM E1792 approved wipe media only

LAB NOTES:

REQUESTED ANALYSIS

#	Client sample ID number (Sample ID's must be unique)	PLM - Short report, Point Count, Long report, Qualitative	TEM - AHERA, Level II, 7402, ISO, +/- (Air, Bulk or Dust), Quant, Semi-Quant, Micro-vac, ISO-Indirect Preps	PCM - 7400A, 7400B, OSHA	DUST - Total, Respirable	METALS - Analyte(s) ____ RCRA 8, TCLP, Welding Fume, Metals Scan, pH	ORGANICS - METH, TSS	MICROBIOLOGY: Pathogens: Aerobic Plate Count, Salmonella, E.coli O157:H7, Listeria, S.aureus, Camphlobacter: +/- or Quantification	MICROBIOLOGY: E.coli and/or Coliforms: +/- or Quantification	MICROBIOLOGY: Microbial Growth: Aerobic Plate Count ID, Bacteria or Y & M: +/- or Quantification	MICROBIOLOGY: Legionella: +/- or Quantification	MICROBIOLOGY: Other: Bioburden, LAL or Environmental	MICROBIOLOGY: Mold: Spore Trap or Bulk: +/-, Identification, Quantification	SAMPLER'S INITIALS OR OTHER NOTES:	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)
1	CONC-1-1	X																		1616951
2	CONC-1-2	X																		1616952
3	CONC-1-3	X																		1616953
4	CONC-2-1	X																		1616954
5	CONC-2-2	X																		1616955
6	CONC-3-1	X																		1616956
7	CONC-3-2	X																		1616957
8	CONC-4-1	X																		1616958
9	CONC-4-2	X																		1616959
10	CONC-4-3	X																		1616960

Number of samples received: ____________ (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: Date/Time:

Laboratory Use Only
Received By: [signature] Date/Time: 4-25-16 @ 12:10p Carrier: Hand / FedEx / UPS / USPS / Drop Box / Courier

Sample Condition: On Ice Sealed Intact
Temp. (F°) ______ Yes / No Yes / No Yes / No

Data Entry	Contact	Phone Email Fax	Date	Time	Initials	Contact	Phone Email Fax	Date	Time	Initials
QA:	Contact	Phone Email Fax	Date	Time	Initials	Contact	Phone Email Fax	Date	Time	Initials

REI LAB Reservoirs Environmental, Inc.
5801 Logan St. Denver, CO 80216 • Ph: 303 964-1986 • Fax 303-477-4275 • Toll Free :866 RESI-ENV

RES Job # 348548

Submitted by: SCA Environmental, Inc.

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Paint = P
Soil = S	Wipe = W
Swab = SW	F = Food
Drinking Water = DW	Waste Water = WW
O = Other	

ASTM E1792 approved wipe media only

LAB NOTES:

REQUESTED ANALYSIS (MICROBIOLOGY: Pathogens through Mold)

#	Client sample ID number (Sample ID's must be unique)	PLM - Short report, Long report, Point Count	TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps	PCM - 7400A, 7400B, OSHA	DUST - Total, Respirable	METALS - Analyte(s) RCRA 8, TCLP, Welding Fume, Metals Scan	ORGANICS - METH	Pathogens: Aerobic Plate Count, Salmonella, E.coli O157:H7, Listeria, S.aureus, Camphlobacter: +/- or Quantification	E.coli and/or Coliforms: +/- or Quantificatino	Microbial Growth: Aerobic Plate Count ID, Bacteria or Y & M: +/- or Quantification	Legionella: +/- or Quantification	Other: Bioburden, LAL or Environmental	Mold: Spore Trap or Bulk: +/- or Quantification	SAMPLER'S INITIALS OR OTHER NOTES:	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)
11	CONC-5-1	X																		1616961
12	CONC-5-2	X																		1616962
13	GASKET-6-1	X																		1616963
14	EL-7-1	X																		1616964
15	GASKET-8-1	X																		1616965
16	FLCER-9-1	X																		1616966
17	WL-10-1	X																		1616967
18	RFAG-11-1	X																		1616968
19	RFAG-11-2	X																		1616969
20	RFAG-11-3	X																		1616970
21	RFROLL-12-1	X																		1616971
22	RFROLL-12-2	X																		1616972
23	RFROLL-12-3	X																		1616973
24	PAINT-13-1	X																		1616974
25	PAINT-13-2	X																		1616975
26	PAINT-13-3	X																		1616976
27	RFMAS-14-1	X																		1616977
28	RFMAS-14-2	X																		1616978
29	WL-15-1	X																		1616979
30	WL-15-2	X																		1616980
31	WL-15-3	X																		1616981
32	CONC-16-1	X																		1616982
33	CONC-16-2	X																		1616983
34	CONC-16-3	X																		1616984
35	PUTTY-17-1	X																		1616985
36	PUTTY-17-2	X																		1616986
37	PUTTY-17-3	X																		1616987
38	ASPHALT-18-1	X																		1616988
39	ASPHALT-18-2	X																		1616989
40	CONC-20-1	X																		1616990
41	CONC-20-2	X																		1616991

REI LAB **Reservoirs Environmental, Inc.**
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RES Job # 348548

Submitted by: **SCA Environmental, Inc.**

VALID MATRIX CODES	
Air = A	Bulk = B
Dust = D	Paint = P
Soil = S	Wipe = W
Swab = SW	F = Food
Drinking Water = DW	Waste Water = WW
O = Other	
ASTM E1792 approved wipe media only	

LAB NOTES:

REQUESTED ANALYSIS

#	Client sample ID number (Sample ID's must be unique)	PLM - Short report, Long report, Point Count	TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps	PCM - 7400A, 7400B, OSHA	DUST - Total, Respirable	METALS - Analyte(s) RCRA 8, TCLP, Welding Fume, Metals Scan	ORGANICS - METH	MICROBIOLOGY: Pathogens: Aerobic Plate Count, Salmonella, E.coli O157:H7, Listeria, S.aureus, Camphlobacter: +/- or Quantification	MICROBIOLOGY: E.coli and/or Coliforms: +/- or Quantificatino	MICROBIOLOGY: Microbial Growth: Aerobic Plate Count ID, Bacteria or Y & M: +/- or Quantification	MICROBIOLOGY: Legionella: +/- or Quantification	MICROBIOLOGY: Other: Bioburden, LAL or Environmental	Mold: Spore Trap or Bulk: +/- or Quantification	SAMPLER'S INITIALS OR OTHER NOTES:	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)
42	WL-21-1	X																		1616992
43	WL-21-2	X																		1616993
44	WL-21-3	X																		1616994
45	CONC-22-1	X																		1616995
46	CONC-22-2	X																		1616996
47	CONC-22-3	X																		1616997
48	CONC-23-1	X																		1616998
49	CONC-23-2	X																		1616999
50	CONC-23-3	X																		1617000
51	EL-24-1	X																		1617001
52	WL-30-1	X																		1617002
53	WL-30-2	X																		1617003
54	WL-30-3	X																		1617004
55	CONC-31-1	X																		1617005
56	CONC-31-2	X																		1617006
57	CONC-31-3	X																		1617007
58	CONC-40-1	X																		1617008
59	CONC-40-2	X																		1617009
60	WL-41-1	X																		1617010
61	WL-41-2	X																		1617011
62	WL-41-3	X																		1617012
63	CONC-42-1	X																		1617013
64	CONC-42-2	X																		1617014
65	CONC-42-3	X																		1617015
66	RFROLL-43-1	X																		1617016
67	RFAG-44-1	X																		1617017
68	RFAG-44-2	X																		1617018
69	RFSH-45-1	X																		1617019
70	CONC-50-1	X																		1617020
71	CONC-50-2	X																		1617021
72	CONC-50-3	X																		1617022

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RES Job # 348548

Page 4 of ____

Submitted by: SCA Environmental, Inc.

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Paint = P
Soil = S	Wipe = W
Swab = SW	F = Food
Drinking Water = DW	Waste Water = WW
O = Other	

ASTM E1792 approved wipe media only

LAB NOTES:

REQUESTED ANALYSIS

#	Client sample ID number (Sample ID's must be unique)	PLM - Short report, Long report, Point Count	TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps	PCM - 7400A, 7400B, OSHA	DUST - Total, Respirable	METALS - Analyte(s) RCRA 8, TCLP, Welding Fume, Metals Scan	ORGANICS - METH	MICROBIOLOGY: Pathogens: Aerobic Plate Count, Salmonella, E.coli O157:H7, Listeria, S.aureus, Camphlobacter: +/- or Quantification	MICROBIOLOGY: E.coli and/or Coliforms: +/- or Quantificatino	MICROBIOLOGY: Microbial Growth: Aerobic Plate Count ID, Bacteria or Y & M: +/- or Quantification	MICROBIOLOGY: Legionella: +/- or Quantification	MICROBIOLOGY: Other: Bioburden, LAL or Environmental	MICROBIOLOGY: Mold: Spore Trap or Bulk: +/- or Quantification	SAMPLER'S INITIALS OR OTHER NOTES:	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)
73	STUCCO-51-1	X																		1617023
74	STUCCO-51-2	X																		1617024
75	STUCCO-51-3	X																		1617025
76	CONC-52-1	X																		1617026
77	WL-10-2 (Not on Original COC)																			1617027
78																				
79																				
80																				
81																				
82																				
83																				
84																				
85																				
86																				
87																				
88																				
89																				
90																				
91																				
92																				
93																				
94																				
95																				
96																				
97																				
98																				
99																				
100																				
101																				
102																				
103																				

RES 348548

SCA Environmental, Inc.

CHAIN OF CUSTODY FORM

650 Delancey St, #222, SF, CA 94107
1 Lakeside Dr, #215, Oakland, CA 94612

Tel 415-8821675 / 510-6456200
Fax 415-9620736 / 415-9620736

CALL/TXT with results:

Email rpt / COC & invoice: dleung@sca-enviro.com & pgervasio@scaehs.com

Email Prj Mgr Name: Chuck Siu Glenn Cass Christina Codemo

Accounting Data:

EMAIL HEADING: MERCY HOUSING 1670-1690 MISSION

(Project #) -	(Project Manager Initials) -	(Site Name/Address) -	(Date MMDD)
F12039	CC	1670 - 1690 MISSION RD., COLMA	4/22

LAB RD SURVEY
REI

COURIER
LAB REP NOTIFIED:
AIRBILL/FLIGHT NO.:
EST ARRIVAL DATE:
Notification DATE/TIME:
Shipper REFERENCE I.D.
EST. ARRIVAL TIME:

Method Reference 7400 PCM AHERA TEM (≤0.005 s/cc AnaSen) CARB-AHERA TEM 0.001 s/cc Ana Sensitivity
PLM (asbestos) Flame AA (Lead)

Sample Media 25 37 mm 0.45 0.8 micron MCEF Bulk Water Wipe

RESULTS DUE: 3 DAYS AM / PM

CHAIN OF CUSTODY DATA:
Sending Info 76 samples submitted by DL (SCA) on 4/22 at 4:30 P
Received by Lab: ______ samples received by ______ on ______ at ______
Received by Analyst: ______ samples received by ______ on ______ at ______

SAMPLE ID	LITERS	~~Results~~ SAMPLE ID	Ins/Blanks/Outs
CONC-1-1,2,3		CONC-20-1,2	
CONC-2-1,2		WL-21-1,2,3	
CONC-3-1,2		CONC-22-1,2,3	
CONC-4-1,2,3		CONC-23-1,2,3	
CONC-5-1,2		EL-24-1	
GASKET-6-1			
EL-7-1		WL-30-1,2,3	
GASKET-8-1		CONC-31-1,2,3	
FLCER-9-1			
WL-10-1		CONC-40-1,2	
RFAG-11-1,2,3		WL-41-1,2,3	
RFROLL-12-1,2,3		CONC-42-1,2,3	
PAINT-13-1,2,3		RFROLL-43-1	
RFMAG-14-1,2		RFAG-44-1,2	
WL-15-1,2,3		RFSH-45-1	
CONC-16-1,2,3			
PUTTY-17-1,2,3	0 LITERS	CONC-50-1,2,3	BLANK
ASPHALT-18-1,2	0 LITERS	STUCCO-51-1,2,3	BLANK
	0 LITERS	CONC-52-1	BLANK

	ASBESTOS											LEAD		
Units (each)	PCM NIOSH 7400	PLM Bulk	CARB 435 (400 Pt Ct) w/ prep	PLM Std Point Count 400	TEM AHERA	CARB AHERA 35-40 grid openings	CARB AHERA 10-15 grid openings					Units (each)	Flame AA	Wipes
< 6 hours	1 to 9 / 10 to 40 / >40											< 6 hours	1 to 9 / 10 to 40 / >40	
24 hours	1 to 9 / 10 to 40 / >40											24 hours	1 to 9 / 10 to 40 / >40	
48 hours	1 to 9 / 10 to 40 / >40											48 hours	1 to 9 / 10 to 40 / >40	
3 to 5 days	1 to 9 / 10 to 40 / >40											3 to 5 days	1 to 9 / 10 to 40 / >40	
> 6 days	1 to 9 / 10 to 40 / >40											> 6 days	1 to 9 / 10 to 40 / >40	

INSTRUCTIONS TO LAB (delete items not applicable AND circle items applicable):

~~1. Pickup requested:~~
~~Contact:~~ ______
~~Time of Call:~~ ______
~~2. Call SCA's contact to acknowledge receipt of samples.~~
~~3. Analyze samples by PCM only.~~
~~4. Analyze inside samples by PCM first; if any sample >0.01 f/cc, contact SCA.~~
~~5. If all samples are <0.01 f/cc, proceed with items 6, 7 or 8, as noted.~~
~~6. Analyze inside samples only; stop if Avg >70 str/mm^2, contact SCA before analyzing outsides or blanks.~~
~~7. Analyze all samples, including outside samples and blanks.~~
~~8. Do NOT analyze outside or blank samples.~~
~~9. Analyze by TEM only the inside air sample with the highest PCM result.~~
10. Serial analysis; stop at first positive (>1%); first trace (<0.1%);except sheetrock and plaster samples.
~~11. Analyze all bulk samples, unless otherwise indicated.~~
~~12. PCB: <25 PPM detection limit required. Authorized to perform cleanup to meet the detection limit.~~
13. ______

Report Number:

Invoice Number:

Supplies /Equipment	Qty
Hi-Vol (3040)	
Lo-Vol (3020)	
TEM / Pb cassettes (3520)	
PCM cassettes (3500)	
Bulk sampling supply (3710)	76

ver 2015

Appendix D

Lead and PCB Laboratory Results

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1604A69

Report Created for: SCA Enviromental, Inc.

1 Lakeside Drive, Suite 215
Oakland, CA 94612

Project Contact: Dan Leung
Project P.O.:
Project Name: F12039; Mercy Housing 1670-1690 Mission Rd. Survey
Project Received: 04/25/2016

Analytical Report reviewed & approved for release on 04/29/2016 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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Glossary of Terms & Qualifier Definitions

Client: SCA Enviromental, Inc.
Project: F12039; Mercy Housing 1670-1690 Mission Rd. Survey
WorkOrder: 1604A69

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 μm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: SCA Enviromental, Inc.
Project: F12039; Mercy Housing 1670-1690 Mission Rd. Survey
WorkOrder: 1604A69

Analytical Qualifiers

J	Result is less than the RL/ML but greater than the MDL. The reported concentration is an estimated value.
a4	reporting limits raised due to the sample's matrix prohibiting a full volume extraction.
h4	sulfuric acid permanganate (EPA 3665) cleanup

Quality Control Qualifiers

F1	MS/MSD recovery and/or RPD is out of acceptance criteria; LCS validated the prep batch.
F2	LCS/LCSD recovery and/or RPD is out of acceptance criteria.
F10	MS/MSD outside control limits. Physical or chemical interferences exist due to sample matrix.

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	SCA Enviromental, Inc.	**WorkOrder:**	1604A69
Date Received:	4/25/16 9:36	**Extraction Method:**	SW3550B
Date Prepared:	4/25/16	**Analytical Method:**	SW8082
Project:	F12039; Mercy Housing 1670-1690 Mission Rd. Survey	**Unit:**	mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
PUTTY-17	**1604A69-012A**	**Solid**	**04/22/2016**	**GC23**	**120042**

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.051	0.50	1	04/27/2016 02:45
Aroclor1221	ND		0.33	0.50	1	04/27/2016 02:45
Aroclor1232	ND		0.032	0.50	1	04/27/2016 02:45
Aroclor1242	ND		0.035	0.50	1	04/27/2016 02:45
Aroclor1248	ND		0.036	0.50	1	04/27/2016 02:45
Aroclor1254	**0.39**	J	0.022	0.50	1	04/27/2016 02:45
Aroclor1260	ND		0.085	0.50	1	04/27/2016 02:45
PCBs, total	**0.39**	J	0.33	0.50	1	04/27/2016 02:45

Surrogates	REC (%)	Limits	Date Analyzed
Decachlorobiphenyl	102	70-130	04/27/2016 02:45

Analyst(s): SS

Analytical Comments: a4,h4

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Analytical Report

Client:	SCA Enviromental, Inc.	**WorkOrder:**	1604A69
Date Received:	4/25/16 9:36	**Extraction Method:**	SW3050B
Date Prepared:	4/25/16	**Analytical Method:**	SW6020
Project:	F12039; Mercy Housing 1670-1690 Mission Rd. Survey	**Unit:**	mg/Kg

Lead

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
OW-1	**1604A69-001A**	**Solid**	**04/22/2016**	**ICP-MS1**	**120057**

Analytes	Result	RL	DF	Date Analyzed
Lead	**410**	5.0	10	04/26/2016 18:04

Surrogates	REC (%)	Limits	
Terbium	101	70-130	04/26/2016 18:04

Analyst(s): DVH

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
GY-2	**1604A69-002A**	**Solid**	**04/22/2016**	**ICP-MS1**	**120057**

Analytes	Result	RL	DF	Date Analyzed
Lead	**67,000**	100	200	04/27/2016 17:10

Surrogates	REC (%)	Limits	
Terbium	93	70-130	04/27/2016 17:10

Analyst(s): DVH

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
RD-3	**1604A69-003A**	**Solid**	**04/22/2016**	**ICP-MS1**	**120057**

Analytes	Result	RL	DF	Date Analyzed
Lead	**72,000**	100	200	04/27/2016 17:16

Surrogates	REC (%)	Limits	
Terbium	97	70-130	04/27/2016 17:16

Analyst(s): DVH

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
GY-4	**1604A69-004A**	**Solid**	**04/22/2016**	**ICP-MS1**	**120057**

Analytes	Result	RL	DF	Date Analyzed
Lead	**23**	5.0	10	04/26/2016 18:41

Surrogates	REC (%)	Limits	
Terbium	109	70-130	04/26/2016 18:41

Analyst(s): DVH

(Cont.)

Angela Rydelius, Lab Manager

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Analytical Report

Client:	SCA Enviromental, Inc.	**WorkOrder:**	1604A69
Date Received:	4/25/16 9:36	**Extraction Method:**	SW3050B
Date Prepared:	4/25/16	**Analytical Method:**	SW6020
Project:	F12039; Mercy Housing 1670-1690 Mission Rd. Survey	**Unit:**	mg/Kg

Lead

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
BR-5	**1604A69-005A**	**Solid**	**04/22/2016**	**ICP-MS1**	**120057**

Analytes	Result	RL	DF	Date Analyzed
Lead	**8200**	100	200	04/27/2016 17:22
Surrogates	REC (%)	Limits		
Terbium	96	70-130		04/27/2016 17:22

Analyst(s): DVH

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
GR-6	**1604A69-006A**	**Solid**	**04/22/2016**	**ICP-MS3**	**120057**

Analytes	Result	RL	DF	Date Analyzed
Lead	**63,000**	100	200	04/26/2016 16:49
Surrogates	REC (%)	Limits		
Terbium	92	70-130		04/26/2016 16:49

Analyst(s): BBO

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
BL-7	**1604A69-007A**	**Solid**	**04/22/2016**	**ICP-MS3**	**120057**

Analytes	Result	RL	DF	Date Analyzed
Lead	**1900**	5.0	10	04/26/2016 16:55
Surrogates	REC (%)	Limits		
Terbium	99	70-130		04/26/2016 16:55

Analyst(s): BBO

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
YW-8	**1604A69-008A**	**Solid**	**04/22/2016**	**ICP-MS1**	**120057**

Analytes	Result	RL	DF	Date Analyzed
Lead	**70,000**	100	200	04/27/2016 17:28
Surrogates	REC (%)	Limits		
Terbium	90	70-130		04/27/2016 17:28

Analyst(s): DVH

(Cont.)

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Analytical Report

Client:	SCA Enviromental, Inc.	**WorkOrder:**	1604A69
Date Received:	4/25/16 9:36	**Extraction Method:**	SW3050B
Date Prepared:	4/25/16	**Analytical Method:**	SW6020
Project:	F12039; Mercy Housing 1670-1690 Mission Rd. Survey	**Unit:**	mg/Kg

Lead

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
WH-9	**1604A69-009A**	**Solid**	**04/22/2016**	**ICP-MS3**	**120057**

Analytes	Result	RL	DF	Date Analyzed
Lead	**780**	5.0	1	04/26/2016 14:27

Surrogates	REC (%)	Limits		
Terbium	98	70-130		04/26/2016 14:27

Analyst(s): DVH

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
GR-10	**1604A69-010A**	**Solid**	**04/22/2016**	**ICP-MS1**	**120057**

Analytes	Result	RL	DF	Date Analyzed
Lead	**74,000**	100	200	04/27/2016 17:35

Surrogates	REC (%)	Limits		
Terbium	95	70-130		04/27/2016 17:35

Analyst(s): DVH

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
FLCER-9	**1604A69-011A**	**Solid**	**04/22/2016**	**ICP-MS1**	**120057**

Analytes	Result	RL	DF	Date Analyzed
Lead	**14**	0.50	1	04/27/2016 11:33

Surrogates	REC (%)	Limits		
Terbium	107	70-130		04/27/2016 11:33

Analyst(s): DVH

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Quality Control Report

Client:	SCA Enviromental, Inc.	**WorkOrder:**	1604A69
Date Prepared:	4/25/16	**BatchID:**	120042
Date Analyzed:	4/25/16	**Extraction Method:**	SW3550B
Instrument:	GC23	**Analytical Method:**	SW8082
Matrix:	Soil	**Unit:**	mg/kg
Project:	F12039; Mercy Housing 1670-1690 Mission Rd. Survey	**Sample ID:**	MB/LCS-120042 1604A52-037AMS/MSD

QC Summary Report for SW8082

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Aroclor1016	ND	-	0.050	-	-	-	-
Aroclor1221	ND	-	0.050	-	-	-	-
Aroclor1232	ND	-	0.050	-	-	-	-
Aroclor1242	ND	-	0.050	-	-	-	-
Aroclor1248	ND	-	0.050	-	-	-	-
Aroclor1254	ND	-	0.050	-	-	-	-
Aroclor1260	ND	0.229	0.050	0.15	-	153, F2	70-130
PCBs, total	ND	-	0.050	-	-	-	-
Surrogate Recovery							
Decachlorobiphenyl	0.0545	0.0584		0.050	109	117	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Aroclor1260	0.214	0.210	0.15	ND	143,F1	140,F1	70-130	2.10	30
Surrogate Recovery									
Decachlorobiphenyl	0.0519	0.0539	0.050		104	108	70-130	3.67	30

NELAP 4033ORELAP

QA/QC Officer

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	SCA Enviromental, Inc.	**WorkOrder:**	1604A69
Date Prepared:	4/25/16	**BatchID:**	120057
Date Analyzed:	4/26/16	**Extraction Method:**	SW3050B
Instrument:	ICP-MS1, ICP-MS3	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	F12039; Mercy Housing 1670-1690 Mission Rd. Survey	**Sample ID:**	MB/LCS-120057 1604A59-001AMS/MSD

QC Summary Report for Metals

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Lead	ND	50.3	0.50	50	-	101	75-125
Surrogate Recovery							
Terbium	499	480		500	100	96	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Lead	139	122	50	62.23	153,F10	120	75-125	12.6	20
Surrogate Recovery									
Terbium	539	520	500		108	104	70-130	3.66	20

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Lead	59.6	62.23	4.23	10

%D Control Limit applied to analytes with concentrations greater than 25 times the reporting limits.

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Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1604A69 **ClientCode: SCAO**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Dan Leung
SCA Enviromental, Inc.
1 Lakeside Drive, Suite 215
Oakland, CA 94612
(510) 645-6200 FAX: (510) 839- 6200

Email: dleung@sca-enviro.com
cc/3rd Party:
PO:
ProjectNo: F12039; Mercy Housing 1670-1690 Mission Rd. Survey

Bill to:
Accounts Payable
SCA Enviromental, Inc.
1 Lakeside Drive, Suite 215
Oakland, CA 94612
emuise@sca-ic.com;pgervasio@scaehs

Requested TAT: 5 days;

Date Received: 04/25/2016
Date Logged: 04/25/2016

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1604A69-001	OW-1	Solid	4/22/2016	☐		A										
1604A69-002	GY-2	Solid	4/22/2016	☐		A										
1604A69-003	RD-3	Solid	4/22/2016	☐		A										
1604A69-004	GY-4	Solid	4/22/2016	☐		A										
1604A69-005	BR-5	Solid	4/22/2016	☐		A										
1604A69-006	GR-6	Solid	4/22/2016	☐		A										
1604A69-007	BL-7	Solid	4/22/2016	☐		A										
1604A69-008	YW-8	Solid	4/22/2016	☐		A										
1604A69-009	WH-9	Solid	4/22/2016	☐		A										
1604A69-010	GR-10	Solid	4/22/2016	☐		A										
1604A69-011	FLCER-9	Solid	4/22/2016	☐		A										
1604A69-012	PUTTY-17	Solid	4/22/2016	☐	A											

Test Legend:

1	8082_PCB_ESL_Solid	2	PBMS_TTLC_S	3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Jena Alfaro

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: SCA ENVIROMENTAL, INC.
QC Level: LEVEL 2
Work Order: 1604A69
Project: F12039; Mercy Housing 1670-1690 Mission Rd. Survey
Client Contact: Dan Leung
Date Logged: 4/25/2016
Comments:
Contact's Email: dleung@sca-enviro.com

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1604A69-001A	OW-1	Solid	SW6020 (Lead)	1	Small Clear Plastic Tub w/ Attached Lid	☐	4/22/2016	5 days		☐	
1604A69-002A	GY-2	Solid	SW6020 (Lead)	1	Small Clear Plastic Tub w/ Attached Lid	☐	4/22/2016	5 days		☐	
1604A69-003A	RD-3	Solid	SW6020 (Lead)	1	Small Clear Plastic Tub w/ Attached Lid	☐	4/22/2016	5 days		☐	
1604A69-004A	GY-4	Solid	SW6020 (Lead)	1	Small Clear Plastic Tub w/ Attached Lid	☐	4/22/2016	5 days		☐	
1604A69-005A	BR-5	Solid	SW6020 (Lead)	1	Small Clear Plastic Tub w/ Attached Lid	☐	4/22/2016	5 days		☐	
1604A69-006A	GR-6	Solid	SW6020 (Lead)	1	Small Clear Plastic Tub w/ Attached Lid	☐	4/22/2016	5 days		☐	
1604A69-007A	BL-7	Solid	SW6020 (Lead)	1	Small Clear Plastic Tub w/ Attached Lid	☐	4/22/2016	5 days		☐	
1604A69-008A	YW-8	Solid	SW6020 (Lead)	1	Small Clear Plastic Tub w/ Attached Lid	☐	4/22/2016	5 days		☐	
1604A69-009A	WH-9	Solid	SW6020 (Lead)	1	Small Clear Plastic Tub w/ Attached Lid	☐	4/22/2016	5 days		☐	
1604A69-010A	GR-10	Solid	SW6020 (Lead)	1	Small Clear Plastic Tub w/ Attached Lid	☐	4/22/2016	5 days		☐	
1604A69-011A	FLCER-9	Solid	SW6020 (Lead)	1	Small Clear Plastic Tub w/ Attached Lid	☐	4/22/2016	5 days		☐	
1604A69-012A	PUTTY-17	Solid	SW8082 (PCBs Only)	1	Small Clear Plastic Tub w/ Attached Lid	☐	4/22/2016	5 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

1604A09

McCampbell Analytical, Inc.

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CHAIN OF CUSTODY RECORD

TURN AROUND TIME: RUSH ☐ 1 DAY ☐ 2 DAY ☐ 3 DAY ☐ 5 DAY ☒

GeoTracker EDF ☐ PDF ☒ EDD ☐ Write On (DW) ☐ EQuIS ☐ 10 DAY ☐

Effluent Sample Requiring "J" flag ☐ **UST Clean Up Fund Project** ☐; **Claim #**_______

Report To: Dan Leung **Bill To:** SCA Environmental, Inc.
Company: SCA Environmental, Inc.
1 Lakeside Dr., #215 Oakland, CA 94612 pgervasio@scaehs.com and
Tele: (415) 867-9544 **E-Mail:** dleung@sca-enviro.com
Project #: F12039 **Project Name:** MERCY HOUSING 1670-1690
Project Location: 1670 - 1690 MISSION RD, COLMA **Purchase Order#** MISSION RD SURVEY
Sampler Signature: Dan Leung

Analysis Request

SAMPLE ID	Location/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	MATRIX Ground Water	Waste Water	Drinking Water	Sea Water	Soil	Air	Sludge	Other	METHOD PRESERVED HCL	HNO_3	Other	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors / Congeners	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)***	LUFT 5 Metals (200.8 / 6020)***	Metals (200.8 / 6020)***	Lab to Filter sample for Dissolved metals analysis	LEAD (TTLC)	PCB			
OW-1		4/22		1								X																			X				
GY-2				1								X																			X				
RD-3				1								X																			X				
GY-4				1								X																			X				
BR-5				1								X																			X				
GR-6				1								X																			X				
BL-7				1								X																			X				
YW-8				1								X																			X				
WH-9				1								X																			X				
GR-10				1								X																			X				
FLCER-9				1								X																			X				
PUTTY-17				1								X																				X			

**MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

*** If metals are requested for water samples and the water type is not specified on the chain of custody, then MAI will default to metals by E200.8.

Relinquished By:	Date:	Time:	Received By:
Dan Leung	4/22	P	UPS
UPS	4/25/16	9:47	[signature]

ICE/t° _______
GOOD CONDITION _____
HEAD SPACE ABSENT ______
DECHLORINATED IN LAB ______
APPROPRIATE CONTAINERS ______
PRESERVED IN LAB _____

COMMENTS:
PCBs: <25 PPM detection limit required. Authorized to perform cleanup to meet the detection limit.
FLCER-9 → LEAD (TTLC)
PUTTY-17 → PCB

VOAS O&G METALS OTHER HAZARDOUS:
PRESERVATION____________ pH<2_____________

K239 448 1862
TRACKING NUMBER

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Sample Receipt Checklist

Client Name:	**SCA Enviromental, Inc.**	Date and Time Received:	**4/25/2016 09:36**
Project Name:	**F12039; Mercy Housing 1670-1690 Mission Rd. Survey**	Date Logged:	**4/25/2016**
WorkOrder №:	**1604A69** Matrix: Solid	Received by:	Jena Alfaro
Carrier:	UPS	Logged by:	Jena Alfaro

Chain of Custody (COC) Information

	Yes	No	NA
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Sample IDs noted by Client on COC?	☑	☐	
Date and Time of collection noted by Client on COC?	☑	☐	
Sampler's name noted on COC?	☑	☐	

Sample Receipt Information

	Yes	No	NA
Custody seals intact on shipping container/cooler?	☐	☐	☑
Shipping container/cooler in good condition?	☑	☐	
Samples in proper containers/bottles?	☑	☐	
Sample containers intact?	☑	☐	
Sufficient sample volume for indicated test?	☑	☐	

Sample Preservation and Hold Time (HT) Information

	Yes	No	NA
All samples received within holding time?	☑	☐	
Sample/Temp Blank temperature	Temp:		☑
Water - VOA vials have zero headspace / no bubbles?	☐	☐	☑
Sample labels checked for correct preservation?	☑	☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	☐	☐	☑
Samples Received on Ice?	☐	☑	

UCMR3 Samples:

	Yes	No	NA
Total Chlorine tested and acceptable upon receipt for EPA 522?	☐	☐	☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	☐	☐	☑

Comments:

APPENDIX G NOISE MONITORING DATA

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Veterans Village Project
Appendix G - Noise Monitoring Data
Prepared by MIG|TRA Environmental Sciences

METER 1

Date	*Hour*	*Leq*	*CNEL*	*Ldn*	*L(10)*	*L(33)*	*L(50)*	*L(90)*	*Lmax*	*Lmin*
7-Jun-16	8:00 AM	61.0	61.0	61.0	65.0	60.6	57.5	50.2	78.8	47.3
7-Jun-16	9:00 AM	58.9	58.9	58.9	63.1	58.6	54.8	48.8	75.8	46.5
7-Jun-16	10:00 AM	59.8	59.8	59.8	63.5	59.7	57.4	52.9	71.7	46.9
7-Jun-16	11:00 AM	59.6	59.6	59.6	62.7	58.3	55.2	49.2	78.6	46.3
7-Jun-16	12:00 PM	59.4	59.4	59.4	62.6	58.8	56.0	50.3	75.1	46.6
7-Jun-16	1:00 PM	59.9	59.9	59.9	63.4	59.2	56.8	50.7	74.6	47.8
7-Jun-16	2:00 PM	60.9	60.9	60.9	63.4	59.0	56.4	50.3	77.8	47.7
7-Jun-16	3:00 PM	64.4	64.4	64.4	65.3	60.1	57.8	51.4	84.1	48.5
7-Jun-16	4:00 PM	64.9	64.9	64.9	66.3	62.1	59.6	52.5	84.8	49.5
7-Jun-16	5:00 PM	62.7	62.7	62.7	65.7	62.3	60.0	51.8	84.0	49.0
7-Jun-16	6:00 PM	62.4	62.4	62.4	66.5	62.7	59.9	51.3	75.6	47.0
7-Jun-16	7:00 PM	60.6	65.6	60.6	65.0	60.0	55.6	48.8	75.2	46.6
7-Jun-16	8:00 PM	59.4	64.4	59.4	64.0	58.3	53.1	47.1	74.5	43.6
7-Jun-16	9:00 PM	58.2	63.2	58.2	62.7	54.5	49.9	45.4	79.1	42.8
7-Jun-16	10:00 PM	56.8	66.8	66.8	61.7	51.5	47.5	44.2	71.6	42.2
7-Jun-16	11:00 PM	56.8	66.8	66.8	58.8	47.7	45.5	43.2	84.0	41.0
8-Jun-16	12:00 AM	51.6	61.6	61.6	52.1	44.2	42.4	40.7	73.0	39.1
8-Jun-16	1:00 AM	50.7	60.7	60.7	53.2	43.4	41.1	39.0	69.5	37.5
8-Jun-16	2:00 AM	48.6	58.6	58.6	46.9	39.9	39.1	37.9	71.6	37.1
8-Jun-16	3:00 AM	49.4	59.4	59.4	48.1	40.2	39.3	38.1	71.6	37.4
8-Jun-16	4:00 AM	50.9	60.9	60.9	49.1	42.3	41.5	40.0	71.0	37.7
8-Jun-16	5:00 AM	55.8	65.8	65.8	59.2	50.3	48.0	45.0	73.3	41.1
8-Jun-16	6:00 AM	59.3	69.3	69.3	63.5	54.6	50.3	46.7	79.8	44.0
8-Jun-16	7:00 AM	63.1	63.1	63.1	66.8	62.4	58.8	49.7	88.0	46.3
Meter 1 Average		60.0	63.5	63.0	63.1	58.4	55.4	48.8	88.0	37.1
Note: Hourly values based on 10-minute interval measurement periods										

METER 2

Date	*Hour*	*Leq*	*CNEL*	*Ldn*	*L(10)*	*L(33)*	*L(50)*	*L(90)*	*Lmax*	*Lmin*
7-Jun-16	8:00 AM	54.6	54.6	54.6	57.3	52.8	52.1	50.2	72.3	48.0
7-Jun-16	9:00 AM	54.3	54.3	54.3	57.0	52.5	51.6	49.7	71.4	47.7
7-Jun-16	10:00 AM	54.6	54.6	54.6	56.3	53.8	53.1	51.6	70.6	49.1
7-Jun-16	11:00 AM	57.4	57.4	57.4	58.7	53.4	52.6	51.1	77.3	49.4
7-Jun-16	12:00 PM	57.6	57.6	57.6	60.1	54.5	53.4	51.6	78.9	49.6
7-Jun-16	1:00 PM	57.4	57.4	57.4	59.8	54.5	53.3	51.5	76.0	49.2
7-Jun-16	2:00 PM	58.5	58.5	58.5	60.4	53.8	52.7	51.0	76.6	49.2
7-Jun-16	3:00 PM	58.3	58.3	58.3	59.0	55.1	54.4	52.8	75.4	50.3
7-Jun-16	4:00 PM	58.1	58.1	58.1	58.4	55.3	54.6	53.2	76.3	51.1
7-Jun-16	5:00 PM	64.3	64.3	64.3	58.4	54.7	54.0	52.5	97.6	50.9
7-Jun-16	6:00 PM	56.6	56.6	56.6	58.4	55.5	53.2	50.9	75.3	49.3

METER 2 (cont.)

Date	*Hour*	*Leq*	*CNEL*	*Ldn*	*L(10)*	*L(33)*	*L(50)*	*L(90)*	*Lmax*	*Lmin*
7-Jun-16	7:00 PM	54.4	59.4	54.4	55.6	52.7	52.0	50.3	73.6	48.7
7-Jun-16	8:00 PM	52.2	57.2	52.2	54.4	52.1	51.0	48.7	70.6	45.5
7-Jun-16	9:00 PM	50.5	55.5	50.5	52.6	50.1	49.2	47.3	70.7	44.9
7-Jun-16	10:00 PM	49.6	59.6	59.6	51.4	49.2	48.4	46.6	63.7	44.3
7-Jun-16	11:00 PM	49.5	59.5	59.5	51.4	47.9	47.0	45.4	66.6	43.0
8-Jun-16	12:00 AM	45.5	55.5	55.5	47.5	45.2	44.4	42.8	61.8	40.9
8-Jun-16	1:00 AM	48.0	58.0	58.0	52.3	44.3	42.9	41.0	71.8	38.4
8-Jun-16	2:00 AM	43.0	53.0	53.0	44.1	41.5	40.8	39.5	60.7	38.2
8-Jun-16	3:00 AM	43.3	53.3	53.3	44.3	41.7	41.0	39.7	61.2	38.2
8-Jun-16	4:00 AM	44.6	54.6	54.6	46.4	44.5	43.8	42.3	59.3	39.3
8-Jun-16	5:00 AM	50.8	60.8	60.8	53.3	50.8	49.8	47.4	62.8	43.2
8-Jun-16	6:00 AM	51.9	61.9	61.9	53.9	51.8	50.9	48.8	64.8	46.2
8-Jun-16	7:00 AM	53.9	53.9	53.9	55.6	53.5	52.7	50.8	76.4	48.4
Meter 2 Average		55.8	58.2	57.9	56.3	52.3	51.4	49.6	97.6	38.2

Note: Hourly values based on 10-minute interval measurement periods, other than for 6 PM, which constists of 4 10-minute intervals.

Calculated Noise Levels

	Distance from source					
	RNL	UF	100	230	300	500
Backhoe	80	0.4	70	63	60	56
Bulldozer	85	0.4	75	68	65	61
Compact roller	80	0.2	67	60	57	53
Concrete mixer	85	0.4	75	68	65	61
Crane	85	0.16	71	64	61	57
Excavator	85	0.4	75	68	65	61
Generator	82	0.5	73	66	63	59
Pneumatic tools	85	0.5	76	69	66	62
Scraper	85	0.4	75	68	65	61
Truck (concrete and supplies delivery)	85	0.4	75	68	65	61
Vibratory compactor	80	0.2	67	60	57	53

RNL - Reference Noise Level (50 ft), UF - Usage Factor

Calculated Groundborne Vibration

PPV

Equipment	Reference (feet)	Estimated (feet)		
	25	100	230	500
Vibratory roller	0.21	0.046	0.018	0.008
Large bulldozer	0.089	0.019	0.008	0.003
Small bulldozer	0.003	0.001	0.000	0.000
Loaded truck	0.076	0.017	0.007	0.003
Jackhammer	0.035	0.008	0.003	0.001

Lv

Equipment	Reference (feet)	Estimated (feet)		
	25	100	230	500
Vibratory roller	84	66	55	45
Large bulldozer	87	69	58	48
Small bulldozer	58	40	29	19
Loaded truck	86	68	57	47
Jackhammer	79	61	50	40

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APPENDIX H TRAFFIC IMPACT ANALYSIS

- **Hexagon Transportation Consultants, Inc., 2016 (April 25). Transportation Impact Analysis Report for the Veterans Village Affordable Housing Project in Colma, California.**

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Memorandum

Date: April 25, 2016

To: Barbara Beard, MIG/TRA Environmental Sciences, Inc.

From: Brett Walinski, T.E.

Subject: Transportation Impact Analysis Report for the Veterans Village Affordable Housing Project in Colma, California

---

Hexagon Transportation Consultants, Inc. has completed this transportation impact analysis report for the proposed Veterans Village housing project on Mission Road in Colma, California. The project site is located on Mission Road, less than one quarter mile south of El Camino Real (SR 82). The site location is shown on Figure 1. The project would consist of 65 affordable housing units and one resident manager unit. Although the site is currently used as vehicle storage for adjacent businesses and for a machine shop, for the purposes of the traffic impact analysis, it will be assumed that the site is vacant. Access to the project would be provided via two driveways on Mission Road. The site plan is shown on Figure 2.

Scope of Study

The purpose of this study is to evaluate AM and PM peak hour traffic conditions at the two site driveways and two intersections near the site: Mission Road/El Camino Real and Mission Road/Lawndale Boulevard. The study intersections are shown on Figure 3.

The AM peak hour of traffic is the 60-minute peak period between 7:00 AM and 9:00 AM, and the PM peak hour is the 60-minute peak period between 4:00 PM and 6:00 PM. It is during these periods that the most congested traffic conditions occur on an average weekday. Traffic conditions were evaluated for the following scenarios:

Scenario 1: *Existing Conditions.* Existing conditions are represented by existing peak-hour traffic volumes on the existing roadway network. Existing traffic volumes were obtained from recent traffic counts conducted in March 2016.

Scenario 2: *Existing Plus Project Conditions*. Project-generated traffic volumes were added to existing traffic volumes to estimate existing plus project conditions. Existing plus project conditions were evaluated relative to existing conditions in order to determine potential project impacts.

Scenario 3: *Cumulative Conditions.* Cumulative traffic volumes without the project were estimated based on previous forecasts of traffic volumes in the study area. No improvements to the roadway network were assumed within the study area.

Scenario 4: *Cumulative Plus Project Conditions*. Project-generated traffic volumes were added to Cumulative traffic volumes without the project to estimate cumulative plus project conditions. Cumulative plus project conditions were evaluated relative to cumulative conditions without the project in order to determine potential project impacts.

A Congestion Management Agency (CMA) analysis was not required because the project is estimated to generate fewer than 100 peak-hour trips.

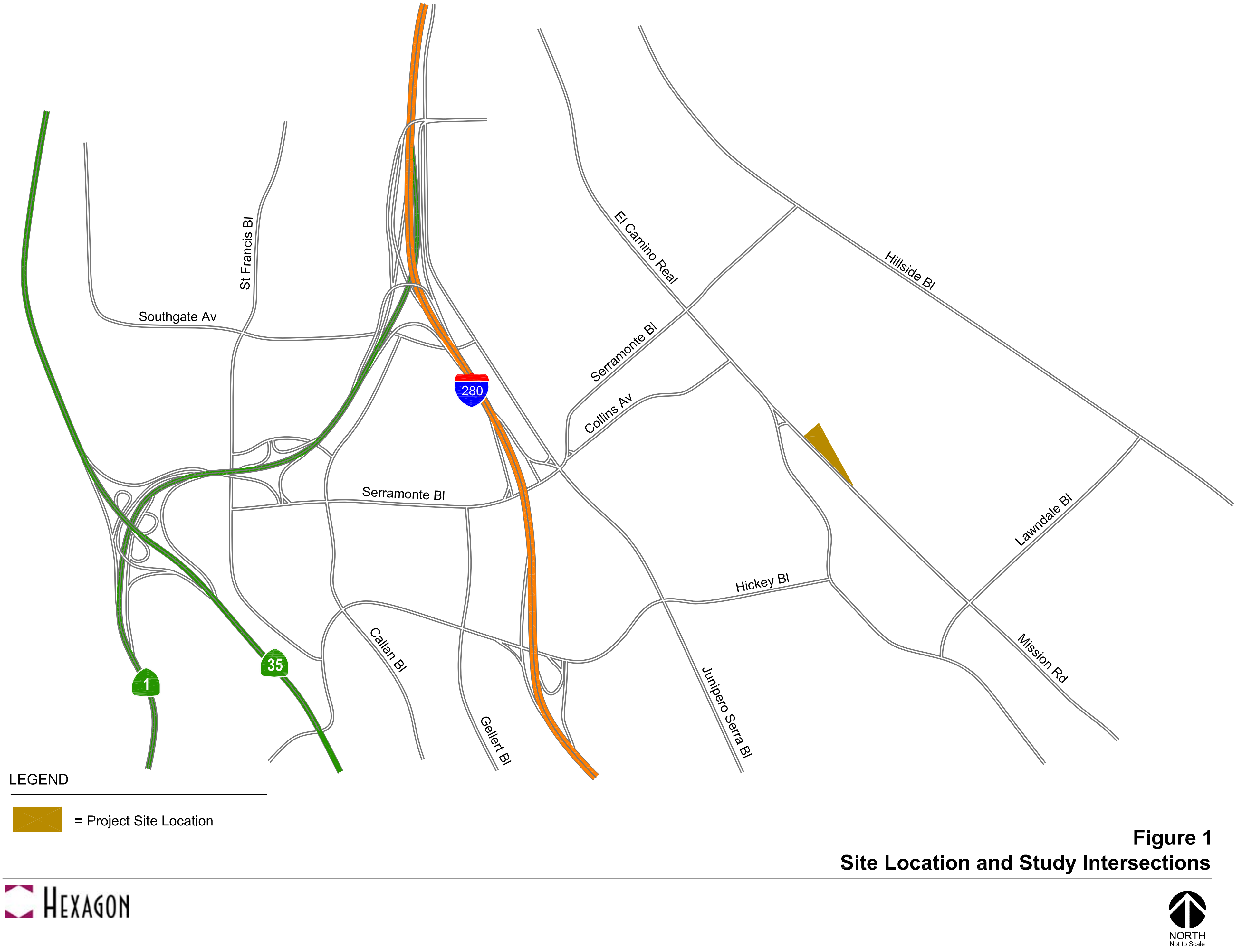

Figure 1
Site Location and Study Intersections

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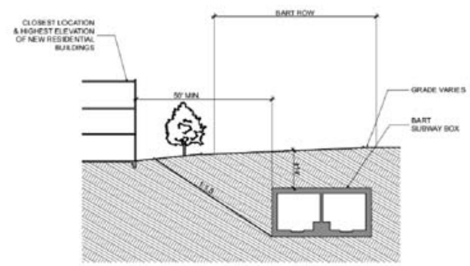


BUILDING AREA

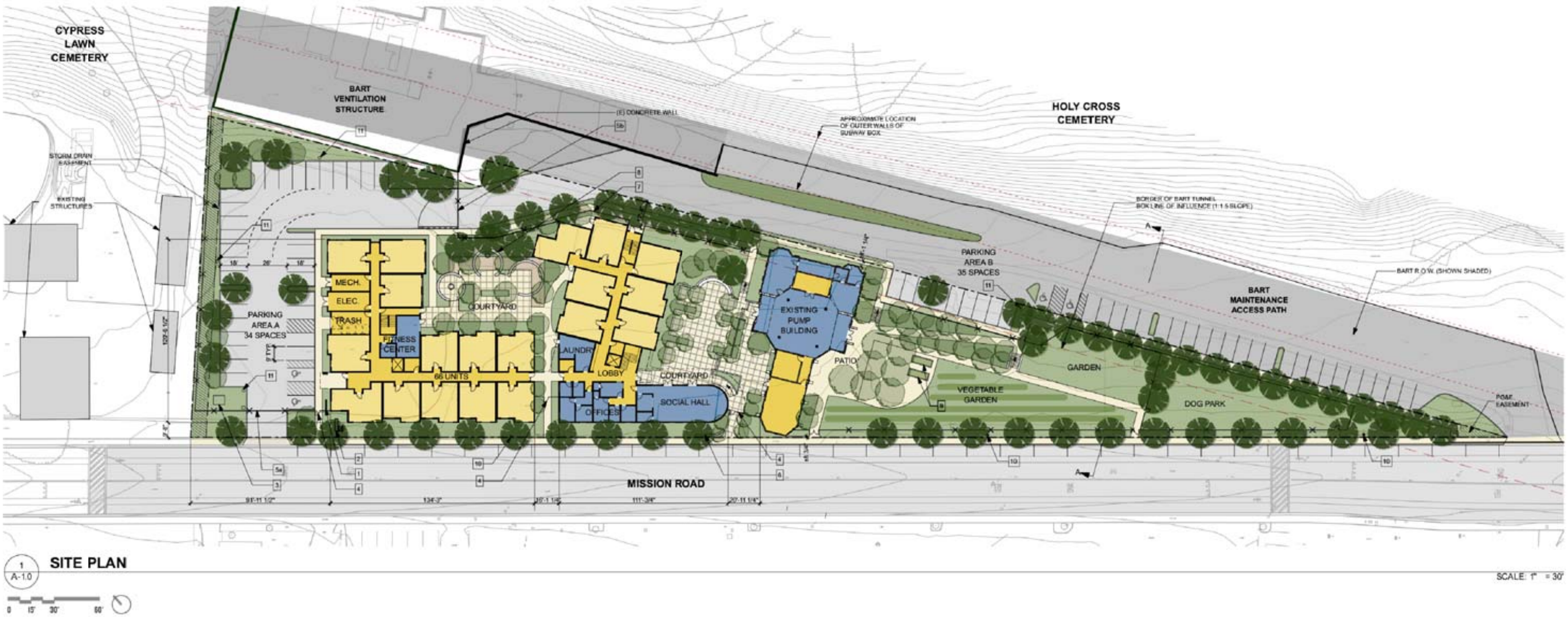
	NUMBER OF UNITS			SQUARE FOOTAGE				
	BUILDING A			BUILDING A				PUMP BUILDING
	STUDIOS	1 BEDROOMS	2 BEDROOMS	RESIDENTIAL GROSS	COMMON	CIRCULATION/ UTILITY*	TOTAL BLDG. A	COMMON
	0.0%	98.5%	1.5%					
3RD FLOOR		22	1	14,753	346	4,051	19,150	
2ND FLOOR		24		15,374	0	4,408	19,782	
GROUND FLOOR		19		11,982	3,531	5,381	20,894	5,106
SUBTOTAL	0	65	1					
TOTALS		**66**		**42,109**	**3,877**	**13,840**	**59,826**	**5,106**

SHEET NOTES

1 GAS METER
2 BACK FLOW PREVENTERS
3 PAD MOUNTED TRANSFORMER
4 ENTRY GATE W/ PERFORATED ALUMINUM PANEL
5a MOTORIZED SLIDING VEHICLE GATE
5a MOTORIZED SWING VEHICLE GATE
6 LOW CONCRETE WALL WITH BUILDING SIGNAGE, SEE A5.1
7 CONCRETE RETAINING WALL, SEE CIVIL DRAWINGS
8 CONCRETE SEAT WALLS, SEE LANDSCAPE DRAWINGS
9 RAISED ACCESSIBLE PLANTERS
10 EXISTING HYDRANT
11 PARKING POLE LIGHT FIXTURE, SEE A5.1. SEE LANDSCAPE DRAWINGS FOR SITE FIXTURES & A2.1 FOR EXTERIOR BUILDING FIXTURES

LEGEND

PROPERTY LINE
BART TUNNEL LINE OF INFLUENCE
OUTER WALLS OF SUBWAY BOX
(N) METAL FENCE, S.L.D.
ACCESSIBLE PARKING SPACE
EASEMENT, SEE SURVEY
RESIDENTIAL
CIRCULATION/MAINTENANCE
COMMON AREAS



VETERANS VILLAGE | A-1.0 SITE PLAN & PROJECT DATA
COLMA, CA | 2/22/16 | MERCY HOUSING | #1502

VAN METER WILLIAMS POLLACK LLP

Figure 2
Site Plan

HEXAGON

NORTH
Not to Scale

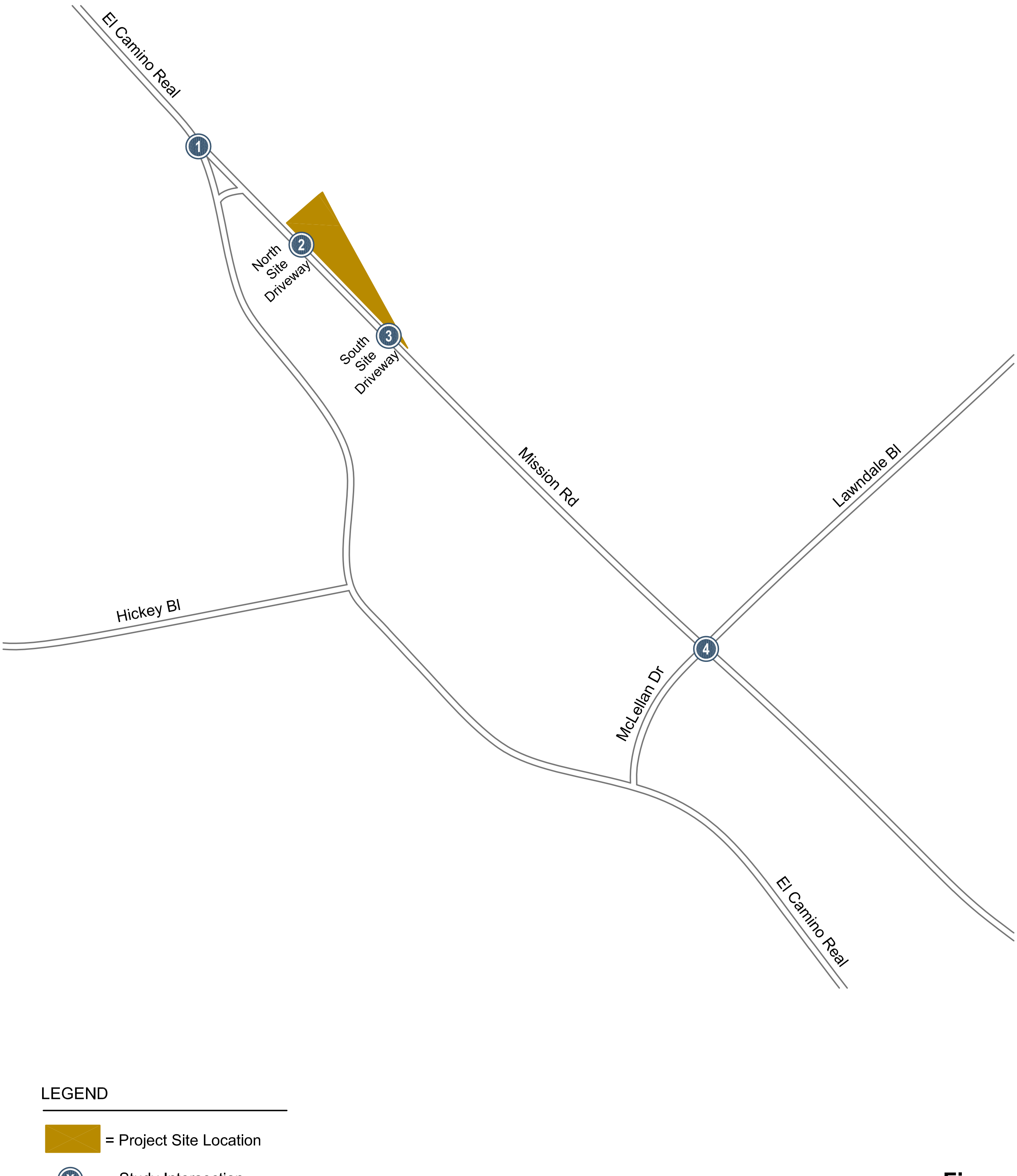


Figure 3
Study Intersections

Intersection operations were evaluated using the 2000 Highway Capacity Manual (HCM) level of service methodology for signalized and unsignalized intersections during the peak hours. Vehicle queuing was evaluated for the project's site access driveways.

Existing Transportation Setting

Roadways

Regional access to the project site would be provided via I-280, El Camino Real (SR 82) and Hickey Boulevard. Local access is provided by Mission Road and Lawndale Boulevard/McLellan Drive.

Interstate 280 (I-280) is a north/south freeway that extends from San Francisco to San Jose. In the vicinity of the project, I-280 has four lanes in each direction and has a posted speed limit of 65 miles per hour. The project is served by an interchange at Hickey Boulevard. The Hickey Boulevard interchange provides full access with on- and off-ramps to both northbound and southbound I-280.

El Camino Real (SR 82) is a four- to six-lane, north-south road that extends between San Francisco to San Jose. The posted speed limit on this roadway is 40 miles per hour near the project site. El Camino Real intersects Mission Road just north of the project site. Parking is permitted in some locations on both sides of the street north of Mission Road.

Hickey Boulevard is a four-lane, east-west road with a posted speed limit of 35 miles per hour. Hickey Boulevard primarily serves as a connection between major facilities to the west (I-280, Junipero Serra Boulevard, and El Camino Real) and residential land uses to the east.

Mission Road is a two-lane, north-south road that extends between El Camino Real at the north end in Colma, to Chestnut Avenue at the south end in South San Francisco. The posted speed limit on this roadway is 30 miles per hour near the project site. Mission Road would provide direct access to the project site via two driveways. Parking is permitted on both sides of the street along most of Mission Road between El Camino Real and Lawndale Boulevard, but there are several sections designated as no parking. Most of the parking is limited to 4-hours in duration. There are also a few 30-minute duration parking spaces.

Lawndale Boulevard is a two-lane, east-west road that extends between Mission Road and Hillside Boulevard. The posted speed limit on this roadway is 35 miles per hour. Lawndale Boulevard continues west of Mission Road as McLellan Drive, which is four lanes wide, with a posted speed limit of 25 miles per hour and metered parking on street over some sections.

Bicycle and Pedestrian Facilities

Bicycle facilities in the immediate vicinity of the site include an existing Class II bike lane on Mission Road from El Camino Real to Lawndale Boulevard, which passes directly along the site frontage, and an existing Class II bike lane on Lawndale Boulevard from Mission Road to Hillside Boulevard.

Existing pedestrian facilities in the project area consist of sidewalks found along most previously-described roadways in the study area near the site, with the following exceptions. El Camino Real south and west of the intersection of Mission Road does not have sidewalks and there are no crosswalks at the intersection of El Camino Real and Mission Road. There are no sidewalks on the north side of McLellan Drive immediately west of Mission Road. There is no sidewalk on the east side of Mission Road from the main entrance of Holy Cross cemetery south to Lawndale Boulevard, south of the project site.

There are two existing mid-block crosswalks located on Mission Road within 150 feet of the planned site driveway locations. The signalized intersection at Mission Road and Lawndale Boulevard/McLellan Drive has pedestrian crosswalks, curb ramps, and pedestrian-actuated crossing phases.

Transit service

Existing transit service in the area includes BART and SamTrans. The South San Francisco BART Station is located one-half mile south of the project site near the intersection of Mission Road and McLellan Drive. Trains operate from 4:00 AM to midnight on weekdays with 7- to 8-minute headways during peak hours. The SamTrans ECR Line operates between the Daly City BART station and the Palo Alto Transit Center between 4:00 AM and 2:00 AM on weekdays with 15-minute headways during peak hours. It also provides weekend service. The nearest bus stops are located on El Camino Real just north of the entrance to Cypress Lawn east, 850 feet north of the project site.

Besides the SamTrans ECR Line, the nearest SamTrans bus services are provided at the South San Francisco BART station or across the street from the BART station at the El Camino High School. Line 35 provides service between El Camino High School and the intersection of Warwick Street and Christen Avenue west of I-280. It operates on school days only, arriving at El Camino High School twice just before the start of school and departing three times just after the end of school. Line 122 provides service between the South San Francisco BART Station and the Stonestown Shopping Center/San Francisco State University on 20- to 30-minute headways between 5:00 AM and 11:00 PM on weekdays. Line 122 also provides weekend service. Line 131 provides service between the Serramonte Center and Airport Boulevard and Linden Avenue in South San Francisco, with an intermediate stop at the South San Francisco BART Station. Line 131 operates on 15-minute headways between 5:00 AM and 11:00 PM on weekdays. Line 131 also provides weekend service. The South City Shuttle (SCS) provides free shuttle service between 7:00 AM and 7:00 PM on a loop route through South San Francisco with headways between 40 and 70 minutes. It has a stop at the South San Francisco BART Station.

Existing Intersection Geometry and Traffic Volumes

The existing intersection lane geometrics are shown on Figure 4. Existing traffic volumes were obtained from peak-hour counts conducted in March 2016. Existing traffic volumes are shown on Figure 5. The count data are included in Appendix A.

Observed Existing Traffic and Parking Conditions

Traffic conditions in the field were observed in order to identify existing operational deficiencies and to confirm the accuracy of calculated levels of service. The purpose of this effort was (1) to identify any existing traffic problems that may not be directly related to intersection level of service, and (2) to identify any locations where the level of service calculation does not accurately reflect level of service in the field. The field observations revealed the following.

- ***Mission Road and Lawndale Boulevard/McLellan Drive (AM peak hour).*** During the AM peak hour, traffic conditions operate well except during the 15-minute period preceding the first bell (8:10 AM) at El Camino High School. During this period, the increase in vehicular traffic and pedestrian traffic significantly increases congestion at the intersection, causing increased vehicle queues and increased delays. During this period, the high volume of pedestrians traveling eastbound across Mission Road from the BART side to the High School side impede eastbound right turning vehicles, causing frequent vehicle backups on McLellan Drive back to and through the adjacent signalized BART intersection west of Mission Road. There is also pedestrian traffic across McLellan Drive from the north to the south. The volume of pedestrian traffic adds pedestrian phases to the signal cycle, thus increasing the cycle length and, accordingly, increasing the vehicle queues. The vehicle queues northbound on Mission Road back up from Lawndale Boulevard to the location of the first BART driveway and the main driveway into the High School- a queue of about 300 feet.

Veterans Village

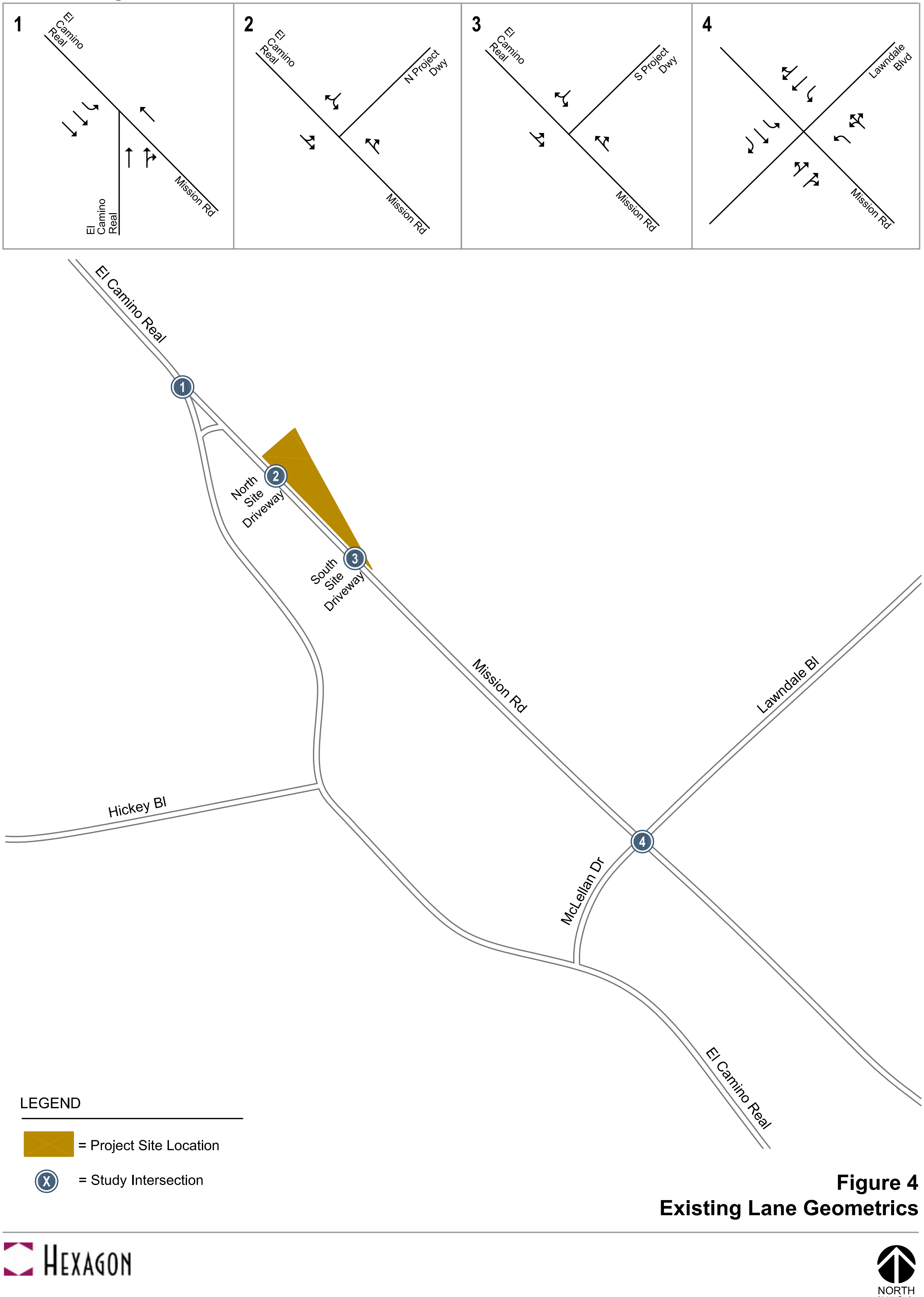


Figure 4
Existing Lane Geometrics

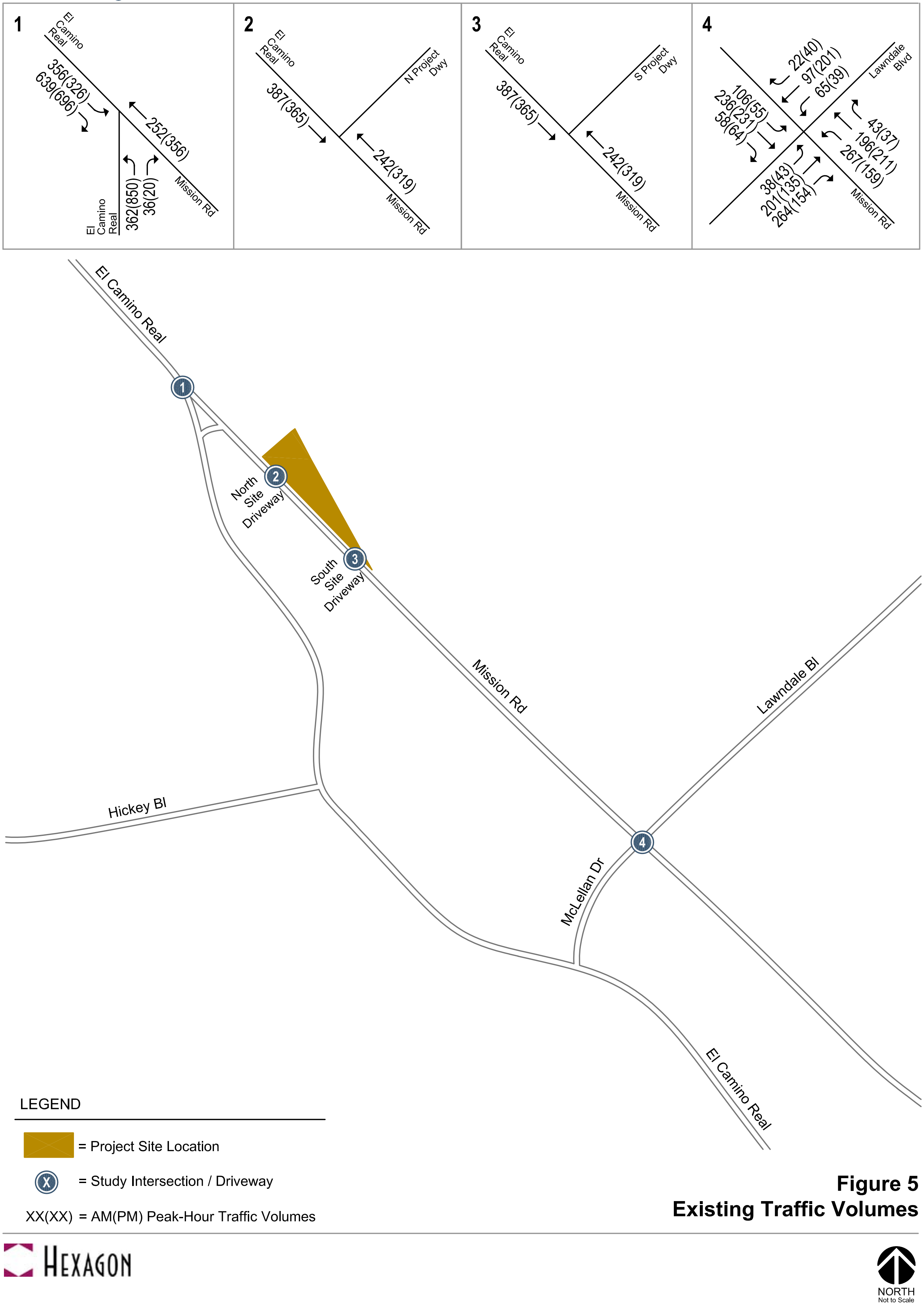


Figure 5
Existing Traffic Volumes

- ***Mission Road and Lawndale Boulevard/McLellan Drive (PM peak hour).*** As in the AM peak hour, during the PM peak hour, the vehicle queues northbound on Mission Road occasionally back up from Lawndale Boulevard to the location of the first BART driveway and the main driveway into the High School. Occasionally during the PM peak hour, westbound vehicle queues extend from the adjacent signalized BART intersection back to Mission Road. This is because vehicles are queued back from the driveway into the Trader Joe's parking lot.
- ***Mission Road Parking.*** On the weekday that conditions were observed, by the end of the AM peak hour, the on-street parking spaces on Mission Road were about two-thirds occupied from the project site northward to El Camino Real. South of the project site, the on-street spaces were mostly vacant, except for the 10 on-street spaces just north of Lawndale Boulevard adjacent to the condominiums. During the mid-afternoon and the beginning of the PM peak hour, virtually all of the on-street parking spaces were occupied on Mission Road between the project site and El Camino Real. By the end of the PM peak hour, half of these on-street parking spaces were vacant.

Project Traffic Estimates

The magnitude of traffic produced by a new development and the locations where that traffic would appear were estimated using a three-step process: (1) trip generation, (2) trip distribution, and (3) trip assignment. In determining project trip generation, the magnitude of traffic entering and exiting the site was estimated for the AM and PM peak hours. As part of the project trip distribution step, an estimate was made of the directions to and from which the project trips would travel. In the project trip assignment step, the project trips were assigned to specific streets and intersections in the study area. These procedures are described further in the following paragraphs.

Through empirical research, data has been collected that correlate to common land uses their propensity for producing traffic. Thus, for the most common land uses there are standard trip generation rates that can be applied to help predict the future traffic increases that would result from a new development. The trip generation estimates for the proposed project are based on rates obtained from the Institute of Transportation Engineers' (ITE) publication *Trip Generation*, 9th Edition. Based on the likely demographics of the residents, the vehicle trip generating characteristics of an affordable housing development for veterans was estimated to be most closely approximated by the trip generation rates applicable to senior attached housing. Based on the ITE rates, it is estimated that the project would generate 227 trips per day, with 13 trips occurring during the AM peak hour and 17 trips occurring during the PM peak hour. The project trip generation estimates are presented in Table 1.

Table 1
Project Trip Generation Estimates

					AM Peak Hour				PM Peak Hour			
Land Use	Size	unit	land use code	Daily Trips	Rate	In	Out	Total	Rate	In	Out	Total
Veteran Housing	66	d.u.	252	227	0.20	4	9	13	0.26	9	8	17

All Rates based on ITE *Trip Generation*, 9th Edition, for Senior Adult Housing- Attached Use.

The trip distribution pattern for the proposed project was estimated based on existing travel patterns in the area. Trips were assigned to the roadway network in accordance with the trip distribution. The project trip distribution and assignment are shown on Figure 6.

Existing plus project traffic volumes are represented by existing traffic volumes plus project trips. Existing plus project traffic volumes are shown on Figure 7. Cumulative volumes were estimated based on previous forecasts of traffic volumes in the study area from the *CarMax Transportation Impact Analysis* dated November 19, 2015. Cumulative plus project traffic volumes are represented by cumulative traffic volumes plus project trips. Cumulative traffic volumes (Cumulative No Project) and Cumulative with Project traffic volumes are shown on Figures 8 and 9, respectively.

Intersection Level of Service Analysis

Traffic conditions at the study intersections were evaluated using level of service (LOS). *Level of Service* is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or jammed conditions with excessive delays. The Town of Colma utilizes SYNCHRO software and the Highway Capacity Manual (HCM) 2000 methodology to evaluate intersection operations. The HCM methodology evaluates and reports level of service at signalized intersections on the basis of average control delay time for all vehicles at the intersection. The HCM 2000 methodology reports level of service at the unsignalized, two-way stop-controlled intersections based on both the overall average delay and for the worst movement on the side street at the intersection.

Significance criteria are used to establish what constitutes an impact. The Town of Colma 2014 General Plan specifies that all intersections should seek to achieve LOS D or better and Levels of Service E and F should be tolerated during peak demand periods.

All study scenarios were evaluated relative to the existing roadway network (i.e. no roadway improvements were assumed). The results of the intersection level of service analysis are summarized in Table 2. Under existing conditions without the project, there were no peak hour traffic volumes observed at the project driveways. Under existing conditions without the proposed project, the two study intersections currently operate at an acceptable LOS C or better during the AM and PM peak-hours. Under existing plus project conditions, the two study intersections would operate the same as under existing conditions, and the project site driveways would operate at an overall LOS A, with the worst movement (outbound out of the site driveway) operating at LOS B.

Under cumulative conditions both without and with the project, the intersection of El Camino Real and Mission Road would operate at LOS C or better for all movements during both peak hours. The intersection of Mission Road and Lawndale Boulevard would operate at an acceptable LOS D during both the AM and PM peak hours under cumulative conditions both without and with the project. Under cumulative conditions with the project, the project site driveways would operate at an overall LOS A, with the worst movement (outbound out of the site driveway) operating at LOS B during both peak hours.

The project would therefore not cause a significant adverse impact on intersection levels of service. The level of service calculation sheets are included in Appendix B.

Veterans Village

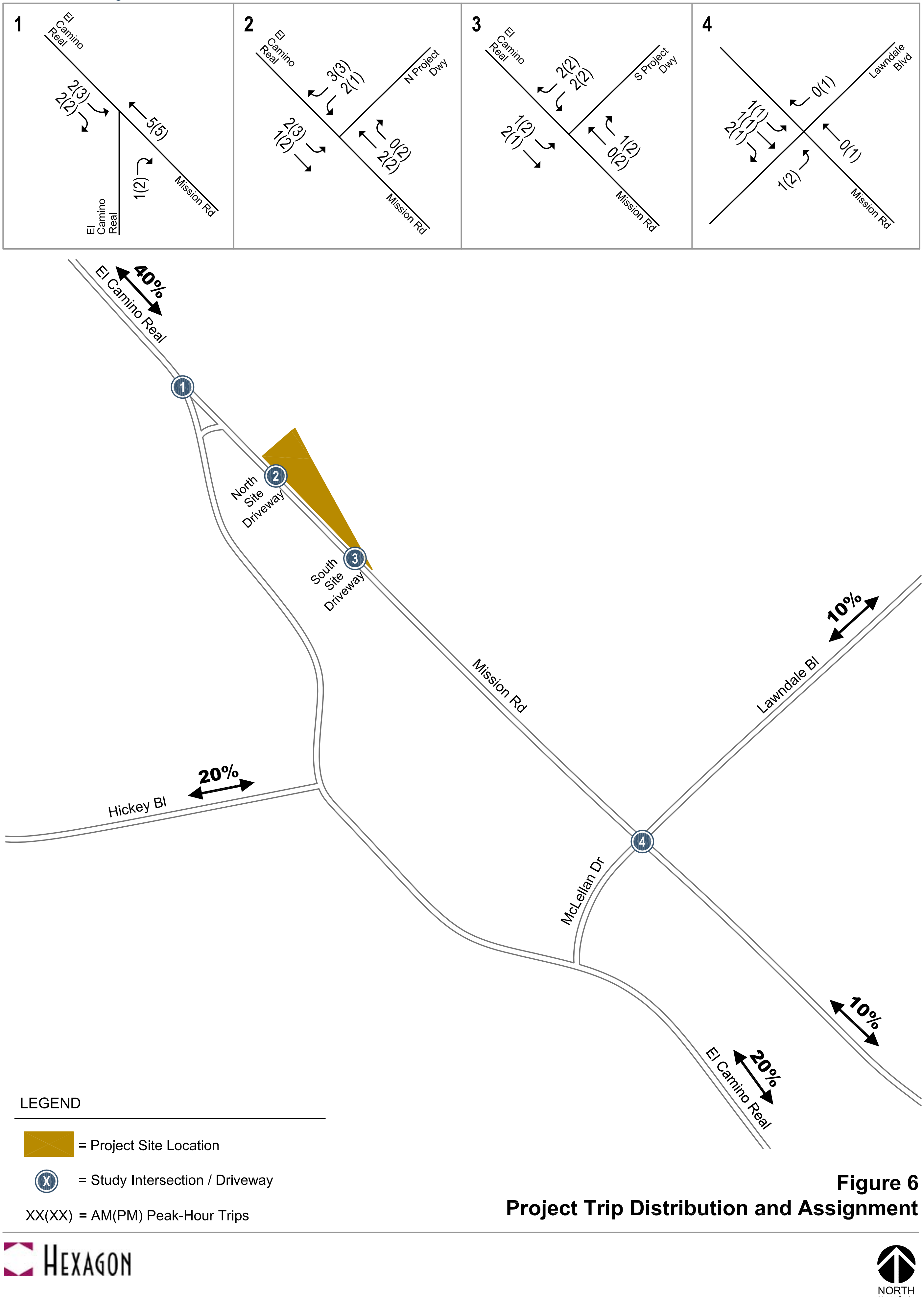


Figure 6
Project Trip Distribution and Assignment

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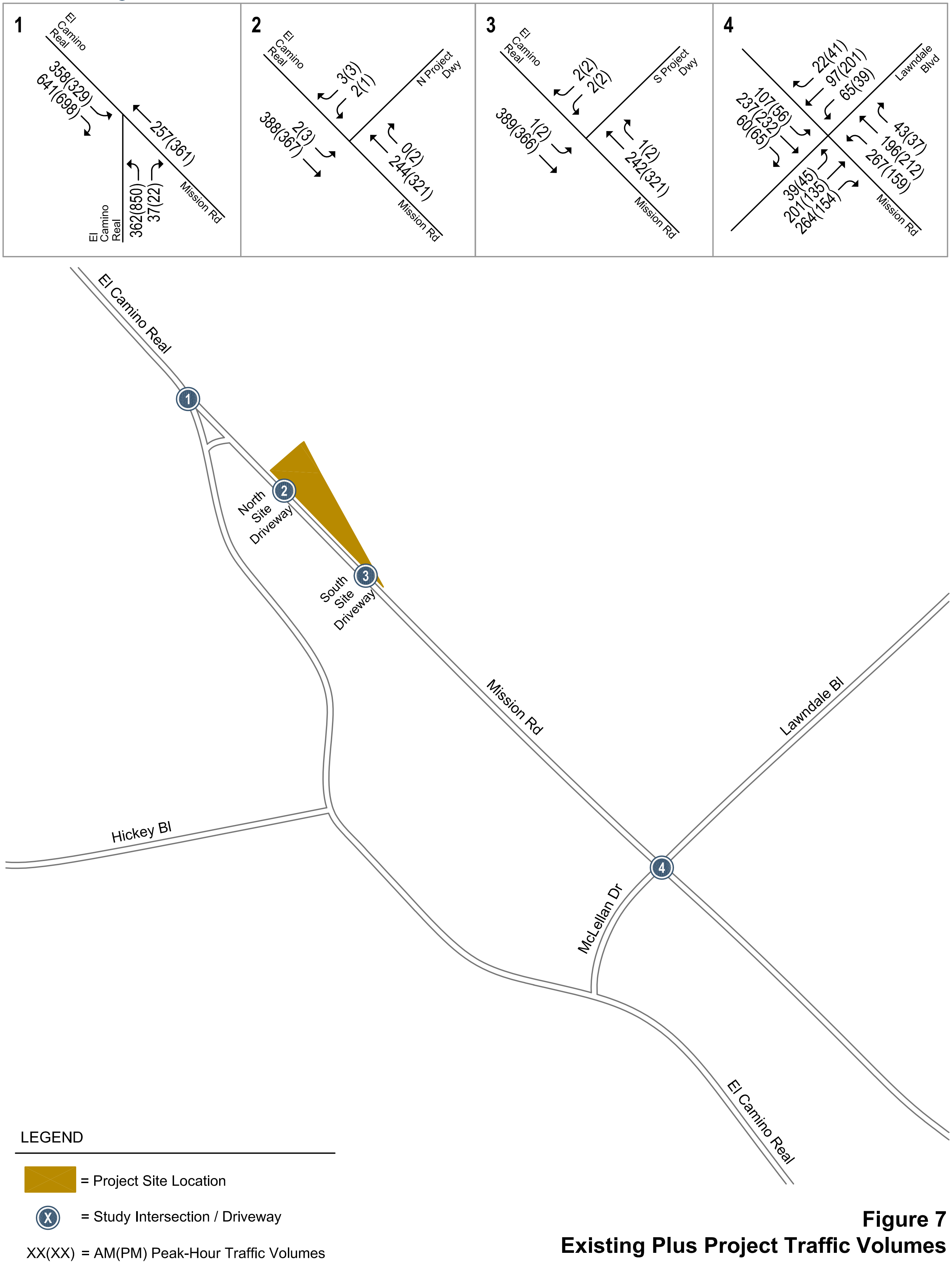

Figure 7
Existing Plus Project Traffic Volumes

HEXAGON

NORTH
Not to Scale

Veterans Village

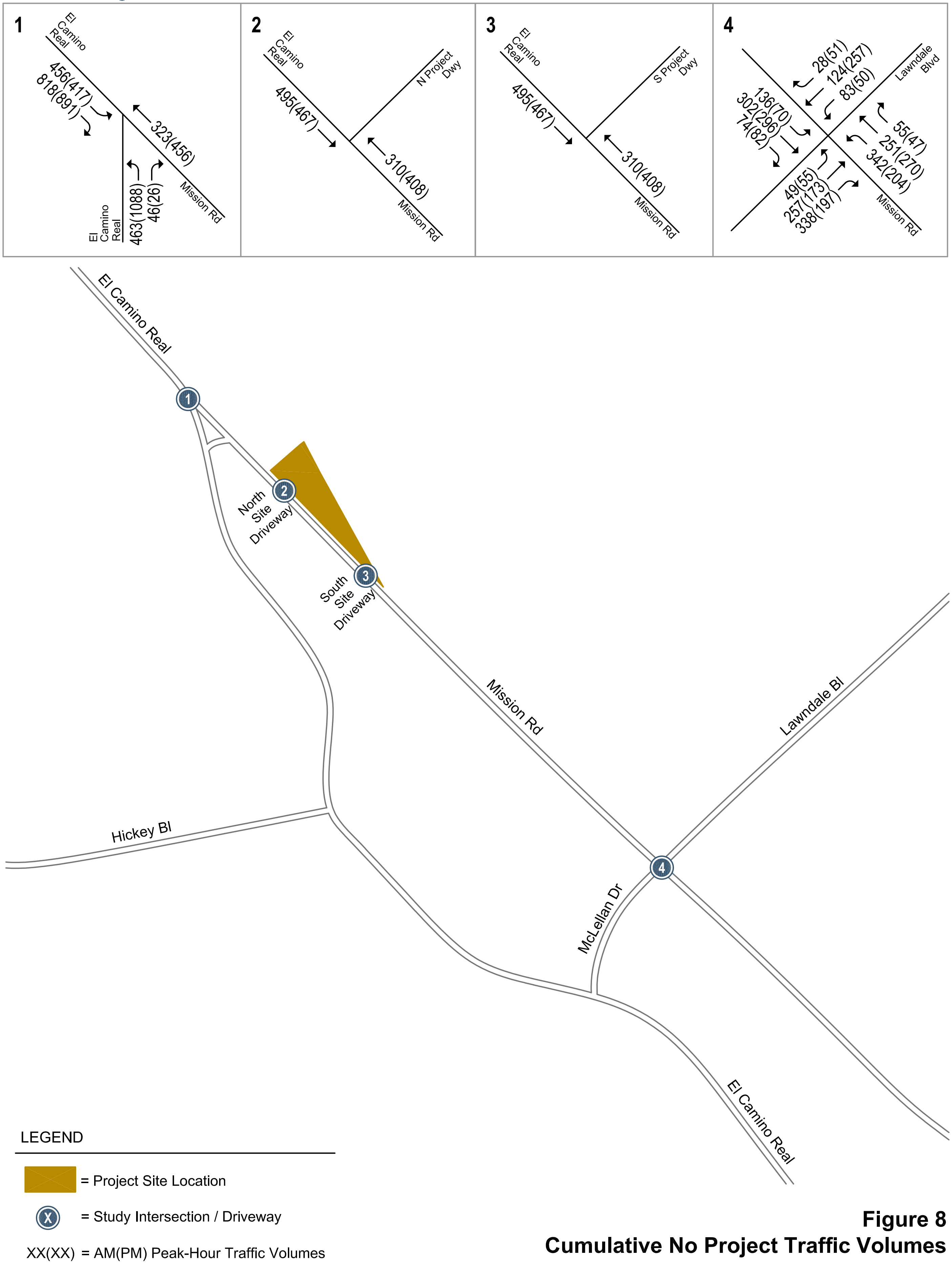

Figure 8
Cumulative No Project Traffic Volumes

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NORTH
Not to Scale

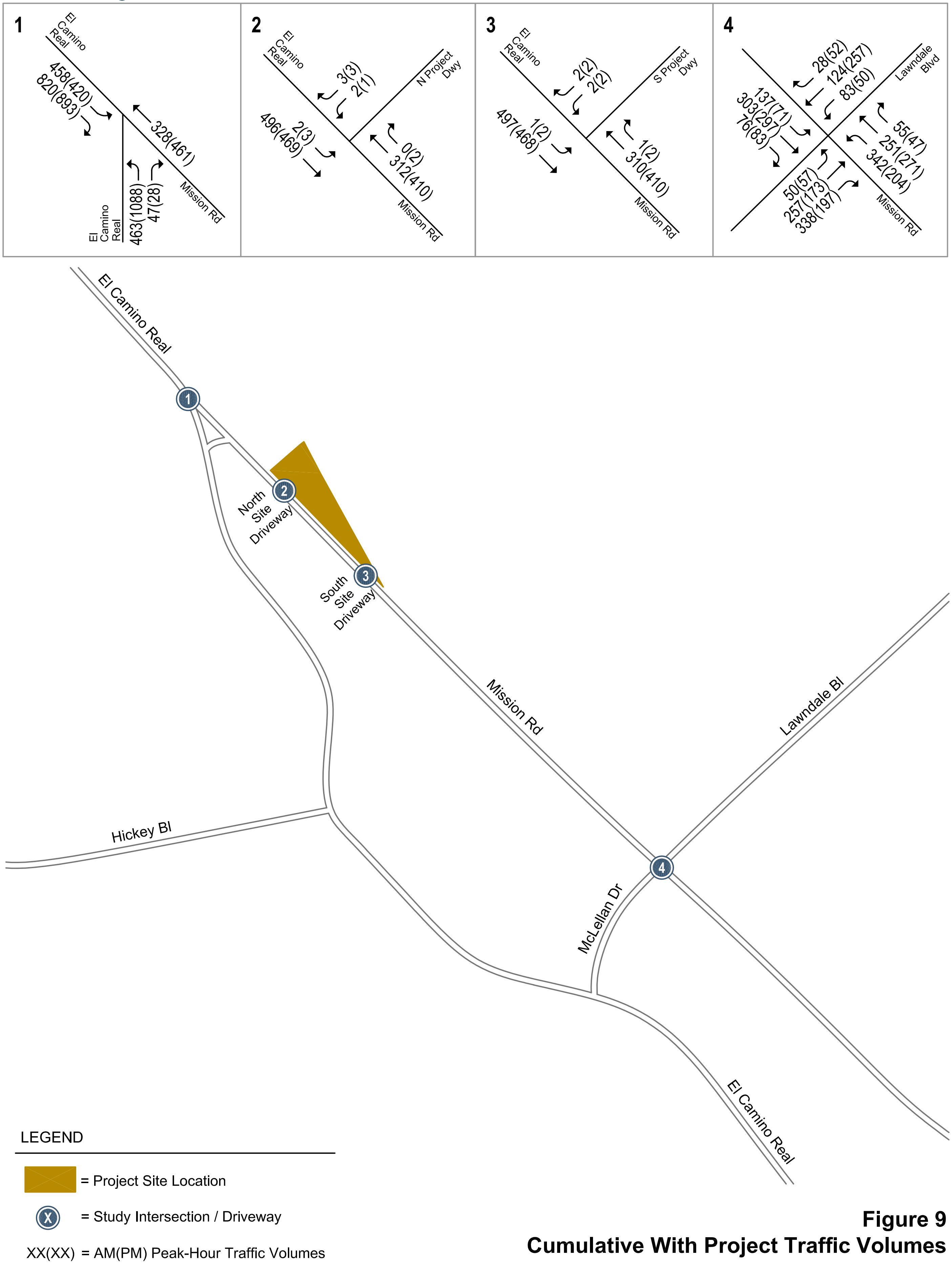


Figure 9
Cumulative With Project Traffic Volumes

Table 2
Level of Service Summary

Intersection	Peak Hour	Count Date	Existing Avg. Delay	Existing LOS	Existing + Project Avg. Delay	Existing + Project LOS	Cumulative Avg. Delay	Cumulative LOS	Cumulative + Project Avg. Delay	Cumulative + Project LOS
El Camino Real & Mission Rd	AM	03/22/16	3.8/9.5	A/A	3.8/9.5	A/A	4.5/11.0	A/B	4.5/11.0	A/B
	PM	03/22/16	5.3/13.1	A/B	5.4/13.1	A/B	13.0/21.7	B/C	13.6/22.0	B/C
Mission Rd & Lawndale Blvd[1]	AM	03/22/16	33.3	C	33.3	C	45.0	D	45.0	D
	PM	03/22/16	31.0	C	31.1	C	39.0	D	39.1	D
N. Site Driveway & Mission Rd	AM	03/22/16	n/a	n/a	0.1/11.0	A/B	n/a	n/a	0.1/12.2	A/B
	PM	03/22/16	n/a	n/a	0.1/11.0	A/B	n/a	n/a	0.1/12.1	A/B
S. Site Driveway & Mission Rd	AM	03/22/16	n/a	n/a	0.1/11.5	A/B	n/a	n/a	0.1/12.8	A/B
	PM	03/22/16	n/a	n/a	0.1/12.0	A/B	n/a	n/a	0.1/13.7	A/B

[1] The intersection of Mission Road & Lawndale Boulevard is signalized. The other three intersections are side-street-stop-controlled intersections. The level of service for the signalized intersection is based on overall average control delay for all vehicles at the intersection. The levels of service and delays reported for side-street-stop-controlled intersections pertain to both overall average delay / average delay on the worst approach.

Vehicle Queuing Under Project Conditions

A queuing analysis was conducted for the outbound turning movements from the project driveways and for the inbound left-turn movements into the project driveways under existing plus project conditions and cumulative plus project conditions. Note that the volume of vehicles turning into and out of the project site, at the driveways, would be the same for both the existing plus project and the cumulative plus project scenarios. The only difference between the two scenarios is the volume of through traffic on Mission Road is higher under cumulative conditions. The following conclusions are equally valid for both existing plus project and cumulative plus project conditions.

There are no separate left-turn pockets for the inbound left-turns into the site. Therefore, any time a left turn needs to be made into the site, the through traffic would have to wait behind the left-turning vehicle until the left-turn is completed. As shown on Figure 6, the volume of trips for the aforementioned turning movements is very small: 4 or 5 total outbound and 2 inbound left-turn peak-hour trips at each project driveway. The vehicle queuing analysis accordingly showed minimal queuing and delays. The analysis showed that up to 2 or 3 vehicles could queue on southbound Mission Road behind a vehicle waiting to turn left into the site at one of the driveways. The occurrence would be infrequent, and the delay would be brief, estimated to be approximately 5 to 10 seconds.

A vehicle queuing analysis was also performed to determine if queues would develop on site as outbound vehicles wait to enter the traffic stream on Mission Road. This would not affect Mission Road but has the potential to affect circulation on site or could affect the ability of vehicles to exit parking spaces on site if queues block the parking spaces. There is one lane at each project driveway from which to exit the site, so vehicles use the same lane regardless of whether turning left or right. The analysis showed that the outbound vehicle queue would rarely exceed one vehicle, and the average delay (the average wait time to exit) would be about 15 seconds. At the north site driveway, the first parking space is set back approximately 25 feet from the street. With the vehicle queues rarely exceeding one vehicle, and vehicle lengths being less than 25 feet, the vehicle queues would rarely block any parking spaces on the aisle along the north site driveway. The same can be said for the south site driveway, where the first parking space is located 85 feet back from the street. The project would therefore not create any impacts on vehicle queuing.

Impacts to Transit, Bikes, and Pedestrians

Overall, it is anticipated that the volume of pedestrian and bike trips generated by the project would not exceed the carrying capacity of the existing sidewalks, crosswalks, and bike facilities on streets surrounding the site. Generally, a project would create an impact on pedestrian and bike circulation if: (1) its vehicle trips would present a barrier to bikes/pedestrians safely crossing roadways, or (2) it would reduce or sever existing or planned bike/pedestrian circulation in the area. Based on these criteria, the proposed project would not create an adverse impact to bike/pedestrian circulation in the area.

According to the U.S. Census, bus trips comprise approximately 9 percent of the total commute mode share in the Town of Colma. For the proposed project, assuming 9 percent of total commute trips would be bus trips, that would equate to one bus trip during the AM peak hour and two bus trips during the PM peak hour. In addition to commute trips, there will be additional bus trips to nearby parks, shopping areas and BART. The volume of bus trips generated by the project would not exceed the carrying capacity of the existing bus serving the site. Therefore, no improvements to existing bus service frequencies would be necessary in conjunction with the proposed project.

In addition to bus service, some future residents would utilize BART, which is located near the intersection of Mission Road and Lawndale Boulevard/McLellan Drive, approximately one-half mile from the project site. According to the U.S. Census, BART trips comprise approximately 9 percent of the total commute share in the Town of Colma. For the proposed project, this would equate to one new BART trip during the AM peak hour and two new BART trips during the PM peak hour. To access BART, future residents could walk, bike or drive. Project trips on BART would comprise an extremely small fraction of the total BART ridership, and therefore, would not cause any meaningful changes in BART service.

Generally, a project would create an impact on transit service if it: (1) causes vehicular congestion that would significantly degrade transit operations, (2) cause a ridership increase that would exceed existing transit capacity, or (3) conflict with existing transit service plans or preclude future transit service to the project area. Based on these criteria, the proposed project would not cause a significant impact to transit operations in the study area.

Site Access, Circulation and Parking

As shown on Figure 2, the project has two full-access site driveways on Mission Road: one at the north end and one at the south end. The two driveways are approximately 840 feet apart. The south driveway provides access to the site by means of the existing BART maintenance roadway. The south driveway would provide access to an on-site road along the east border of the site within BART right-of-way. As the site plan shows, near the north end of the site, the east road veers out of the BART right-of-way and into the site, then loops around to connect to the north site driveway. The site therefore has two ways in and two ways out, and large vehicles can pass through without having to turn around.

Approximately 85 feet from the intersection of the south site driveway and Mission Road, the project would add ninety-degree parking on-street within the BART maintenance road right-of-way. This section of the BART maintenance road travel way is approximately 40 feet wide. Approximately 350 feet from Mission Road, the cross section of the BART right-of-way is split by an existing grass median, and the 90 degree parking in the BART right of way is transitioned onto the project site. Nine more parking spaces are provided along this 90-foot section of the "east road." North of there, the east road narrows to 20 feet wide and continues parallel to the site. The on-site drive aisle onto which the east road transitions is 26 feet wide, the latter half of the section providing 90-degree parking on the east side. The aisle loops westward approximately 140 feet to meet the north site driveway at Mission Road. This latter section is 26 feet wide with 90-degree parking on both sides.

On the east road where the BART right-of-way is split by a grass median, there is an abrupt transition between where the 90-degree parking on the BART maintenance road stops and where parking on the east road begins. The site plan shows this transition as a small “pie shaped” island. Although the traffic volumes through this area will be very low, the alignment is unusual and provides only minimal channelization for drivers. As a result, drivers may have tendency to drive down the center of the east road, rather than within their respective lanes. In addition, there is no traffic control shown where the BART right-of-way splits by the grass median. Because (1) project traffic would exceed that of BART maintenance traffic and (2) the upper approach from the maintenance facility is at a higher elevation than the east road (which makes for better visibility), vehicles on the upper BART maintenance road should yield to traffic on the east road.

> **Recommendation:** Additional traffic control and an improved roadway realignment should be considered where the east road meets the BART maintenance Road. There are two options for the realignment. The first option for realigning the east road would involve eliminating several of the parking spaces at the north end of the “on-street” parking section in Parking Area B. The elimination of the spaces would allow for a gradual, 50-foot taper of the roadway on the west side. The second option for realigning the east road would entail realigning the on-street parking so that what begins as on-street parking at the south end gradually transitions to parking entirely on-site at the north end near the transition area. This option would eliminate most roadway curvature and horizontal transitions. In addition, a yield sign is recommended on the upper BART maintenance Road at its intersection with the east road.

Corner sight distance was reviewed at each of the project access points on Mission Road. Currently, on-street parking on Mission Road obstructs the sight distance for vehicles exiting the existing BART access driveway at Mission Road, because vehicles park too close to the driveway.

> **Recommendation:** In order to ensure that adequate sight distance is provided, the project should prohibit parking on Mission Road over a distance of 25 feet on either side of both the north and south site driveways.

The project proposes to provide 69 total parking spaces on-site, including 4 accessible parking spaces. The site plan shows the breakdown as 34 spaces in Parking Area A in the north part of the site and 35 spaces in Parking Area B in the south part of the site. Each area would have two accessible spaces. The supply of parking proposed by the project was compared to the projected parking demand. Applying to the proposed 66-unit development the ITE 85th-percentile peak parking demand rate of 0.66 vehicles per dwelling unit applicable to the senior attached housing use yields an estimated peak parking demand of 44 parking spaces. The proposed parking supply of 69 greatly exceeds the estimated maximum demand. The proposed parking supply should therefore be satisfactory.

To accommodate pedestrians, the project provides walkways between the building entrances, parking areas, and existing sidewalks on Mission Road. The project also proposes to provide bicycle storage for 66 enclosed bicycle parking units on-site near the pump house building. This complies with and exceeds the Town’s current requirements, which are applied through the building code.

Conclusions

The impacts of the proposed project were evaluated in accordance with the procedures and guidelines specified by the Town of Colma. The analysis resulted in the following key findings:

- The project as proposed would have no significant impacts on traffic level of service or vehicle queuing at intersections in the vicinity of the site.
- The project as proposed would have no significant impacts on bicycle, pedestrian or transit facilities in the vicinity of the site.
- The project as proposed would provide adequate parking.

In addition, the following recommendations should be considered:

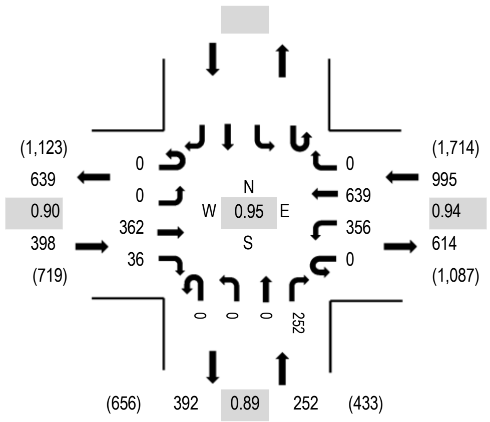
- Additional traffic control and an improved roadway realignment should be considered where the east road meets the BART maintenance Road. There are two options for the realignment. The first option for realigning the east road would involve eliminating several of the parking spaces at the north end of the "on-street" parking section in Parking Area B. The elimination of the spaces would allow for a gradual, 50-foot taper of the roadway on the west side. The second option for realigning the east road would entail realigning the on-street parking so that what begins as on-street parking at the south end gradually transitions to parking entirely on-site at the north end near the transition area. This option would eliminate most roadway curvature and horizontal transitions. In addition, a yield sign is recommended on the upper BART maintenance Road at its intersection with the east road.
- In order to ensure that adequate sight distance is provided, the project should prohibit parking on Mission Road over a distance of 25 feet on either side of both the north and south site driveways.

Appendix A
Traffic Counts

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

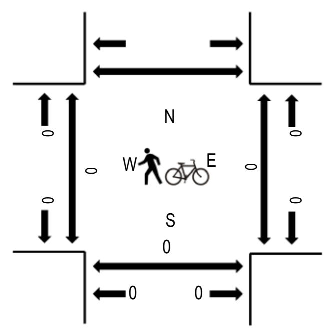
Location: 1 MISSION RD & EL CAMINO REAL AM
Date and Start Time: Tuesday, March 22, 2016
Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	EL CAMINO REAL Eastbound U-Turn	Left	Thru	Right	EL CAMINO REAL Westbound U-Turn	Left	Thru	Right	MISSION RD Northbound U-Turn	Left	Thru	Right	Southbound U-Turn	Left	Thru	Right	Total	Rolling Hour	Pedestrain Crossings West	East	South	North
7:00:00 AM	0	0	47	5	0	52	92	0	0	0	0	38					234	1,298	0	0	0	
7:15:00 AM	0	0	81	5	0	56	125	0	0	0	0	44					311	1,497	0	0	0	
7:30:00 AM	0	0	73	14	0	76	135	0	0	0	0	55					353	1,605	0	0	0	
7:45:00 AM	0	0	71	12	0	104	160	0	0	0	0	53					400	1,645	0	0	0	
8:00:00 AM	0	0	96	15	0	102	154	0	0	0	0	66					433	1,568	0	0	0	
8:15:00 AM	0	0	103	3	0	82	160	0	0	0	0	71					419		0	0	0	
8:30:00 AM	0	0	92	6	0	68	165	0	0	0	0	62					393		0	0	0	
8:45:00 AM	0	0	91	5	0	51	132	0	0	0	0	44					323		0	0	0	

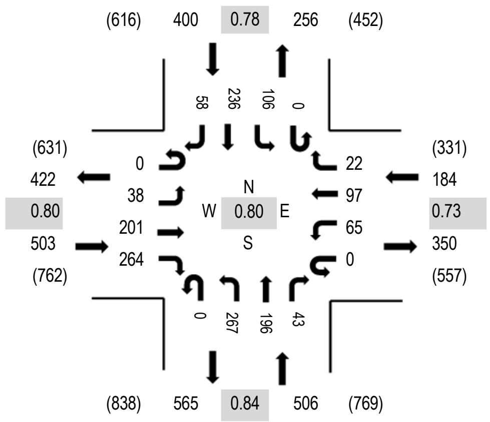
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound U-Turn	Left	Thru	Right	Westbound U-Turn	Left	Thru	Right	Northbound U-Turn	Left	Thru	Right	Southbound U-Turn	Left	Thru	Right	Total
Articulated Trucks	0	0	2	0	0	0	1	0	0	0	0	0					3
Lights	0	0	354	36	0	349	627	0	0	0	0	249					1,615
Mediums	0	0	6	0	0	7	11	0	0	0	0	3					27
Total	0	0	362	36	0	356	639	0	0	0	0	252					1,645

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

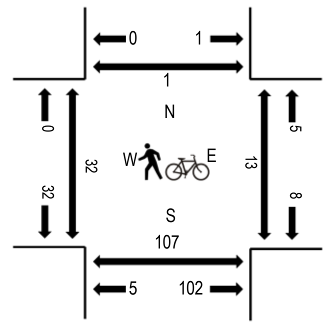
Location: 2 MISSION RD & LAWNDALE RD AM
Date and Start Time: Tuesday, March 22, 2016
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	MCLELLAN DR Eastbound U-Turn	Left	Thru	Right	LAWNDALE RD Westbound U-Turn	Left	Thru	Right	MISSION RD Northbound U-Turn	Left	Thru	Right	MISSION RD Southbound U-Turn	Left	Thru	Right	Total	Rolling Hour	Pedestrain Crossings West	East	South	North
7:00:00 AM	0	6	29	17	0	9	13	4	0	15	27	8	0	16	27	2	173	1,164	3	0	1	0
7:15:00 AM	0	2	23	32	0	10	16	6	0	25	36	6	0	18	25	6	205	1,490	3	1	4	0
7:30:00 AM	0	5	47	58	0	16	22	5	0	48	52	10	0	31	39	13	346	1,593	8	3	10	0
7:45:00 AM	0	10	61	82	0	16	18	8	0	84	42	9	0	24	70	16	440	1,511	8	4	30	1
8:00:00 AM	0	12	51	94	0	20	37	6	0	85	49	16	0	27	82	20	499	1,314	9	6	66	0
8:15:00 AM	0	11	42	30	0	13	20	3	0	50	53	8	0	24	45	9	308		6	0	1	0
8:30:00 AM	0	14	34	26	0	10	26	9	0	29	43	8	0	16	39	10	264		2	1	0	2
8:45:00 AM	0	10	31	35	0	12	27	5	0	27	34	5	0	13	31	13	243		1	2	1	3

Peak Rolling Hour Flow Rates

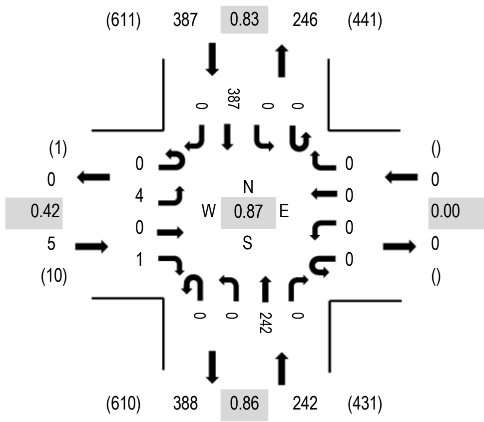
Vehicle Type	Eastbound U-Turn	Left	Thru	Right	Westbound U-Turn	Left	Thru	Right	Northbound U-Turn	Left	Thru	Right	Southbound U-Turn	Left	Thru	Right	Total
Articulated Trucks	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2
Lights	0	38	195	255	0	56	94	22	0	265	193	35	0	103	234	58	1,548
Mediums	0	0	5	9	0	9	2	0	0	2	3	8	0	3	2	0	43
Total	0	38	201	264	0	65	97	22	0	267	196	43	0	106	236	58	1,593

All Traffic Data Services Inc.

(303) 216-2439
www.alltrafficdata.net

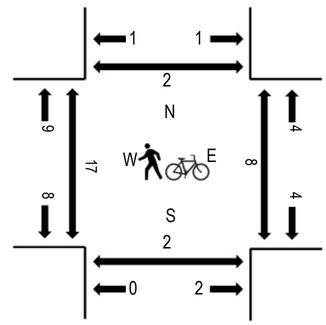
Location: 3 MISSION RD & BART ACCESS DWY AM
Date and Start Time: Tuesday, March 22, 2016
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	DWY Eastbound U-Turn	Left	Thru	Right	BART ACCESS DWY Westbound U-Turn	Left	Thru	Right	MISSION RD Northbound U-Turn	Left	Thru	Right	MISSION RD Southbound U-Turn	Left	Thru	Right	Total	Rolling Hour	Pedestrain Crossings West	East	South	North
7:00:00 AM	0	1	0	0	0	0	0	0	0	0	36	0	1	0	48	0	86	490	0	1	0	0
7:15:00 AM	0	0	0	0	0	0	0	0	0	0	45	0	0	0	61	1	107	587	8	2	3	1
7:30:00 AM	0	0	0	0	0	0	0	0	0	0	56	0	0	0	86	0	142	634	10	2	2	2
7:45:00 AM	0	1	0	0	0	0	0	0	0	0	50	0	0	0	104	0	155	619	6	5	0	0
8:00:00 AM	0	0	0	1	0	0	0	0	0	0	66	0	0	0	116	0	183	562	0	0	0	0
8:15:00 AM	0	3	0	0	0	0	0	0	0	0	70	0	0	0	81	0	154		0	1	0	0
8:30:00 AM	0	2	0	1	0	0	0	0	0	0	60	0	0	0	64	0	127		0	0	0	0
8:45:00 AM	0	1	0	0	0	0	0	0	0	0	48	0	1	0	48	0	98		0	1	0	0

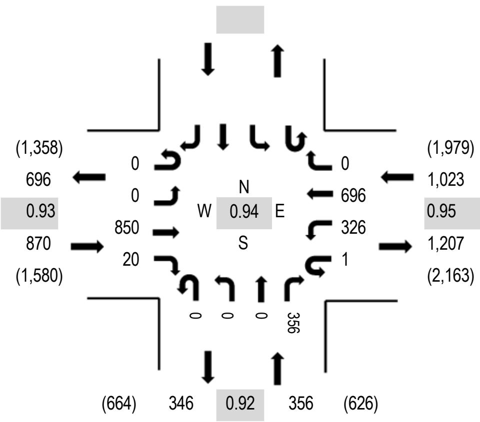
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound U-Turn	Left	Thru	Right	Westbound U-Turn	Left	Thru	Right	Northbound U-Turn	Left	Thru	Right	Southbound U-Turn	Left	Thru	Right	Total
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	4	0	1	0	0	0	0	0	0	239	0	0	0	382	0	626
Mediums	0	0	0	0	0	0	0	0	0	0	3	0	0	0	5	0	8
Total	0	4	0	1	0	0	0	0	0	0	242	0	0	0	387	0	634

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

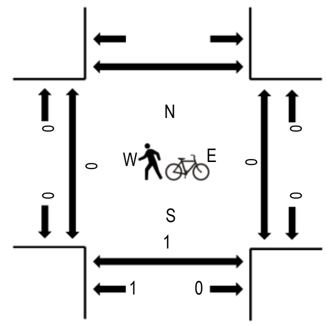
Location: 1 MISSION RD & EL CAMINO REAL PM
Date and Start Time: Tuesday, March 22, 2016
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	EL CAMINO REAL Eastbound U-Turn	Left	Thru	Right	EL CAMINO REAL Westbound U-Turn	Left	Thru	Right	MISSION RD Northbound U-Turn	Left	Thru	Right	Southbound U-Turn	Left	Thru	Right	Total	Rolling Hour	Pedestrain Crossings West	East	South	North
4:00:00 PM	0	0	167	9	1	67	158	0	0	0	0	66					468	1,989	0	0	0	
4:15:00 PM	0	0	160	6	0	71	172	0	0	0	0	70					479	2,079	0	0	0	
4:30:00 PM	0	0	169	6	0	83	180	0	0	0	0	65					503	2,201	1	0	0	
4:45:00 PM	0	0	191	1	1	87	163	0	0	0	0	96					539	2,249	0	0	1	
5:00:00 PM	0	0	217	4	0	86	165	0	0	0	0	86					558	2,196	0	0	0	
5:15:00 PM	0	0	224	10	0	86	184	0	0	0	0	97					601		0	0	0	
5:30:00 PM	0	0	218	5	0	67	184	0	0	0	0	77					551		0	0	0	
5:45:00 PM	0	0	189	4	0	72	152	0	0	0	0	69					486		0	0	0	

Peak Rolling Hour Flow Rates

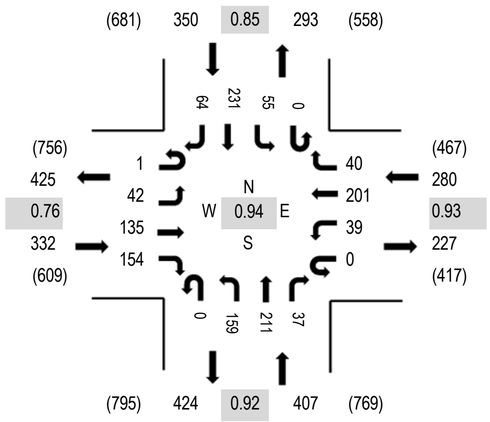
Vehicle Type	Eastbound U-Turn	Left	Thru	Right	Westbound U-Turn	Left	Thru	Right	Northbound U-Turn	Left	Thru	Right	Southbound U-Turn	Left	Thru	Right	Total
Articulated Trucks	0	0	1	0	0	0	1	0	0	0	0	1					3
Lights	0	0	842	20	1	323	688	0	0	0	0	350					2,224
Mediums	0	0	7	0	0	3	7	0	0	0	0	5					22
Total	0	0	850	20	1	326	696	0	0	0	0	356					2,249

All Traffic Data Services Inc.

(303) 216-2439
www.alltrafficdata.net

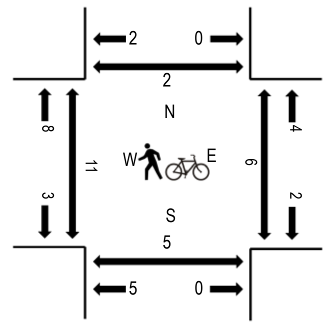
Location: 2 MISSION RD & LAWNDALE RD PM
Date and Start Time: Tuesday, March 22, 2016
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	MCLELLAN DR Eastbound U-Turn	Left	Thru	Right	LAWNDALE RD Westbound U-Turn	Left	Thru	Right	MISSION RD Northbound U-Turn	Left	Thru	Right	MISSION RD Southbound U-Turn	Left	Thru	Right	Total	Rolling Hour	Pedestrain Crossings West	East	South	North
4:00:00 PM	0	13	32	32	0	11	27	9	0	32	41	5	0	13	58	17	290	1,157	4	2	4	0
4:15:00 PM	0	8	34	32	0	6	26	7	0	45	50	4	0	8	45	15	280	1,210	1	0	1	1
4:30:00 PM	0	7	27	31	0	10	25	8	0	32	45	4	0	12	58	21	280	1,295	1	3	0	0
4:45:00 PM	0	6	32	23	1	14	36	7	0	35	64	5	0	13	51	20	307	1,355	1	2	0	0
5:00:00 PM	0	9	31	31	0	7	55	5	0	34	64	6	0	18	63	20	343	1,369	4	1	0	0
5:15:00 PM	0	11	26	39	0	10	54	11	0	37	63	11	0	11	70	22	365		2	2	0	2
5:30:00 PM	1	16	49	43	0	10	47	9	0	43	39	12	0	11	48	12	340		3	1	0	0
5:45:00 PM	0	6	29	41	0	12	45	15	0	45	45	8	0	15	50	10	321		2	0	5	0

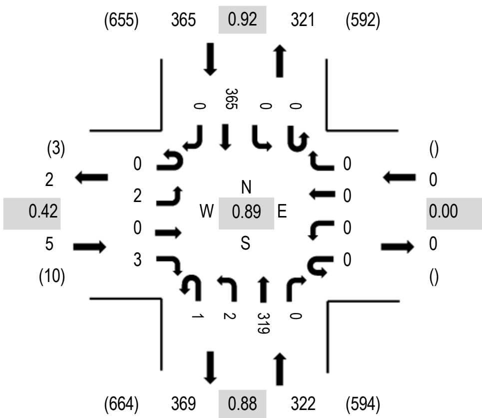
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound U-Turn	Left	Thru	Right	Westbound U-Turn	Left	Thru	Right	Northbound U-Turn	Left	Thru	Right	Southbound U-Turn	Left	Thru	Right	Total
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	1	42	133	147	0	30	201	40	0	159	210	31	0	55	230	63	1,342
Mediums	0	0	2	7	0	9	0	0	0	0	1	6	0	0	1	1	27
Total	1	42	135	154	0	39	201	40	0	159	211	37	0	55	231	64	1,369

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

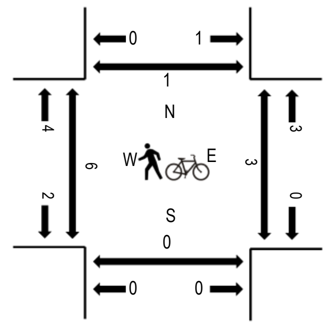
Location: 3 MISSION RD & BART ACCESS DWY PM
Date and Start Time: Tuesday, March 22, 2016
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	DWY Eastbound U-Turn	Left	Thru	Right	BART ACCESS DWY Westbound U-Turn	Left	Thru	Right	MISSION RD Northbound U-Turn	Left	Thru	Right	MISSION RD Southbound U-Turn	Left	Thru	Right	Total	Rolling Hour	Pedestrain Crossings West	East	South	North
4:00:00 PM	0	0	0	4	0	0	0	0	0	1	68	0	0	0	69	0	142	634	0	3	0	0
4:15:00 PM	0	0	0	0	0	0	0	0	0	0	71	0	0	0	79	0	150	664	0	0	0	0
4:30:00 PM	0	1	0	0	0	0	0	0	1	0	63	0	0	0	83	0	148	692	2	0	0	0
4:45:00 PM	0	0	0	3	0	0	0	0	0	0	92	0	0	0	99	0	194	680	4	1	0	0
5:00:00 PM	0	0	0	0	0	0	0	0	0	1	81	0	0	0	90	0	172	625	0	2	0	0
5:15:00 PM	0	1	0	0	0	0	0	0	0	1	83	0	0	0	93	0	178		0	0	0	1
5:30:00 PM	0	0	0	0	0	0	0	0	0	0	66	0	0	0	70	0	136		1	0	1	0
5:45:00 PM	0	0	0	1	0	0	0	0	0	0	66	0	0	0	72	0	139		0	2	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound U-Turn	Left	Thru	Right	Westbound U-Turn	Left	Thru	Right	Northbound U-Turn	Left	Thru	Right	Southbound U-Turn	Left	Thru	Right	Total
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Lights	0	2	0	3	0	0	0	0	0	2	317	0	0	0	361	0	685
Mediums	0	0	0	0	0	0	0	0	1	0	2	0	0	0	3	0	6
Total	0	2	0	3	0	0	0	0	1	2	319	0	0	0	365	0	692

Appendix B

LOS Calculations

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	356	639	362	36	0	252
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	356	639	362	36	0	252
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	398				1412	199
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	398				1412	199
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	69				100	69
cM capacity (veh/h)	1157				89	809

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SW 1	SW 2
Volume Total	356	320	320	241	157	0	252
Volume Left	356	0	0	0	0	0	0
Volume Right	0	0	0	0	36	0	252
cSH	1157	1700	1700	1700	1700	1700	809
Volume to Capacity	0.31	0.19	0.19	0.14	0.09	0.00	0.31
Queue Length 95th (ft)	33	0	0	0	0	0	33
Control Delay (s)	9.5	0.0	0.0	0.0	0.0	0.0	11.5
Lane LOS	A					A	B
Approach Delay (s)	3.4			0.0		11.5	
Approach LOS						B	

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	387	242	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	387	242	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	242				629	242
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	242				629	242
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1324				446	797

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	387	242	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1324	1700	1700
Volume to Capacity	0.00	0.14	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	23.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	387	242	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	387	242	0	0	0
Pedestrians			2		8	
Lane Width (ft)			12.0		12.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	250				639	250
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	250				639	250
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1307				437	783

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	387	242	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1307	1700	1700
Volume to Capacity	0.00	0.14	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	23.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	236	58	267	196	43	38	201	264	65	97	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00			0.86		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.92		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	0.99			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1493	1681	1710			2788		1770	3427	
Flt Permitted	0.95	1.00	1.00	0.95	0.99			1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1493	1681	1710			2788		1770	3427	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	106	236	58	267	196	43	38	201	264	65	97	22
RTOR Reduction (vph)	0	0	48	0	9	0	0	208	0	0	17	0
Lane Group Flow (vph)	106	236	10	240	257	0	0	295	0	65	102	0
Confl. Peds. (#/hr)	13		32	32		13	1		107	107		1
Turn Type	Split	NA	Perm	Split	NA		Split	NA		Split	NA	
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4									
Actuated Green, G (s)	13.6	13.6	13.6	14.5	14.5			16.1		16.1	16.1	
Effective Green, g (s)	13.6	13.6	13.6	14.5	14.5			16.1		16.1	16.1	
Actuated g/C Ratio	0.18	0.18	0.18	0.19	0.19			0.21		0.21	0.21	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	315	332	266	319	324			588		373	723	
v/s Ratio Prot	0.06	c0.13		0.14	c0.15			c0.11		c0.04	0.03	
v/s Ratio Perm			0.01									
v/c Ratio	0.34	0.71	0.04	0.75	0.79			0.50		0.17	0.14	
Uniform Delay, d1	27.4	29.5	25.9	29.2	29.5			26.6		24.7	24.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.6	7.0	0.1	9.6	12.5			3.0		1.0	0.4	
Delay (s)	28.0	36.5	26.0	38.8	42.0			29.6		25.7	24.9	
Level of Service	C	D	C	D	D			C		C	C	
Approach Delay (s)		32.7			40.5			29.6			25.2	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	76.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	326	696	850	20	0	356
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	326	696	850	20	0	356
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	870				1860	435
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	870				1860	435
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	58				100	37
cM capacity (veh/h)	770				37	569

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SW 1	SW 2
Volume Total	326	348	348	567	303	0	356
Volume Left	326	0	0	0	0	0	0
Volume Right	0	0	0	0	20	0	356
cSH	770	1700	1700	1700	1700	1700	569
Volume to Capacity	0.42	0.20	0.20	0.33	0.18	0.00	0.63
Queue Length 95th (ft)	53	0	0	0	0	0	108
Control Delay (s)	13.1	0.0	0.0	0.0	0.0	0.0	21.3
Lane LOS	B					A	C
Approach Delay (s)	4.2			0.0		21.3	
Approach LOS						C	

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	365	319	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	365	319	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	319				684	319
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	319				684	319
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1241				414	722

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	365	319	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1241	1700	1700
Volume to Capacity	0.00	0.19	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	22.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	365	319	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	365	319	0	0	0
Pedestrians			1		3	
Lane Width (ft)			12.0		12.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	322				688	322
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	322				688	322
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1235				411	717

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	365	319	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1235	1700	1700
Volume to Capacity	0.00	0.19	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	22.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	231	64	159	211	37	43	135	154	39	201	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.93		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	1863	1540	1681	1722			3224		1770	3437	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.99		0.95	1.00	
Satd. Flow (perm)	1770	1863	1540	1681	1722			3224		1770	3437	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	231	64	159	211	37	43	135	154	39	201	40
RTOR Reduction (vph)	0	0	53	0	7	0	0	121	0	0	21	0
Lane Group Flow (vph)	55	231	11	143	257	0	0	211	0	39	220	0
Confl. Peds. (#/hr)	6		11	11		6	2		5	5		2
Turn Type	Split	NA	Perm	Split	NA		Split	NA		Split	NA	
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4									
Actuated Green, G (s)	13.5	13.5	13.5	14.5	14.5			16.1		16.1	16.1	
Effective Green, g (s)	13.5	13.5	13.5	14.5	14.5			16.1		16.1	16.1	
Actuated g/C Ratio	0.18	0.18	0.18	0.19	0.19			0.21		0.21	0.21	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	313	330	272	319	327			681		373	726	
v/s Ratio Prot	0.03	c0.12		0.09	c0.15			c0.07		0.02	c0.06	
v/s Ratio Perm			0.01									
v/c Ratio	0.18	0.70	0.04	0.45	0.79			0.31		0.10	0.30	
Uniform Delay, d1	26.6	29.4	26.0	27.3	29.4			25.4		24.2	25.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.3	6.4	0.1	1.0	11.7			1.2		0.6	1.1	
Delay (s)	26.9	35.8	26.1	28.3	41.1			26.5		24.8	26.4	
Level of Service	C	D	C	C	D			C		C	C	
Approach Delay (s)		32.6			36.6			26.5			26.2	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	76.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	358	641	362	37	0	257
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	358	641	362	37	0	257
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	399				1417	200
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	399				1417	200
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	69				100	68
cM capacity (veh/h)	1156				88	808

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SW 1	SW 2
Volume Total	358	320	320	241	158	0	257
Volume Left	358	0	0	0	0	0	0
Volume Right	0	0	0	0	37	0	257
cSH	1156	1700	1700	1700	1700	1700	808
Volume to Capacity	0.31	0.19	0.19	0.14	0.09	0.00	0.32
Queue Length 95th (ft)	33	0	0	0	0	0	34
Control Delay (s)	9.5	0.0	0.0	0.0	0.0	0.0	11.5
Lane LOS	A					A	B
Approach Delay (s)	3.4			0.0		11.5	
Approach LOS						B	

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	2	388	244	0	2	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2	388	244	0	2	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	244				636	244
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	244				636	244
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1322				441	795

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	390	244	5
Volume Left	2	0	2
Volume Right	0	0	3
cSH	1322	1700	602
Volume to Capacity	0.00	0.14	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.1	0.0	11.0
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	11.0
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	32.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	1	389	242	1	2	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	389	242	1	2	2
Pedestrians			2		8	
Lane Width (ft)			12.0		12.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	251				644	250
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	251				644	250
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1306				434	783

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	390	243	4
Volume Left	1	0	2
Volume Right	0	1	2
cSH	1306	1700	558
Volume to Capacity	0.00	0.14	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.0	11.5
Lane LOS	A		B
Approach Delay (s)	0.0	0.0	11.5
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	237	60	267	196	43	39	201	264	65	97	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00			0.86		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.92		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	0.99			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1493	1681	1710			2789		1770	3427	
Flt Permitted	0.95	1.00	1.00	0.95	0.99			1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1493	1681	1710			2789		1770	3427	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	107	237	60	267	196	43	39	201	264	65	97	22
RTOR Reduction (vph)	0	0	49	0	9	0	0	208	0	0	17	0
Lane Group Flow (vph)	107	237	11	240	257	0	0	296	0	65	102	0
Confl. Peds. (#/hr)	13		32	32		13	1		107	107		1
Turn Type	Split	NA	Perm	Split	NA		Split	NA		Split	NA	
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4									
Actuated Green, G (s)	13.6	13.6	13.6	14.5	14.5			16.1		16.1	16.1	
Effective Green, g (s)	13.6	13.6	13.6	14.5	14.5			16.1		16.1	16.1	
Actuated g/C Ratio	0.18	0.18	0.18	0.19	0.19			0.21		0.21	0.21	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	315	332	266	319	324			588		373	723	
v/s Ratio Prot	0.06	c0.13		0.14	c0.15			c0.11		c0.04	0.03	
v/s Ratio Perm			0.01									
v/c Ratio	0.34	0.71	0.04	0.75	0.79			0.50		0.17	0.14	
Uniform Delay, d1	27.4	29.5	25.9	29.2	29.5			26.6		24.7	24.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.6	7.1	0.1	9.6	12.5			3.1		1.0	0.4	
Delay (s)	28.1	36.6	26.0	38.8	42.0			29.6		25.7	24.9	
Level of Service	C	D	C	D	D			C		C	C	
Approach Delay (s)		32.8			40.5			29.6			25.2	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	76.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	329	698	850	22	0	361
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	329	698	850	22	0	361
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	872				1868	436
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	872				1868	436
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	57				100	36
cM capacity (veh/h)	769				37	568

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SW 1	SW 2
Volume Total	329	349	349	567	305	0	361
Volume Left	329	0	0	0	0	0	0
Volume Right	0	0	0	0	22	0	361
cSH	769	1700	1700	1700	1700	1700	568
Volume to Capacity	0.43	0.21	0.21	0.33	0.18	0.00	0.64
Queue Length 95th (ft)	54	0	0	0	0	0	111
Control Delay (s)	13.1	0.0	0.0	0.0	0.0	0.0	21.7
Lane LOS	B					A	C
Approach Delay (s)	4.2			0.0		21.7	
Approach LOS						C	

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	3	367	321	2	1	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	367	321	2	1	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	323				695	322
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	323				695	322
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1237				407	719

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	370	323	4
Volume Left	3	0	1
Volume Right	0	2	3
cSH	1237	1700	603
Volume to Capacity	0.00	0.19	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.1	0.0	11.0
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	11.0
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	2	366	321	2	2	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2	366	321	2	2	2
Pedestrians			1		3	
Lane Width (ft)			12.0		12.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	326				696	325
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	326				696	325
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1231				406	714

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	368	323	4
Volume Left	2	0	2
Volume Right	0	2	2
cSH	1231	1700	517
Volume to Capacity	0.00	0.19	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.1	0.0	12.0
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	12.0
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	30.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	232	65	159	212	37	45	135	154	39	201	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.93		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	1863	1540	1681	1722			3225		1770	3435	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.99		0.95	1.00	
Satd. Flow (perm)	1770	1863	1540	1681	1722			3225		1770	3435	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	56	232	65	159	212	37	45	135	154	39	201	41
RTOR Reduction (vph)	0	0	53	0	7	0	0	121	0	0	21	0
Lane Group Flow (vph)	56	232	12	143	258	0	0	213	0	39	221	0
Confl. Peds. (#/hr)	6		11	11		6	2		5	5		2
Turn Type	Split	NA	Perm	Split	NA		Split	NA		Split	NA	
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4									
Actuated Green, G (s)	13.5	13.5	13.5	14.5	14.5			16.1		16.1	16.1	
Effective Green, g (s)	13.5	13.5	13.5	14.5	14.5			16.1		16.1	16.1	
Actuated g/C Ratio	0.18	0.18	0.18	0.19	0.19			0.21		0.21	0.21	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	313	330	272	319	327			681		373	725	
v/s Ratio Prot	0.03	c0.12		0.09	c0.15			c0.07		0.02	c0.06	
v/s Ratio Perm			0.01									
v/c Ratio	0.18	0.70	0.04	0.45	0.79			0.31		0.10	0.30	
Uniform Delay, d1	26.6	29.5	26.0	27.3	29.4			25.4		24.2	25.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.3	6.6	0.1	1.0	11.9			1.2		0.6	1.1	
Delay (s)	26.9	36.1	26.1	28.3	41.3			26.6		24.8	26.4	
Level of Service	C	D	C	C	D			C		C	C	
Approach Delay (s)		32.8			36.7			26.6			26.2	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	76.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	456	818	463	46	0	323
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	456	818	463	46	0	323
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	509				1807	254
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	509				1807	254
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	57				100	57
cM capacity (veh/h)	1052				40	745

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SW 1	SW 2
Volume Total	456	409	409	309	200	0	323
Volume Left	456	0	0	0	0	0	0
Volume Right	0	0	0	0	46	0	323
cSH	1052	1700	1700	1700	1700	1700	745
Volume to Capacity	0.43	0.24	0.24	0.18	0.12	0.00	0.43
Queue Length 95th (ft)	56	0	0	0	0	0	55
Control Delay (s)	11.0	0.0	0.0	0.0	0.0	0.0	13.5
Lane LOS	B					A	B
Approach Delay (s)	3.9			0.0		13.5	
Approach LOS						B	

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	495	310	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	495	310	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	310				805	310
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	310				805	310
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1250				352	730

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	495	310	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1250	1700	1700
Volume to Capacity	0.00	0.18	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	29.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	495	310	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	495	310	0	0	0
Pedestrians			2		8	
Lane Width (ft)			12.0		12.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	318				815	318
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	318				815	318
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1234				344	718

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	495	310	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1234	1700	1700
Volume to Capacity	0.00	0.18	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	29.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	136	302	74	342	251	55	49	257	338	83	124	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	0.99			0.85		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.92		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1491	1681	1709			2771		1770	3427	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1491	1681	1709			2771		1770	3427	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	136	302	74	342	251	55	49	257	338	83	124	28
RTOR Reduction (vph)	0	0	60	0	9	0	0	249	0	0	22	0
Lane Group Flow (vph)	136	302	14	308	331	0	0	395	0	83	130	0
Confl. Peds. (#/hr)	13		32	32		13	1		107	107		1
Turn Type	Split	NA	Perm	Split	NA		Split	NA		Split	NA	
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4									
Actuated Green, G (s)	15.3	15.3	15.3	16.0	16.0			16.0		16.0	16.0	
Effective Green, g (s)	15.3	15.3	15.3	16.0	16.0			16.0		16.0	16.0	
Actuated g/C Ratio	0.19	0.19	0.19	0.20	0.20			0.20		0.20	0.20	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	341	359	287	339	344			559		357	691	
v/s Ratio Prot	0.08	c0.16		0.18	c0.19			c0.14		c0.05	0.04	
v/s Ratio Perm			0.01									
v/c Ratio	0.40	0.84	0.05	0.91	0.96			0.71		0.23	0.19	
Uniform Delay, d1	28.0	30.8	26.1	30.9	31.4			29.5		26.5	26.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.8	16.1	0.1	26.8	38.5			7.3		1.5	0.6	
Delay (s)	28.7	47.0	26.1	57.8	69.8			36.8		28.0	26.9	
Level of Service	C	D	C	E	E			D		C	C	
Approach Delay (s)		39.1			64.1			36.8			27.3	
Approach LOS		D			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	45.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	79.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	417	891	1088	26	0	456
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	417	891	1088	26	0	456
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1114				2380	557
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1114				2380	557
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	33				100	4
cM capacity (veh/h)	623				9	474

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SW 1	SW 2
Volume Total	417	446	446	725	389	0	456
Volume Left	417	0	0	0	0	0	0
Volume Right	0	0	0	0	26	0	456
cSH	623	1700	1700	1700	1700	1700	474
Volume to Capacity	0.67	0.26	0.26	0.43	0.23	0.00	0.96
Queue Length 95th (ft)	127	0	0	0	0	0	300
Control Delay (s)	21.7	0.0	0.0	0.0	0.0	0.0	62.1
Lane LOS	C					A	F
Approach Delay (s)	6.9			0.0		62.1	
Approach LOS						F	

Intersection Summary			
Average Delay	13.0		
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	467	408	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	467	408	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	408				875	408
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	408				875	408
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1151				320	643

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	467	408	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1151	1700	1700
Volume to Capacity	0.00	0.24	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	0	467	408	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	467	408	0	0	0
Pedestrians			1		3	
Lane Width (ft)			12.0		12.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	411				879	411
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	411				879	411
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1145				317	639

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	467	408	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1145	1700	1700
Volume to Capacity	0.00	0.24	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	296	82	204	270	47	55	173	197	50	257	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.93		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	1863	1539	1681	1722			3223		1770	3437	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.99		0.95	1.00	
Satd. Flow (perm)	1770	1863	1539	1681	1722			3223		1770	3437	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	70	296	82	204	270	47	55	173	197	50	257	51
RTOR Reduction (vph)	0	0	66	0	7	0	0	157	0	0	21	0
Lane Group Flow (vph)	70	296	16	184	330	0	0	268	0	50	287	0
Confl. Peds. (#/hr)	6		11	11		6	2		5	5		2
Turn Type	Split	NA	Perm	Split	NA		Split	NA		Split	NA	
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4									
Actuated Green, G (s)	15.2	15.2	15.2	16.0	16.0			16.0		16.0	16.0	
Effective Green, g (s)	15.2	15.2	15.2	16.0	16.0			16.0		16.0	16.0	
Actuated g/C Ratio	0.19	0.19	0.19	0.20	0.20			0.20		0.20	0.20	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	339	357	295	339	347			651		357	694	
v/s Ratio Prot	0.04	c0.16		0.11	c0.19			c0.08		0.03	c0.08	
v/s Ratio Perm			0.01									
v/c Ratio	0.21	0.83	0.05	0.54	0.95			0.41		0.14	0.41	
Uniform Delay, d1	26.9	30.8	26.1	28.3	31.2			27.5		26.0	27.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.3	14.6	0.1	1.8	35.4			1.9		0.8	1.8	
Delay (s)	27.2	45.4	26.2	30.1	66.6			29.4		26.8	29.3	
Level of Service	C	D	C	C	E			C		C	C	
Approach Delay (s)		39.0			53.7			29.4			29.0	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	39.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	79.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	458	820	463	47	0	328
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	458	820	463	47	0	328
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	510				1812	255
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	510				1812	255
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	56				100	56
cM capacity (veh/h)	1051				39	744

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SW 1	SW 2
Volume Total	458	410	410	309	201	0	328
Volume Left	458	0	0	0	0	0	0
Volume Right	0	0	0	0	47	0	328
cSH	1051	1700	1700	1700	1700	1700	744
Volume to Capacity	0.44	0.24	0.24	0.18	0.12	0.00	0.44
Queue Length 95th (ft)	56	0	0	0	0	0	57
Control Delay (s)	11.0	0.0	0.0	0.0	0.0	0.0	13.6
Lane LOS	B					A	B
Approach Delay (s)	4.0			0.0		13.6	
Approach LOS						B	

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	2	496	312	0	2	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2	496	312	0	2	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	312				812	312
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	312				812	312
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1248				348	728

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	498	312	5
Volume Left	2	0	2
Volume Right	0	0	3
cSH	1248	1700	507
Volume to Capacity	0.00	0.18	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.0	12.2
Lane LOS	A		B
Approach Delay (s)	0.0	0.0	12.2
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	1	497	310	1	2	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	497	310	1	2	2
Pedestrians			2		8	
Lane Width (ft)			12.0		12.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	319				820	318
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	319				820	318
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1233				342	717

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	498	311	4
Volume Left	1	0	2
Volume Right	0	1	2
cSH	1233	1700	463
Volume to Capacity	0.00	0.18	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.0	12.8
Lane LOS	A		B
Approach Delay (s)	0.0	0.0	12.8
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	303	76	342	251	55	50	257	338	83	124	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	0.99			0.85		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.92		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1491	1681	1709			2772		1770	3427	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1491	1681	1709			2772		1770	3427	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	137	303	76	342	251	55	50	257	338	83	124	28
RTOR Reduction (vph)	0	0	61	0	9	0	0	249	0	0	22	0
Lane Group Flow (vph)	137	303	15	308	331	0	0	396	0	83	130	0
Confl. Peds. (#/hr)	13		32	32		13	1		107	107		1
Turn Type	Split	NA	Perm	Split	NA		Split	NA		Split	NA	
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4									
Actuated Green, G (s)	15.3	15.3	15.3	16.0	16.0			16.0		16.0	16.0	
Effective Green, g (s)	15.3	15.3	15.3	16.0	16.0			16.0		16.0	16.0	
Actuated g/C Ratio	0.19	0.19	0.19	0.20	0.20			0.20		0.20	0.20	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	341	359	287	339	344			559		357	691	
v/s Ratio Prot	0.08	c0.16		0.18	c0.19			c0.14		c0.05	0.04	
v/s Ratio Perm			0.01									
v/c Ratio	0.40	0.84	0.05	0.91	0.96			0.71		0.23	0.19	
Uniform Delay, d1	28.0	30.8	26.1	30.9	31.4			29.5		26.5	26.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.8	16.4	0.1	26.8	38.5			7.4		1.5	0.6	
Delay (s)	28.8	47.2	26.2	57.8	69.8			36.9		28.0	26.9	
Level of Service	C	D	C	E	E			D		C	C	
Approach Delay (s)		39.2			64.1			36.9			27.3	
Approach LOS		D			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	45.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	79.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Cumulative with Project PM
1: El Camino Real & Mission Road

4/4/2016

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	420	893	1088	28	0	461
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	420	893	1088	28	0	461
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1116				2388	558
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1116				2388	558
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	32				100	3
cM capacity (veh/h)	622				9	473

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SW 1	SW 2
Volume Total	420	446	446	725	391	0	461
Volume Left	420	0	0	0	0	0	0
Volume Right	0	0	0	0	28	0	461
cSH	622	1700	1700	1700	1700	1700	473
Volume to Capacity	0.68	0.26	0.26	0.43	0.23	0.00	0.97
Queue Length 95th (ft)	130	0	0	0	0	0	310
Control Delay (s)	22.0	0.0	0.0	0.0	0.0	0.0	64.9
Lane LOS	C					A	F
Approach Delay (s)	7.0			0.0		64.9	
Approach LOS						F	

Intersection Summary			
Average Delay	13.6		
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	3	469	410	2	1	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	469	410	2	1	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	412				886	411
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	412				886	411
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1147				314	641

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	472	412	4
Volume Left	3	0	1
Volume Right	0	2	3
cSH	1147	1700	509
Volume to Capacity	0.00	0.24	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.1	0.0	12.1
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	12.1
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	2	468	410	2	2	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2	468	410	2	2	2
Pedestrians			1		3	
Lane Width (ft)			12.0		12.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	415				887	414
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	415				887	414
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1141				313	637

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	470	412	4
Volume Left	2	0	2
Volume Right	0	2	2
cSH	1141	1700	420
Volume to Capacity	0.00	0.24	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.1	0.0	13.7
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	13.7
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	71	297	83	204	271	47	57	173	197	50	257	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95			0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98			0.93		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	1863	1539	1681	1723			3224		1770	3435	
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.99		0.95	1.00	
Satd. Flow (perm)	1770	1863	1539	1681	1723			3224		1770	3435	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	71	297	83	204	271	47	57	173	197	50	257	52
RTOR Reduction (vph)	0	0	67	0	7	0	0	157	0	0	21	0
Lane Group Flow (vph)	71	297	16	184	331	0	0	270	0	50	288	0
Confl. Peds. (#/hr)	6		11	11		6	2		5	5		2
Turn Type	Split	NA	Perm	Split	NA		Split	NA		Split	NA	
Protected Phases	4	4		8	8		2	2		6	6	
Permitted Phases			4									
Actuated Green, G (s)	15.2	15.2	15.2	16.0	16.0			16.0		16.0	16.0	
Effective Green, g (s)	15.2	15.2	15.2	16.0	16.0			16.0		16.0	16.0	
Actuated g/C Ratio	0.19	0.19	0.19	0.20	0.20			0.20		0.20	0.20	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	339	357	295	339	348			651		357	693	
v/s Ratio Prot	0.04	c0.16		0.11	c0.19			c0.08		0.03	c0.08	
v/s Ratio Perm			0.01									
v/c Ratio	0.21	0.83	0.05	0.54	0.95			0.41		0.14	0.42	
Uniform Delay, d1	26.9	30.8	26.1	28.3	31.2			27.5		26.0	27.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.3	15.1	0.1	1.8	35.4			1.9		0.8	1.8	
Delay (s)	27.3	45.9	26.2	30.1	66.6			29.5		26.8	29.4	
Level of Service	C	D	C	C	E			C		C	C	
Approach Delay (s)		39.3			53.7			29.5			29.0	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	39.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	79.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group